Revitalizing Auto Communities Environmental Response (RACER) Trust

2022 ANNUAL GROUNDWATER MONITORING REPORT

RACER Trust Lansing Industrial Land

Lansing, Michigan

June 6, 2023

2022 Annual Groundwater Monitoring Report

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Prepared By:
Arcadis of Michigan, LLC
28550 Cabot Drive, Suite 500
Novi
Michigan 48377
Phone: 248 994 2240

Prepared For:
Revitalizing Auto Communities Environmental Response Trust

Our Ref:
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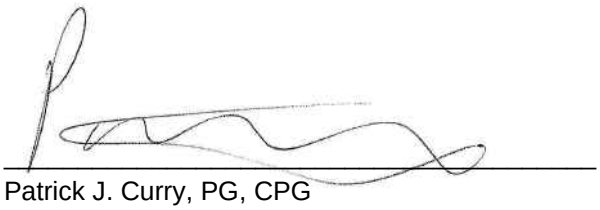

Patrick J. Curry, PG, CPG
Technical Expert

Tiffany A. Linder
Certified Project Manager

Caitlin Cisco
Staff Geologic Specialist

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Acronyms and Abbreviations

Annual Report	2022 Annual Groundwater Monitoring Report
APC Site	former Adam's Plating Company Superfund Site
Arcadis	Arcadis of Michigan, LLC
bgs	below ground surface
COC	constituent of concern
CSM	Conceptual Site Model
DW criteria	Part 201 Residential Drinking Water Criteria
EGLE	Michigan Department of Environment, Great Lakes, and Energy
FSP	Field Sampling Plan
ft	feet
ft/ft	foot per foot
GSI criteria	Groundwater-Surface Water Interface Criteria
IGMP	Revised Interim Groundwater Monitoring Work Plan
LNAPL	light nonaqueous phase liquid
µg/L	microgram per liter
Merit	Merit Laboratories located in Lansing, Michigan
mg/L	milligram per liter
ng/L	nanogram per liter
NTU	nephelometric turbidity unit
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonic acid
QC	quality control
RACER	Revitalizing Auto Communities Environmental Response
RCRA	Resource Conservation and Recovery Act
RL	reporting limit

RRD	Remediation and Redevelopment Act
SGS	SGS Accutest Laboratory located in Orlando, Florida
SIM	selected ion monitoring
Site	RACER Trust Plants 2, 3, and 6 located in Lansing, Michigan
SOP	Standard Operating Procedure
TestAmerica	TestAmerica Laboratories, Inc. located in Burlington, Vermont
USEPA	United States Environmental Protection Agency
VAP	vertical aquifer profiling
VOC	volatile organic compound

1 Introduction

On behalf of the Revitalizing Auto Communities Environmental Response (RACER) Trust, Arcadis of Michigan, LLC (Arcadis) prepared this 2022 Annual Groundwater Monitoring Report (Annual Report) to support the Resource Conservation and Recovery Act (RCRA) Corrective Action process for RACER Trust Lansing Industrial Land, located in Lansing, Michigan (Site). The Site consists of former Plants 2, 3, and 6. This Annual Report summarizes groundwater monitoring completed between January and December 2022, consistent with the requirements of the Revised Interim Groundwater Monitoring Work Plan (IGMP; Arcadis 2019, as revised), which was approved by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on July 25, 2019.

The following sampling events were completed in accordance with the 2019 Revised IGMP:

- First quarter 2022 – A quarterly groundwater sampling and gauging event completed February 28 through March 2, 2022. Groundwater elevations were collected from a total of 68 monitoring wells and groundwater samples were collected from a total of 27 wells.
- Second quarter 2022 – Gauging of light non-aqueous phase liquid (LNAPL) wells and quarterly, semi-annual, annual, and biennial groundwater sampling and gauging event completed May 31 through June 10, 2022. Groundwater elevations were collected from a total of 203 monitoring wells, LNAPL gauging was completed at a total of 22 wells, and groundwater samples were collected from a total of 161 wells.
- Third quarter 2022 – A quarterly groundwater sampling and gauging event completed August 29 through September 3, 2022. Groundwater elevations were collected from a total of 33 monitoring wells and groundwater samples were collected from a total of 31 wells.
- Fourth quarter 2022 –Gauging of LNAPL wells and a quarterly and semi-annual groundwater sampling and gauging event completed October 31 through November 10, 2022. Annual sampling of Lansing Township municipal well sampling was also completed during the fourth quarter. Groundwater elevations were collected from a total of 112 monitoring wells, LNAPL gauging was completed at a total of 22 wells, and groundwater samples were collected from a total of 107 wells.
- Additionally, storm sewer sampling for per- and polyfluoroalkyl substances (PFAS) was completed during each 2022 quarterly event on March 1, May 12, August 2, and November 3.

A revised IGMP for 2023 is currently in review and will be in place prior to the second quarter 2023 sampling event. The 2023 Revised IGMP will incorporate storm sewer monitoring; newly installed monitoring wells; and will adjust the number of wells, constituents, and frequency of sampling consistent with the evolving risk and regulatory requirements, as approved by EGLE.

As outlined in the 2019 Revised IGMP, this Annual Report includes quarterly data (e.g., tabulated data, figures, analytical narrative) and the following information:

- Objective and scope of the sampling events
- Summary of groundwater elevations and LNAPL gauging data, including contour maps and trend plots
- Figures, tables, and a brief narrative summarizing the groundwater sampling results
- Groundwater elevation contour maps for various water bearing zones
- Updated groundwater plume stability evaluation
- Summary of Lansing Township water supply well sampling
- Conclusions and recommendations for revisions to the IGMP as appropriate.

All groundwater monitoring activities were completed in accordance with the 2019 Revised IGMP. The sampling frequencies and analytes for each well are included in **Table 1**. The locations of all site monitoring wells are provided on **Figures 1A**, **1B**, and **1C**.

The following deviations from the 2019 IGMP were observed during the 2022 monitoring activities:

- **MW-03-02** and **MW-03-04** are flush-mounted wells located in low lying areas of Plant 6 and utilized for groundwater elevation monitoring. Both monitoring wells have been unable to be located since June 2020 and may have been buried or under standing water. Arcadis will attempt to locate MW-03-02 and MW-03-04 during the 2023 sampling. Note these two wells have been proposed for abandonment. The 2023 well abandonment work plan is currently under review.
- **MW-03-08** is a perched monitoring well with flush-mount construction and was unable to be accessed due to standing water in second quarter 2022. MW-03-08 is utilized for annual groundwater elevation monitoring and biennial VOC monitoring. Arcadis will evaluate converting this well to a stick-up casing in 2023, as well as address the grade near the well to prevent future submersion.
- **MW-12-05R** was observed to be damaged and was not sampled for low level 1,4-dioxane in second quarter 2022. In August 2022, MW-12-05R was repaired, converted into a flush mount well and resurveyed in October 2022. Annual low level 1,4-dioxane sampling will next be completed in fourth quarter 2023.
- **MW-14-56** was observed to be damaged and was not sampled for 1,4-dioxane and PFAS in second quarter 2022. In August 2022, MW-14-56 was repaired, converted into a flush mount well and resurveyed in October 2022. MW-14-56 was sampled for PFAS in fourth quarter 2022. This well is next planned for annual gauging, 1,4-dioxane and PFAS sampling fourth quarter 2023.
- **MW-14-69** was dry in second quarter 2022 and has been dry since installation in 2014. This monitoring well was installed in an area with limited perched groundwater with the intent of verifying whether saturated conditions existed and if the well would produce enough water for sampling and is checked annually.
- **MW-18-96** was installed in shallow fill material at Plant 3 and contained water during development and initial sampling; however, the well has been dry since June 2020. This result suggests the clay in this area of the site is a barrier to groundwater flow.
- **MW-18-106** was sampled in second quarter 2022 but was dry in fourth quarter 2022. This is the first event with observed dry conditions. This location is scheduled to be gauged and sampled again in second quarter 2023.
- **MW-19** was noted to have had an unsecured slip cap that caused sediment to enter the well when attempting to gauge and sample for VOCs and1,4-dioxane in second quarter 2022. MW-19 was redeveloped in August 2022, but was noted to have approximately 15 feet of sediment accumulation that needed more aggressive surging to fully remove. This monitoring well was not sampled or gauged in 2022. MW-19 is scheduled for annual gauging and biennial sampling for 1,4-dioxane. Additional well development will occur in 2023 to prepare for biennial sampling in 2024.
- **MW-19-110** was installed in August 2019 at the request of the EGLE in an area of Plant 3 with limited perched groundwater with the intent of verifying whether saturated conditions existed and if the well would produce enough water for sampling. Since installation in 2019, the well has had either low water levels or been dry, resulting in no groundwater samples collected. No samples were collected at this location in 2022.

- **MW-19-113** was installed in a sand seam encountered from 16 to 23 feet below ground surface (ft bgs) on northern Plant 3 and had approximately 7 feet of water during development and initial sampling during 2019. The water level decreased dramatically during 2020 and continued to decrease until the well contained insufficient water to collect a sample beginning in fourth quarter 2020. The last groundwater sample collected from MW-19-113 was in June 2020. Low water levels were present during the second and fourth quarter 2022 gauging events (0.27 to 0.11 feet of water column, respectively). No samples were collected from this location in 2022.
- **P6-SB-35** is part of groundwater elevation monitoring during the annual event. In 2022, this well was inadvertently missed and not gauged. Nearby wells MW-13-36R and MW-14-67 were gauged including during the annual gauging event.
- **UNK-15** includes quarterly groundwater elevation monitoring. This well could not be accessed during the first quarter 2022 field event due to ice. This location was gauged during the remaining quarterly events.

2 Sampling Methods

This section discusses the groundwater and storm sewer sampling methodology used at the Site.

2.1 Groundwater Sampling Methods

All groundwater samples were collected in a manner consistent with the low-flow sampling techniques in the Arcadis Standard Operating Procedure (SOP) for low-flow sample collection, and generally consistent with EGLE's Remediation and Redevelopment Division (RRD) Op Memo 2, Attachment 5 (EGLE 2004). An emphasis was placed on collecting low-turbidity samples (less than 10 nephelometric turbidity units [NTUs]) for metals analysis. If turbidity below 10 nephelometric turbidity units (NTU) could not be achieved during sampling, the sample was filtered and the filtered and unfiltered samples were submitted for dissolved metals analysis and total metals analysis, using USEPA Method 6020. Samples collected for 1,4-dioxane, volatile organic compounds (VOCs), metals, and general chemistry were submitted under chain of custody protocol to Merit Laboratories (Merit) located in East Lansing, Michigan. Samples collected for low-concentration 1,4-dioxane analysis were submitted under chain of custody protocol to Eurofins Laboratory in Barberton, Ohio. Samples collected for PFAS analyses were submitted under chain of custody protocol to Pace Analytical Laboratory located in West Columbia, South Carolina. Laboratory analytical reports and data validation reports for Lansing Township municipal wells and all other monitoring wells are included as **Appendix A** and **B**, respectively. Groundwater low-flow sampling logs are included as **Appendix C**.

During the second quarter 2022 annual sampling event, and before sample collection, site-wide gauging was completed using electronic water level meters and LNAPL wells were gauged using an oil/water interface probe. During the first, third, and fourth quarter 2022 sampling events, gauging was limited to those wells selected for sampling and LNAPL monitoring. All gauging was completed within 24 hours with few exceptions due to access or other issues.

The most current sampling matrix provided as part of the 2019 Revised IGMP is included as **Table 1**. In general, groundwater samples were submitted for analysis for one or more of the following parameters:

- Target compound list (TCL) volatile organic compounds (VOCs) using United States Environmental Protection Agency (USEPA) Method SW8260B, Revision 2 or SW8260C, Revision 3.
- Low-concentration 1,4-dioxane using USEPA Drinking Water Method 522 (Eurofins), which provides a reporting limit (RL) of 0.20 microgram per liter (µg/L) – used for the Lansing Township municipal wells and select bedrock monitoring wells.
- 1,4-Dioxane using USEPA Method SW8260B-SIM (Merit) – used for monitoring wells other than municipal and bedrock wells.
- VOCs using USEPA Method 8260C.
- Selected metals (arsenic, total chromium, copper, lead, nickel, and vanadium) by USEPA Method 6020, and, at discrete locations, metals associated with known impacts (e.g., hexavalent chromium in Area 14 at Plant 3).
- Nutrient sampling (i.e., general chemistry), including nitrate, phosphorus and total Kjeldahl nitrogen (TKN), at select biosparge monitoring wells using Standard Method SM4500-N(org)/NH and SM4500-PE.
- Per- and polyfluoroalkyl substances (PFAS) using USEPA Method 537 modified with isotope dilution (DoD QSM 5.3).

2.1.1 Quality Control/Quality Assurance

Quality control (QC) samples were collected during the sampling event and included the following:

- One duplicate sample per every ten samples.
- One matrix spike and matrix spike duplicate (MS/MSD) sample per every 20 samples.
- One field blank sample per sampler per sampling event.
- One equipment blank sample per pump per sampling event, as well as additional equipment blank samples from the water level meters used for PFAS sampling.

Additionally, trip blanks were included with each cooler containing samples for VOC analysis. One sample delivery group per plant from each quarter underwent complete Tier I validation as defined in USEPA *Innovative Approaches to Data Validation*, USEPA Region III (USEPA 1995). Validation reports are included in **Appendix A** and **B** along with laboratory analytical reports.

2.1.2 Light Nonaqueous Phase Liquid Monitoring

LNAPL monitoring wells were gauged during the second and fourth quarter events with an oil/water interface probe. Gauging methods were consistent with the 2019 revised IGMP (Arcadis 2019).

2.2 Groundwater Elevation Monitoring

Monitoring wells were gauged during sampling using an electronic water level meter generally within a 24-hour period. To evaluate seasonality, site-wide gauging is rotated annually between the second quarter and fourth quarter events. In 2022, site-wide gauging was completed during the second quarter annual sampling event. During the first, third, and fourth quarter sampling events, gauging was limited to those wells selected for sampling. Gauging methods were consistent with the 2019 revised IGMP (Arcadis 2019).

2.3 Storm Sewer Sampling Methods

Storm sewer sampling was completed quarterly to confirm the effectiveness of storm sewer modifications and abandonments completed in Fall 2018, Winter 2019/2020, Fall 2020, and Spring 2021 (Arcadis 2021d). Storm sewer sampling was completed prior to storm sewer modifications and abandonments in 2017 at Plant 2 and in 2019 on Plants 2 and 6. Storm sewer samples required for quarterly monitoring are collected from the sump of the structure. Past samples collected for investigation purposes were collected from sumps and individual inverts as needed. Samples are collected according to the Arcadis technical guidance instruction (TGI) for PFAS sample collection and analyzed using USEPA Method 537 modified with isotope dilution (DoD QSM 5.3).

3 Results

This section summarizes the results from sampling activities completed between January and December 2022. **Table 2** presents groundwater analytical data collected during the reporting period. As a frame of reference and not indicating the criteria are applicable or that additional response is necessary, figures showing exceedances of EGLE Part 201 residential drinking water criteria (DW criteria) and Part 201 groundwater surface water interface criteria (GSI criteria), are provided as **Figures 2** through **9**. Laboratory analytical reports and data validation reports for Lansing Township municipal wells and all other monitoring wells are included as **Appendix A** and **B**, respectively. Groundwater low-flow sampling logs are included as **Appendix C**.

3.1 Groundwater Monitoring Results

A summary table of the groundwater analytical data collected during 2022 is presented in **Table 2** with exceedances of DW criteria and GSI criteria, if applicable, highlighted in gray and summarized on **Figures 2** through **9**. Results of the 2022 groundwater monitoring events are summarized below.

3.1.1 Perched 1,4-Dioxane Results

In accordance with the approved 2019 IGMP Table (**Table 1**), sampling of perched groundwater for 1,4-dioxane was completed as part of annual groundwater sampling event during second quarter 2022. Perched 1,4-dioxane results (**Figure 2**) are generally consistent with the results summarized in the 2021 Annual Groundwater Monitoring Report (Arcadis 2022b), except for MW-14-58R.

Monitoring well MW-14-58R is a perched monitoring well located near the western property boundary of Plant 2 was installed in October 2021 as a replacement for MW-14-58 which was damaged and subsequently abandoned. MW-14-58 was last sampled in June 2020 and had a 1,4-dioxane concentration of 38 µg/L. MW-14-58R was installed 5 to 6 feet north of MW-14-58 within similar geology to a total depth of 27 feet below ground

surface. MW-14-58R was first sampled in December 2021 with a 1,4-dioxane concentration of 430 µg/L. Resampling of MW-14-58R has shown decreasing 1,4-dioxane concentrations in 2022.

Additional evaluation of MW-14-58R, including four vertical aquifer profile (VAP) borings, and installation of four additional monitoring wells (MW-22-153, MW-22-155, MW-122-156, and MW-22-157), was completed to delineate 1,4-dioxane and better understand why the replacement well shows such a disparity in concentration. All five wells were sampled in September and October 2022 and 1,4-dioxane exceeded its residential DW criteria to the south (MW-22-156) and west (MW-22-153) but were generally lower than the concentrations observed at MW-14-58R. Concentrations off-site to the west are below criteria. A summary of the 2022 investigation results and proposed additional investigation activities for 2023 was included in the *MW-14-58R Area Data Summary and Proposed Additional Work* submittal on February 3, 2023 (Arcadis 2023a). Monitoring will continue consistent with the 2023 revised IGMP, data will be reviewed with EGLE, and we will determine if additional delineation is necessary.

3.1.2 Lower 1,4-Dioxane Results

A biosparge remedy has been implemented per the *Interim Measures Work Plan: Lower 1,4-Dioxane Biosparge* work plan (Arcadis 2018). The lower 1,4-dioxane biosparge system has been operating at Plant 3 since May 2019 and Plant 2 since August 2020. Performance monitoring of the biosparge system is summarized in the *Lower 1,4-Dioxane Biosparge Update Report* (Arcadis 2021c), submitted to EGLE on March 18, 2021 and in the *Lower 1,4-Dioxane Biosparge Progress Report and Shutdown Evaluation* (Arcadis 2023b), submitted to EGLE on March 27, 2023. Lower 1,4-dioxane concentrations (**Figure 3**) have been generally decreasing throughout the footprint of the plume in 2022.

Performance monitoring demonstrates treatment of the lower 1,4-dioxane plume within the radius of influence of the biosparge wells on Plants 2 and 3, as well as downgradient flushing. Performance reporting will continue on an annual basis. Lower 1,4-dioxane performance monitoring wells located within the area of influence of the biosparge system (e.g., MW-13-43, MW-19-121, MW-19-123, MW-20-128, and TW-14-06) have shown decreasing concentrations since system startup. The results at the perimeter of the lower 1,4-dioxane plume were reviewed for potential changes:

- *Southern Extent (the toe)* – The lower 1,4-dioxane plume is defined to the south by MW-16-74, MW-16-75, MW-16-77, MW-16-78, MW-16-79, MW-19-121, MW-21-140, and MW-21-141. These results suggest no significant expansion has occurred at the southern toe of the lower 1,4-dioxane plume since 2018. Future migration to the southeast is not expected due to the operation of the biosparge system and geologic conditions described as part of the *Lower 1,4-Dioxane Conceptual Site Model* (Arcadis 2021a).
- *Northeast Lobe (on Plant 2)* – Increasing and/or stable concentrations were observed within the northeast lobe of the lower 1,4-dioxane plume on Plant 2 during 2018-2021. Since then, stable to decreasing concentrations have been observed (e.g., at wells MW-16-84, MW-16-85, and MW-17-86), likely attributable to the operation of the biosparge system (Arcadis 2021c, 2023b).
- *MW-20-130*: Monitoring well MW-20-130 is a weather bedrock monitoring well that was installed as a deep sentinel for PFAS at the Plant 2 PFAS source area. MW-20-130 has a 1,4-dioxane concentration of 10 µg/L (November 2022). Two weathered bedrock monitoring wells were installed downgradient of MW-20-130, one to the south (MW-21-140) and one to the east (MW-21-141), and 1,4-dioxane was not detected at either well.

- Monitoring wells located near the western Plant 2 property boundary including MW-15-73 and MW-16-80 in weathered bedrock, show concentrations of 1,4-dioxane exceeding the DW criterion of 7.2 µg/L in 2022. The detected concentrations are generally consistent with previous results observed at these locations. As previously reported, detections of 1,4-dioxane at these locations could be associated, wholly or in part, with the APC site.

3.1.3 VOCs (other than 1,4-dioxane) Results

In accordance with the approved 2019 IGMP Table (**Table 1**), the annual and biennial analysis of VOCs was completed during the second quarter 2022. Of the thirty-six (36) wells that were sampled for VOCs during second quarter, five (5) wells had concentrations exceeding the DW and/or GSI criteria (**Figure 4**).

- *Plant 6 entrance at the intersection of Stanley and Osborn Streets* – A vapor intrusion investigation was completed in this area and details regarding the detection of vinyl chloride in shallow groundwater in this area was provided to EGLE in the *Plant 2, 3 and Plant 6 Vapor Intrusion Investigation Summary* (Arcadis 2021b). Vinyl chloride has been detected on-site at monitoring well MW-20-131 and off-site at MW-20-132 at concentrations above the Site-Specific Vapor Intrusion to Indoor Air Criteria (SSVIAC). A summary of the VI evaluation was provided to EGLE in June 2022 (Arcadis 2022c). An additional monitoring well was installed in September 2022 (MW-22-154) to the northeast of MW-20-132 to define the extent of SSVIAC exceedances in groundwater. Analytical results from MW-22-154 had vinyl chloride at or below criteria and ranged between non-detect (<1 µg/L) to 2 µg/L. Soil vapor sampling at SVMP-20-01, located between the Plant 6 entrance and the residential properties located to the northeast, has been non-detect for vinyl chloride.
- *Weathered bedrock wells MW-14-61, MW-17-86, and MW-19-120* – located in the northeast lobe of the lower 1,4-dioxane plume on Plant 2, these wells are monitored for VOCs semi-annually due to previously observed low detections of chlorinated VOCs (e.g., 1,2-DCE; chloroethane) related to leakage from the perched zone. VOCs were not detected in MW-14-61, MW-17-86, or MW-19-120 in 2022. VOCs will continue to be monitored in the weathered bedrock zone.

3.1.4 Metals Results

Metals including arsenic, chromium III, chromium VI, and nickel exceeded DW Criteria in three monitoring wells on Plant 3 during 2022 (**Figure 5**).

- *CH-14-RO*: Chromium III and chromium VI were detected in this shallow well at concentrations of 7.16 milligrams per liter (mg/L) and 7.4 mg/L, respectively, exceeding the DW criteria of 0.10 mg/L for both compounds. Chromium concentrations at CH-14-RO are related to the former plating line and have been steadily decreasing since monitoring began in 2012.
- *MW-13-32*: Nickel was detected in the shallow well MW-13-32, located near the eastern boundary of Plant 3, at a concentration of 0.363 mg/L, exceeding the DW criterion of 0.1 mg/L and GSI criterion of 0.12 mg/L. As previous discussed, nickel in this area appears to migrate onto the RACER property from the adjacent railroad easement.
- *MW-02-04(3)*: Arsenic was detected in the deep overburden well MW-02-04(3), located in central Plant 3, at a concentration of 0.051 mg/L, exceeding the DW criteria of 0.01 mg/L.

These metals results are consistent with previous sampling events. An evaluation of metals stability in groundwater (Arcadis 2014b) and subsequent monitoring indicates that metals at the Site are stable and spatially limited.

3.1.5 PFAS Results

The following sections discuss the PFAS groundwater results at the Site.

3.1.5.1 PFOS Results

Perfluorooctane sulfonic acid (PFOS) concentrations exceeded the Groundwater-Surface Water Interface (GSI) criteria (12 nanograms per liter [ng/L] and DW Criteria (16 ng/l) at 16 perched monitoring wells in 2022 (**Figure 6**).

- MW-18-98: Located on the northern portion of Plant 3, this perched well contained concentrations of PFOS that increased from 33 ng/L to 440 ng/L in 2022, exceeding the DW and GSI criteria. Further north, the perched well MW-19-113 is screened in a similar depth interval and was dry in 2022 suggesting no further migration.
- *MW-18-88, MW-18-95, and eastern Plant 3 off-site wells*: Perched monitoring wells located along the eastern boundary of Plant 3 contained PFOS concentrations of 120 to 310 ng/L at MW-18-88 and 27 to 46 ng/L at MW-18-95. PFOS exceeded the GSI criterion during the first quarter only at one (MW-18-105) of the six perched monitoring wells installed in the City of Lansing's Dunnebacke and Westside Parks, located east of Plant 3.
- *MW-12-12 and MW-13-36R*: Located along the northern and eastern boundary of Plant 6, these wells contained concentrations of PFOS that exceed the DW and GSI criteria. However, PFOS detections did not exceed DW criterion at the vertical aquifer profiling (VAP) or off-site monitoring wells completed east of Plant 6 to delineate PFAS impacts.

3.1.5.2 PFOA Results

Perfluorooctanoic acid (PFOA) concentrations exceeded the DW Criterion of 8 ng/L at 28 perched monitoring wells in 2022 (**Figure 7**).

- *MW-18-88, MW-18-95, and eastern Plant 3 off-site wells*: Perched monitoring wells located along the eastern boundary of Plant 3 contained PFOA concentrations of 5.6 to 9.2 ng/L at MW-18-88 and 2.3 to 11 ng/L at MW-18-95. However, PFOA has not exceeded the DW criterion at any of the six perched sentinel monitoring wells installed in the City of Lansing's Dunnebacke and Westside Parks.
- *MW-04-05(6), MW-12-10R, MW-12-12, MW-13-36R, MW-14-67, MW-14-70, MW-20-131, MW-20-132, and MW-22-151*: Perched monitoring wells located along the northeastern and eastern boundaries of Plant 6 and off-site, contained concentrations of PFOA that exceed the DW criterion. Additional sentinel monitoring wells (MW-22-150 and MW-22-152) were installed off-site to the northeast and east of Plant 6 in March 2022 and the groundwater analytical results did not exceed the DW criterion.
- *Southeastern Plant 6 boundary wells*: Installation of fifteen additional monitoring wells (MW-21-133 through MW-21-138 and MW-22-143 to MW-22-152) was completed between March 2021 and March 2022 along the southeastern perimeter of Plant 6 and off-site. The three southern boundary wells (MW-21-136, MW-21-137, and MW-21-138) were non-detect for all PFAS contaminants in 2022. To the southeast, well MW-22-144 and MW-22-145 have or currently exceed DW Criteria. Additional investigation work was completed in September through December 2022 east of MW-22-145 including the installation of three additional wells (MW-22-158, MW-22-159 and MW-22-160) to complete delineation of PFOA (Arcadis 2023c). Off-site PFAS concentrations will continue to be monitored to evaluate concentration trends and stability.

- *MW-12-09 and MW-14-58R*: Perched monitoring wells located near the western boundary of Plant 2 both contained of PFOA ranging from 12 to 15 ng/L, exceeding the PFOA DW Criteria. The western property boundary in this area in is located southeast of the former APC Site. There is the potential that PFAS concentrations near the Plant 2 boundary and within the Rosemary right-of-way could be attributable to the APC Site or another potential nearby source.

3.1.5.3 PFNA Results

Perfluorononanoic acid (PFNA) concentrations exceeded the DW criterion value of 6 ng/L at six perched monitoring wells in 2022 (**Figure 8**). The highest concentration of PFNA was 170 ng/L observed in Plant 6 source area well P6-SB-07. Other exceedances ranged from 6.0 ng/L to 22 ng/L.

3.1.5.4 Other PFAS Compounds

The only detections of perfluorohexanesulfonic acid (PFHxS) that exceed the DW criterion value (51 ng/L) in 2022 were concentrations of 280 ng/L in perched well MW-21-139 in the Plant 2 PFAS source area, 1,600 ng/L in Plant 3 source area monitoring well CH-14-RO, and 84 ng/L in perched well MW-18-103 located along the northern boundary of Dunneback Park east of Plant 3. The PFHxS detected at MW-18-103 appears to be isolated and may be related to an off-site source to the north where large quantities of roofing shingles are piled on the ground surface, processed and recycled.

Sporadic low detections of perfluorobutanesulfonic acid (PFBS) and perfluorohexanoic acid (PFHxA) observed in monitoring wells during 2022 are below the DW criteria values of 420 ng/L and 400,000 ng/L, respectively.

In addition to PFOS, PFOA, PFNA, PFHxS, PFBS, and PFHxA, other PFAS compounds have been detected at the Site, however there are no established criteria for comparison. In general, these concentrations appear to correlate to PFOS and PFOA concentrations and decrease with distance from PFOS and PFOA source areas.

3.1.5.5 Storm Sewer Analytical Results

Storm sewer PFAS analytical results from 2022 are summarized on **Tables 7** through **9** with exceedances of Rule 57 criteria highlighted in gray. Third and fourth quarter data are also summarized on **Figures 16** through **18**. Results of the third and fourth quarter 2022 sampling events are summarized below.

- P2-MH-2 exceeded the Rule 57 criteria for PFOS of 12.0 ng/L during third quarter 2022 with a detection of 14 ng/L. No other outfall exceedances occurred on Plant 2 in third and fourth quarter 2022.
- P3-MH-284 exceeded the Rule 57 criteria for PFOS during third quarter 2022 with a detection of 16 ng/L. No other outfall exceedances occurred on Plant 3 in the third and fourth quarter 2022.
- Rule 57 criteria for PFOS was exceeded near Plant 6 as listed below. No other exceedances occurred on Plant 6 in third and fourth quarter 2022.
  - MichAve-MH-4 exceeded in the third quarter with a detection of 15 ng/L.
  - Osborn-MH-1 exceeded in fourth quarter with a detection of 14 ng/L.
  - Verlinden-MH-2 exceeded in the third quarter with a detection of 15 ng/L.

3.1.6 Municipal Well and Bedrock Monitoring Well Sampling Results

The results of the Lansing Township well sampling indicate 1,4-dioxane concentrations of 0.16 J µg/L in Lansing Township well TWP-90-03 and 0.31 µg/L in TWP-90-04 (**Appendix A**). These concentrations are consistent with those detected in December 2021 (0.13 J in TWP-90-03, 0.23 ng/L in TWP-90-04). TWP-90-05 was inaccessible due to maintenance and was unable to be sampled in 2022. The locations of the municipal wells are shown and the bedrock 1,4-dioxane results are summarized on **Figure 9.**

Analytical results for the municipal wells are included in **Table 2**. Widespread 1,4-dioxane detections are potentially related to a 1,4-dioxane "background condition" in and around Lansing, as demonstrated by the low-level 1,4-dioxane sampling completed at the Site in 2017. Sporadic detections of 1,4-dioxane in the bedrock monitoring wells installed along the core of the plume ranged from 0.19 µg/L to 1.7 µg/L and did not exceed DW Criteria in 2022. Annual sampling of Lansing Township wells will continue to monitor for 1,4-dioxane.

3.2 Light Nonaqueous Phase Liquid Monitoring

LNAPL is present in the central portion of Plant 2 (Area 5-2) and in the north-central portion of Plant 3 (Area 17). LNAPL monitoring well locations and approximate extent of LNAPL are presented on **Figures 1A** and **1B**. LNAPL thicknesses were generally consistent with previous observations and are provided in **Table 3**. LNAPL trend graphs are included in **Appendix D**. The trend graphs indicate that, when present, LNAPL thickness generally gradually increases until it reaches equilibrium within the well and then stabilizes. For the deeper LNAPL, wells take longer to equilibrate with the confined LNAPL conditions relative to the static water level within the formation. The comprehensive *Plant 2 LNAPL Conceptual Site Model* was provided to EGLE for review on February 20, 2020 (Arcadis 2020). Based on the monitoring results, there is no indication of LNAPL migration.

3.3 Groundwater Elevation Monitoring

A site-wide groundwater elevation survey was completed during the annual event (second quarter 2022). Additional groundwater elevation measurements were collected at sampled wells during the semi-annual and quarterly events. **Table 4** summarizes groundwater elevation measurements collected at the Site. Groundwater elevation contour maps (**Figures 10** through **13**), LNAPL trend graphs (**Appendix D**), and groundwater elevation hydrographs (**Appendix E**) are provided for review. Trends within each water-bearing zone are discussed below.

3.3.1 Perched Zone

The groundwater elevation hydrographs included in **Appendix E** indicate that potentiometric surface elevations in the perched zone have been stable to increasing during the period of monitoring beginning in 2012. Storm sewer modifications were completed at Plant 3 during November 2018 and at Plant 2 in 2019 and 2020. Comparison of potentiometric surface elevations observed on Plant 3 prior to storm sewer modifications and post-modification potentiometric surface elevations generally show minor fluctuations (both increasing and decreasing) that are within the range of seasonal variation. Perched potentiometric surface elevations on Plant 2 generally show a gradual increasing trend since 2012 and a slight increase in groundwater elevation following the 2019 storm sewer modifications as levels stabilized. It is unclear whether the small changes in groundwater elevation on Plant 2 are influences by storm sewer modifications, or part of longer-term trends related to decommissioning of the plants. Groundwater elevations at Plant 6 perched monitoring wells have been generally stable since 2012.

Due to the predominance of clay-rich sediment, the perched zone is interbedded and has an overall low permeability and is characterized by isolated sand zones within layers of silt and clay. The potentiometric surface measured within the perched zones is presented on **Figure 10** (Plants 2 and 6) and **Figure 11** (Plant 3). Both figures include potentiometric surface contours for all wells less than 25 feet deep. The lower conductivity clay and silt that dominate this zone result in high horizontal and vertical gradients. Sand zones are discontinuous and often do not correlate from well to well, and minor variations in well screen elevation have a significant impact on the potentiometric surface. Therefore, although the contour maps represent the overall shallow potentiometric surface, they are of limited use to determine groundwater flow direction.

3.3.2 Deep Overburden

Saturated deep overburden is present only at Plant 3 within a southwest-northeast trending bedrock valley. Groundwater present within the deep overburden is hydraulically connected to the weathered bedrock and bedrock zones. The groundwater elevation hydrographs included in **Appendix E** show that deep overburden water levels appear to be decreasing since 2020 following a period of steady increases 2016 to 2020. The variations observed in deep overburden water levels are likely changes in precipitation, as well as long-term changes in municipal pumping.

Figure 12 presents potentiometric surface elevation contours for deep overburden wells located on Plant 3. In the northern portion of Plant 3, the apparent groundwater gradient is northwesterly. In the southwestern portion of Plant 3 there is a groundwater high below the former “coliseum” source area with an apparent gradient to the southeast.

3.3.3 Weathered Bedrock and Bedrock

Potentiometric surface trend graphs for select bedrock and weathered bedrock wells are included in **Appendix E**. Following a period of increasing elevations from 2016 to 2020, the bedrock and weathered bedrock elevations have been decreasing since 2021 with an overall increase in vertical gradient (0.41 ft/ft downward) within the Saginaw Formation. The variable potentiometric surface is likely attributed to changes in municipal pumping patterns, both long-term and seasonally.

Similar to the perched zone, the depth of a monitoring well within the weathered bedrock or bedrock zones plays a large role in the potentiometric surface observed at that location. Large vertical gradients occur in formations with vertical anisotropy and indicate a lack of vertical groundwater communication. Traditional groundwater elevation contour maps were not prepared for the weathered bedrock wells because they would be of limited use for interpreting groundwater flow direction and transport.

For the bedrock (and by extension, the weathered bedrock), the effective head or “corrected” potentiometric surface elevation can be calculated based on the observed vertical gradients. As indicated in **Table 5**, the vertical gradient tends to be limited near the coliseum and increases to the south to 0.43 ft/ft downward at wells MW-15-72/MW-12-05R (located in central Plant 2) before stabilizing to 0.53 ft/ft downward at wells MW-13-52/MW-13-50 (located on western Plant 6). This variation in vertical gradient appears to coincide with the transition between bedrock formations. Near the former coliseum (former stamping area basement) in the western portion of Plant 3, where the bedrock encountered consists of the more uniform and permeable Grand River Formation, the vertical gradient is negligible. To the south, within the interbedded sandstone and shale of the Saginaw Formation, there is a significant vertical gradient due to the vertical anisotropy created by the interbedded shale and sandstone of the Saginaw Formation. Review of the bedrock wells and other deep boring logs suggests an approximate

geologic contact between the Grand River and Saginaw Formations oriented roughly southwest to northeast. **Figure 13** includes the interpreted location of the geologic contact.

To calculate the effective head for the bedrock, an average downward gradient 0.41 ft/ft was applied to bedrock monitoring wells installed within the Saginaw Formation (**Table 5**) as follows:

$$GW_{eff} = GW – (dh/dl * \Delta Elev)$$

Where:

GW_{eff} = effective groundwater elevation

GW = measured groundwater elevation

dh/dl = vertical gradient

ΔElev = change in elevation between deepest well and measured well

As shown on **Figure 13**, the corrected bedrock groundwater elevation contours are a good match for the distribution of the lower 1,4-dioxane plume located within the weathered bedrock zone. Groundwater flow is generally to the southeast, but as documented in the December 5, 2019 *Update Meeting Presentation* provided to EGLE, the gradient in the central part of Plant 2 has become flatter and more variable in recent years with an west to east flow component beneath the Plant 2 LNAPL area.

4 Groundwater Plume Stability

A preliminary groundwater plume stability assessment was completed at the Site in April 2014 (Arcadis 2014a). The primary objective of that assessment was to provide an initial evaluation of plume stability and determine the suitability of monitored plume stability as a remedial alternative. The preliminary plume stability assessment used data collected between October 2011 and first quarter 2014 as well as geochemical data collected during the August and September 2013 events.

The plume stability assessment has been updated annually and incorporated into the annual reports. Stability assessments have been generally consistent and demonstrate that historical increasing trends are primarily limited to 1,4-dioxane in weathered bedrock wells and metals in perched wells mobilized by changes in groundwater geochemistry associated with the Site. Operation of the biosparge system in weathered bedrock has decreased concentrations in the lower 1,4-dioxane plume significantly since 2020. The plume stability assessment presented in this section represents an updated analysis of time-series concentration trends using data collected through fourth quarter 2022.

The updated statistical analysis of dissolved-phase constituent of concern (COC) concentrations with time was completed using the Mann-Kendall slope trend test, consistent with the methodology used in previous evaluations. The updated analysis for 2022 includes all wells that that meet the following criteria:

- At least four sampling events have been completed.
- At least 65 percent of the sampling results were greater than detection limits (minimum of three sampling results greater than detection limits).
- At least one detection in the dataset exceeded the lowest relevant criteria.

Guidance for conducting the Mann-Kendall test have been provided in Section 17.3.2 of the US EPA guidance document (USEPA 2009). The Mann-Kendall trend test is a non-parametric test to evaluate if a statistically significant unidirectional (consistently increasing or decreasing) trend was observed during the monitoring period. Correlations were accepted as significant for p-values less than or equal to the alpha value, 0.10 (with a confidence level of 90 percent). Additional information regarding the Mann-Kendall analysis and methods is provided in the 2014 *Preliminary Groundwater Geochemical and Plume Stability Assessment* (Arcadis 2014a) and in **Appendix F**. **Table 6** presents a comprehensive summary Mann-Kendall trend analysis results. The overall trend results are shown on **Figures 14** and **15** for perched and weathered bedrock zones, respectively. **Appendix F** presents plots of concentrations through time for all well/COC pairs that met criteria for statistical trend analysis.

4.1 Perched Zone

4.1.1 1,4-Dioxane

The 1,4-dioxane plume generally appears to be stable to decreasing within the perched zone, with the exception of MW-03-06 on central Plant 6, which has shown variable concentrations of <2 ug/L up to 8 µg/L. The concentration at MW-03-06 was 5 µg/L in 2022.

4.1.2 Volatile Organic Compounds

Concentrations of VOCs in the perched zone are sporadic, and a large plume footprint has not been observed; rather, VOC concentrations in groundwater greater than DW criteria are limited to discrete source areas (e.g., Area 2, Area 9) and areas immediately surrounding observed LNAPL at Plants 2 and 3. VOC data showed decreasing trends across the site with the exception of MW-14-54 in Area 2, which has increasing trends noted for several aromatic hydrocarbons.

4.1.3 Metals

During previous plume stability assessments, most statistical analyses for concentrations of metals in perched zone monitoring wells were determined to be decreasing or exhibit no significant trend, suggesting overall stability in metals greater than criteria. The trend evaluation for metals focused on monitoring wells near the Site boundary to evaluate the potential for off-site metal impacts. Of the perimeter wells, only MWBP-10-UST5-6 indicated an increasing trend for arsenic. The increasing trend for arsenic in this well is for the time period from 2013 through 2022. Since the observed maximum concentration of 0.051 mg/L in December 2017, concentrations have been decreasing and was at criteria (0.010 mg/L) in June 2022. Elevated arsenic in this area is related to reducing conditions associated with the underground storage tanks formally located in Area 6.

4.1.4 PFOS, PFOA, PFNA, and PFHxS

Thirty-two monitoring wells met the criteria for Mann-Kendall analysis for PFOA, PFOS, PFNA, and/or PFHxS during 2022. Statistical trend analysis indicates that three wells (MW-13-36R, MW-18-88, MW-18-103) have statistically increasing trends and all other wells with PFAS concentrations exceeding criteria demonstrate stable to decreasing trends. An increasing trend was observed at MW-13-36R for PFOA near the eastern boundary of Plant 6. This monitoring well showed an increase in concentration from 70 µg/L in November 2021 to 81 µg/L in

March 2022 and was at 74 µg/L in June 2022. Additional monitoring of PFOA east of Plant 6 will be completed during 2023. PFOA is currently defined east of Plant 6 by permanent monitoring wells.

Increasing trends are also observed for PFOA and PFOS at Plant 3 at monitoring well MW-18-88. An increase in PFOA and PFOS at well MW-18-88 was observed during the third quarter 2021 (PFOA concentration of 17 ng/L and PFOS concentration of 860 ng/L) and then fell back to within the historical range during the 4th quarter 2021 and subsequent 2022 quarterly sampling events (PFOA ranging between 5.5 to 9.2 ng/L and PFOS ranging between 120 to 310 ng/L). Increasing trends are not observed at the six perched sentinel monitoring wells installed further east within the City of Lansing's Dunnebacke and Westside Parks except for PFHxS at MW-18-103, which has PFHxS concentrations up to 84 ng/L, compared to a range of 0.59 J to 3.7 ng/L observed at the other five off-site perched sentinel wells. The presence of PFHxS at MW-18-103 appears to be isolated and may be related to an off-site source area.

4.2 Deep Overburden and Weathered Bedrock

4.2.1 1,4-Dioxane

Prior to the operation of the biosparge system concentrations within the lower 1,4-dioxane were decreasing to stable trends in the northern portion of the plume on Plant 3, and stable to increasing trends towards the toe of the plume and the Plant 2 LNAPL area. Since the biosparge startup, concentrations throughout the lower 1,4-dioxane plume are stable to decreasing. Three weathered bedrock wells exhibited increasing trends for 1,4-dioxane on Plants 2 (MW-14-56 and MW-15-73) and 3 (MW-13-34). Notable trends within the lower 1,4-dioxane plume include the following:

- *MW-13-34*: MW-13-34 is a weathered bedrock well at Plant 3 that has exhibited an increasing trend for 1,4-dioxane since sampling began in 2013 ranging from approximately 20 µg/L up to 130 µg/L, but in recent quarters has fluctuated around 80 ug/L. A nested well installed in deep overburden, MW-13-48, previously exhibited an increasing trend but has been decreasing since 2015 (from a max of 380 µg/L down to 24 µg/L). This difference may be due to the groundwater preferential pathway downgradient of the Plant 3 biosparge transect with clean water flushing through the higher permeability zone associated with MW-13-48.
- *MW-14-56:* A weathered bedrock well located along the western property boundary of Plant 2, shows an increasing trend (6 to 15 µg/L) for 1,4-dioxane. 1,4-Dioxane impacts at this well may be related to deep 1,.4-dioxane associated with the APC Site located upgradient of this location. MW-14-56 was damaged in second quarter 2022 and was not sampled. The well was repaired and will next be sampled next in fourth quarter 2023.
- *MW-15-73:* MW-15-73 is located within the weathered bedrock at the west extent of the lower 1,4-dioxane plume in the central part of Plant 2. Well MW-15-73 has shown consistent detections of 1,4-dioxane since 2016, with the five most recent samples (December 2018 through June 2022) exceeding the DW criterion of 7.2 µg/L. Work completed during the installation of MW-15-73 and installation of the Biosparge system (Arcadis 2021c) has shown a clean zone between the lower 1,4-dioxane plume and MW-15-73 suggesting the increasing trend could be attributed to contributions from the APC Site.

5 Conclusions

This Annual Report summarizes the groundwater monitoring activities completed between January and December 2022, consistent with the 2019 Revised IGMP. Based on the results of the sampling and review of the plume stability evaluation, the following conclusions are offered:

- *Lower 1,4-Dioxane:* Installation of the biosparge system for the lower 1,4-dioxane plume has been completed per the *Interim Measures Work Plan: Lower 1,4-Dioxane Biosparge* work plan (Arcadis 2018). The Plant 3 biosparge system began operating in May of 2019, and the Plant 2 biosparge system began operating in August of 2020. Since the biosparge startup, concentrations across the lower 1,4-dioxane plume are stable to decreasing. Three weathered bedrock wells exhibit increasing trends for 1,4-dioxane on Plants 2 (MW-14-56 and MW-15-73) and 3 (MW-13-34). Deep impacts along the western Plant 2 property boundary (MW-14-56 and MW-15-73) are likely related to the upgradient APC facility.
- *Perched 1,4-Dioxane:* Elevated detections of 1,4-dioxane at MW-14-58R and associated wells on western Plant 2 will continue to be monitored through second quarter 2023 at which time the available information will be evaluated and a recommendation for next steps will be developed.
- *1,4-Dioxane in Bedrock:* Sporadic detections of 1,4-dioxane in deeper bedrock monitoring wells installed along the core of the plume ranged from 0.19 µg/L to 0.86 µg/L and did not exceed drinking water criteria in 2022.
  - Lansing Township wells TWP-90-03 and TWP-90-04 were sampled in November 2022 and analyzed for 1,4-dioxane using USEPA Method 522 for drinking water. Concentrations of 0.16 and 0.31 µg/L, respectively, were reported and are consistent with previous sampling results. The low-level detections of 1,4-dioxane in the region may result from several regional and/or numerous nonpoint sources. Annual sampling of Lansing Township wells will continue in 2023.
- *VOC and Metals:* Groundwater sample results indicate that concentrations of several VOCs and metals exceed residential drinking water criteria during at least one sampling event at the Site. Elevated concentrations of VOCs are observed within a few perched monitoring wells centrally located on Plants 2 and 6 and impacts do not appear to be migrating radially. Elevated concentrations of metals are, in most cases, a result of natural geochemical conditions and/or slight shifts in geochemistry associated with the presence of VOCs. The exception is nickel on the eastern boundary of Plant 3, which is attributed to off-site conditions.
- *PFAS Compounds:* PFOS, PFOA, PFNA, and PFHxS concentrations exceeded DW Criteria and PFOS exceeded the GSI criterion in perched monitoring wells during 2022 groundwater monitoring events. Concentrations PFAS in perched groundwater at Plants 2, 3, and 6, show stable to decreasing trends, with the exception of two wells on Plant 3 and one eastern perimeter well on Plant 6. Additional sampling will continue in 2023 to monitor PFAS impacts.
- *Stormwater PFAS:* The quarterly storm sewer sampling indicates the storm sewer modifications at Plant 2 and 3 have successfully reduced PFAS discharge to concentrations at or below the Rule 57 criteria. Plant 6 modifications have reduced PFAS concentrations to near Rule 57 Criteria and will continue to be monitored for changes.
- *LNAPL:* LNAPL extent and thicknesses are consistent with previous annual reports, there is no indication of LNAPL migration.

Based on these conclusions, no immediate action is recommended at this time. Results of the monitoring program do not suggest changes are required for the previously submitted *Plant 2 LNAPL Conceptual Site Model* (Arcadis 2020), or the *Lower 1,4-Dioxane Conceptual Site Model* (Arcadis 2021a). Further, there are no apparent risks of exposure noted for the surrounding residential neighborhoods. Groundwater and storm sewer PFAS monitoring will continue consistent with the 2023 revised IGMP.

6 Proposed IGMP Modifications

A revised interim groundwater monitoring plan (2023 Revised Interim Groundwater Monitoring Plan) has been submitted to, and reviewed by, EGLE. The revised plan is in the final stages of revision and is expected to be incorporated into the quarterly sampling beginning second quarter 2023.

7 References

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Tables

Table 1
Revised Interim Groundwater Monitoring Summary - Plant 2
Revised May 2019
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Well	Gauging*	Analyte					Primary Function	Reason(s) for Change
		VOCs	1,4-Dioxane	Select Metals**	SVOCs	PFAS		
Plant 2								
Perched								
MW-01(2)	A	B					VOC monitoring	VOC Change from A to B. MTBE is detected consistently below criteria. No other VOCs detected
MW-02(2)	Abandon							consistent non-detects / do not need 4 wells in Area 1
MW-03(2)	Abandon							consistent non-detects / do not need 4 wells in Area 1
MW-12-09	A	B	A			SA	VOC monitoring, perched 1,4-dioxane monitoring, PFAS monitoring	
MW-12-18	SA	B				SA	VOC monitoring, PFAS monitoring	VOC change from SA to B /1,1-DCE at 1 to 2 ug/L is the only VOC detected / Removed Metals Analysis / Consistent Non-Detects
P2-MW-04	A		A		Qd		perched 1,4-dioxane monitoring, SVOC evaluation	
P2-SB-20	A						groundwater elevation monitoring	Removed VOC, 1,4-d Analysis / Consistently non-detect for at least the past 6 years
LMW-12-01	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / No LNAPL Observed for 4 Quarters
LMW-12-02	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / Max LNAPL Thickness Observed in 4 Quarters was 0.04 feet.
LMW-12-03D	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / Elliminate LNAPL Removal
LMW-12-03S	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / Max LNAPL Thickness Observed in 4 Quarters was 0.01 feet.
LMW-12-04	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / Max LNAPL Thickness Observed in 4 Quarters was 0.02 feet.
LMW-12-05	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / Max LNAPL Thickness Observed in 4 Quarters was 0.18 feet.
LMW-12-06	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / No LNAPL Observed for 4 Quarters
LMW-12-07	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / Max LNAPL Thickness Observed in 4 Quarters was 0.02 feet.
LMW-12-08	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA
LMW-14-12D	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / Elliminate LNAPL Removal
LMW-14-13D	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / No LNAPL Observed for One Year
LMW-14-14D	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / No LNAPL Observed Monthly for One Year
LMW-14-15D	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / Elliminate LNAPL Removal
LMW-15-16D	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / Elliminate LNAPL Removal
LMW-15-17D	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / Max LNAPL Thickness Observed During Monthly Checks for One Year was 0.01 feet.
PMW-01	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA
PMW-02	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA
PMW-03	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA / No LNAPL Observed for 4 Quarters
P2-SB-37	SA						LNAPL Monitoring	Reduce LNAPL gauging to SA
MW-12-07	A						groundwater elevation monitoring	Removed VOC Analysis / Has always been non-detect for VOCs
MW-12-08	A						groundwater elevation monitoring	Reduce LNAPL gauging to SA
MW-12-17	Abandon							Consistent non-detects / do not need 4 wells in Area 1
P2-MW-02	A						groundwater elevation monitoring	Removed VOC Analysis / Consistently non-detect for VOCs
P2-MW-03	A						groundwater elevation monitoring	
P2-SB-03	A						groundwater elevation monitoring	Removed VOC and 1,4-D Analysis / Consistently non-detect for VOCs and 1,4-D
P2-SB-06	A						groundwater elevation monitoring	Removed VOC and SVOC Analysis / Consistently non-detect for VOCs and SVOCs
MW-14-54	A	B					VOC monitoring, SVOC evaluation	VOC change from A to B / Stable Trends. Removed SVOC Analysis / Consistent Non-Detects
MW-14-55	A	B					VOC monitoring	VOC change from A to B / Intermittent VOC detections are consistently below criteria
MW-14-57	A		A				perched 1,4-dioxane monitoring	Remove VOCs/ Intermittent VOC detections are consistently below criteria
MW-14-58	SA	B	A			SA	perched 1,4-dioxane monitoring, PFAS Monitoring	VOC Analysis changed to biennial / VOCs never detected 1,4-D Change from SA to A / Stable trend
MW-14-59	SA	B	A		Qd	SA	perched 1,4-dioxane monitoring, SVOC monitoring, PFAS monitoring	VOC change from A to B / 1,1-DCE exceeds DW but has been stable for 5 years
MW-14-60	SA	B	A		Qd	SA	perched 1,4-dioxane monitoring, SVOC monitoring, PFAS monitoring	VOC change from A to B / VC exceeds DW but has been stable for 3 years
MW-14-62	SA	B	A		Qd	SA	perched 1,4-dioxane monitoring, SVOC monitoring, PFAS Monitoring	VOC change from A to B / Intermittent VOC detections are consistently below criteria
Deep Overburden and Weathered Bedrock								
MW-13-43	SA		SA				lower 1,4-dioxane monitoring	
MW-13-45	SA		SA				lower 1,4-dioxane monitoring	
MW-13-51	A		A				lower 1,4-dioxane monitoring	1,4-D change from B to A / Increased Monitoring of Plume
MW-14-56	A		A			SA	lower 1,4-dioxane monitoring / PFAS monitoring	Removed VOC Analysis / Consistent Non-Detects Removed Metals Analysis / No exceedances 1,4-D Change from SA to A / APC plume / Added PFAS
MW-14-61	SA	A	SA		Qd	SA	lower 1,4-dioxane monitoring, VOC, SVOC & PFAS monitoring	VOC change from SA to A / Single detections of 1,1,1-TCA and Chloroethane below criteria / Added SVOCs/PFAS
MW-14-63	A		A				lower 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections 1,4-D Change from SA to A / No detections
MW-15-72	SA	A	SA		Qd	SA	lower 1,4-dioxane monitoring/VOC, SVOC, PFAS monitoring	Added SVOC / PFAS Analysis
MW-15-73	A		A				lower 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections Removed Metals Analysis / No metal exceedences 1,4-D Change from SA to A / APC plume
MW-16-74	SA		SA				lower 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections
MW-16-75	SA		SA				lower 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections
MW-16-76	A		A				lower 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections 1,4-D Change from SA to A / No 1,4-D exceedances
MW-16-77	SA		SA				lower 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections 1,4-D Change from SA to A / No 1,4-D exceedances
MW-16-78	SA		SA				lower 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections
MW-16-79	SA		SA				lower 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections
MW-16-80	SA		SA				lower 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections
MW-16-81	SA	A	SA			SA	lower 1,4-dioxane monitoring / PFAS monitoring	VOCs change from SA to A / No VOC detections 1,4-D Change from Q to SA/ >4 samples collected
MW-16-82	SA		SA				lower 1,4-dioxane monitoring	VOCs removed / No VOC detections 1,4-D Change from Q to SA / >4 samples collected
MW-16-83	A		A				lower 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections 1,4-D Change from SA to A / No 1,4-D detections
MW-16-84	SA	A	SA				lower 1,4-dioxane monitoring	VOCs change from SA to A / No VOC detections 1,4-D Change from Q to SA/ >4 samples collected
MW-16-85	SA	A	SA				lower 1,4-dioxane monitoring	VOC change from SA to A / No VOC detections
MW-17-86	SA	A	SA				lower 1,4-dioxane monitoring	Well added / VOC to A
MW-19-115	SA		SA				lower 1,4-dioxane monitoring	Well added
MW-19-116	SA		SA				lower 1,4-dioxane monitoring	Well added
MW-19-117	SA		SA				lower 1,4-dioxane monitoring	Well added
PW-14-01	SA		SA				lower 1,4-dioxane monitoring	
PW-14-02	SA	B	SA				lower 1,4-dioxane monitoring	VOC change from SA to B / No VOC detections
TW-14-02	SA	B	SA				lower 1,4-dioxane monitoring	VOC change from SA to B / No VOC detections
Bedrock								
MW-12-01	A		A(1)				bedrock 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections 1,4-D Change from SA to A / No 1,4-D detections > DW
MW-12-02	A		A(1)				bedrock 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections 1,4-D Change from SA to A / No 1,4-D detections >DW
MW-12-05R	A		A(1)				bedrock 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections 1,4-D Change from SA to A / No 1,4-D detections >DW
MW-13-44	A		A(1)				bedrock 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections 1,4-D Change from SA to A / No 1,4-D detections >DW
MW-12-06	A		A(1)				bedrock 1,4-dioxane monitoring	Removed VOC Analysis / No VOC detections 1,4-D Change from SA to A / No 1,4-D detections
MW-17-87	A		A(1)				bedrock 1,4-dioxane monitoring	Well added
MW-19-118S	A		A(1)				bedrock 1,4-dioxane monitoring	New nested deep bedrock well / 1,4-Dioxane only
MW-19-118D	A		A(1)				bedrock 1,4-dioxane monitoring	New nested deep bedrock well / 1,4-Dioxane only
MW-19-125	A		A(1)				bedrock 1,4-dioxane monitoring	Proposed deep bedrock well / 1,4-Dioxane only
Lansing Township Wells								
TWP-03	-		A(1)				Municipal Well 1,4-dioxane monitoring	
TWP-04	-		A(1)				Municipal Well 1,4-dioxane monitoring	
TWP-05	-		A(1)				Municipal Well 1,4-dioxane monitoring	

Notes:

* Site wide gauging to alternate between semi-annual events to account for seasonal variability. Semi-annual gauging includes all wells sampled semi-annually.

** Select metals includes arsenic, nickel, lead, vanadium, chromium, and copper.

(1) = Analyzed for 1,4-dioxane via low-level USEPA Method 522

New wells will be added to the figures and incorporated into the annual monitoring once 4 samples are collected and a COC list is determined.

M = Monthly

Q = Quarterly

SA = Semi-annual

A = Annual

B = Biennial (starting 2nd quarter of 2020)

Qd = Quadrennial

Table 1
Revised Interim Groundwater Monitoring Summary - Plant 3
Revised May 2019
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Well	Gauging*	Analyte						Primary Function	Reason(s) for Change
		VOCs	1,4-Dioxane	Select Metals**	Hexavalent Chromium	SVOCs	PFAS		
Plant 3									
Perched									
CH-14-RO	SA			A	A		SA	metals monitoring, PFAS montiroing	Removed VOC Analysis / No VOC detections
MW-05(3)	A	A						VOC monitoring	
MW-06(3)	Abandon								Removed VOC & SVOC Analysis / ND or Decreasing Trend / Abandon - Redundant
UNK-09	Abandon								Remove Guaging/Abandon - Redundant
UNK-10	A	A						VOC monitoring	
UNK-11	A	A				Qd		VOC monitoring, SVOC monitoring	Removed Metals Analysis / Stable to Decreasing Trend / Added SVOC Analysis
MW-13-31	A							groundwater elevation monitoring	Removed Metals & SVOCs/ Stable to Decreasing Trend /attributed to offsite
MW-13-32	A			B		Qd		groundwater elevation monitoring/ SVOC & Metals monitoring	Perimeter monitoring for metals and SVOCs
MW-13-33	Abandon								Removed Metals Analysis / Stable to Decreasing Trend / Abandon
LMW-12-09	SA							Reduce LNAPL gauging to SA	LNAPL Gauging will Occur SA/ Max LNAPL Thickness Observed in 4 Quarters was 0.04 feet.
LMW-12-10	SA							Reduce LNAPL gauging to SA	LNAPL Gauging will Occur SA
LMW-12-11	SA							Reduce LNAPL gauging to SA	LNAPL Gauging will Occur SA / No LNAPL Observed for 4 Quarters
UNK-13	SA							Reduce LNAPL gauging to SA	Change LNAPL Gauging to SA
UNK-14	SA							Reduce LNAPL gauging to SA	Change LNAPL Gauging to SA
MW-04(3)	A							groundwater elevation monitoring	
MW-12-19	A							groundwater elevation monitoring	
P3-SB-07	SA							groundwater elevation monitoring	Guaging used to evaluate bulkheading and PFAS area
P3-SB-28	A					Qd		groundwater elevation monitoring, SVOC monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend
MW-14-65	A							groundwater elevation monitoring	Removed VOC and SVOC Analysis / ND
UNK-15	Q						Q	PFAS monitoring	
MW-18-88	Q	A		A	A		Q	PFAS monitoring/ monitoring VOC & Metals	Well Added
MW-18-89	Q						Q	PFAS monitoring	Well Added
MW-18-90	Q						Q	PFAS monitoring	Well Added
MW-18-91	Q						Q	PFAS monitoring	Well Added
MW-18-92	SA						SA	PFAS monitoring	Well Added
MW-18-95	Q						Q	PFAS monitoring	Well Added
MW-18-96	SA						SA	PFAS monitoring	Well Added
MW-18-98	Q						Q	PFAS monitoring	Well Added
MW-18-99	Q						Q	PFAS monitoring	Well Added
MW-18-100	SA						SA	PFAS monitoring	Well Added
MW-18-102	SA						SA	PFAS monitoring	Well Added
MW-18-103	Q						Q	PFAS monitoring	Well Added
MW-18-104	SA						SA	PFAS monitoring	Well Added
MW-18-105	Q						Q	PFAS monitoring	Well Added
MW-18-106	SA						SA	PFAS monitoring	Well Added
MW-19-107	SA						SA	PFAS monitoring	Well Added
MW-19-108	SA						SA	PFAS monitoring	Well Added
MW-19-110	SA						SA	PFAS monitoring	New perched monitoring well installed August 2019
MW-19-111	SA						SA	PFAS monitoring	New perched monitoring well installed August 2019
MW-19-112	SA						SA	PFAS monitoring	New perched monitoring well installed August 2019
MW-19-113	SA						SA	PFAS monitoring	New perched monitoring well installed August 2019
MW-19-114	SA						SA	PFAS monitoring	New perched monitoring well installed August 2019
Deep Overburden and Weathered Bedrock									
MW-12-20	A		B					lower 1,4-dioxane monitoring	Removed VOC Analysis / Stable to Decreasing Trend
MW-12-21	SA	B	SA					lower 1,4-dioxane monitoring, VOC monitoring	VOC Changed from A to B / Stable to Decreasing Trend Removed Metals Analysis / Stable to Decreasing Trend
MW-13-22	A	B	A					lower 1,4-dioxane monitoring, VOC monitoring	VOC Changed from A to B / Stable to Decreasing Trend Removed Metals Analysis / Stable to Decreasing Trend
MW-13-23	A		A					lower 1,4-dioxane monitoring	
MW-13-24	A		A					lower 1,4-dioxane monitoring	
MW-13-25	SA		SA					lower 1,4-dioxane monitoring	Removed VOC Analysis / Stable to Decreasing Trend
MW-13-26	A							groundwater elevation monitoring	Remove B 1,4-d / 6 yrs ND
MW-13-29	A		A					lower 1,4-dioxane monitoring	
MW-13-30	A							groundwater elevation monitoring	Remove B 1,4-d / 6 yrs ND
MW-13-34	SA	B	SA					lower 1,4-dioxane monitoring, VOC monitoring,	VOC Changed from A to B / Stable to Decreasing Trend
MW-13-40	A							groundwater elevation monitoring	Removed 1,4-dioxane, added MW-18-97
MW-13-41	A	B						VOC monitoring	Added VOC Analysis Removed Metals Analysis / Stable to Decreasing Trend
MW-13-46	SA		SA					lower 1,4-dioxane monitoring	'Removed VOC Analysis / ND or Stable to Decreasing Trend
MW-13-48	SA	B	SA					lower 1,4-dioxane monitoring. VOC monitoring	VOC Changed from A to B / Stable to Decreasing Trend
MW-13-49	A		A					lower 1,4-dioxane	'Removed VOC Analysis / ND or Stable to Decreasing Trend
MW-19	A	B	A					lower 1,4-dioxane monitoring	
MW-22	A							metals monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend / Removed 1,4-D Analysis / Stable to Decreasing Trend
MW-23	SA						SA	PFAS monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend / Removed 1,4-D Analysis / Stable to Decreasing Trend / Add PFAS
MW-91-2 (abandoned) / MW-91-2R	SA		A	A	A		SA	lower 1,4-dioxane, PFAS and metals monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend MW-91-2 abandoned and replaced in August 2019
MW-02-02(3)	A		A					lower 1,4-dioxane monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend / Removed Metals Analysis / Stable to Decreasing Trend
MW-02-04(3)	SA		A	A			SA	lower 1,4-dioxane, PFAS and metals monitoring	Add PFAS
MW-02-01(3)	A							groundwater elevation monitoring	
MW-02-03(3)	A							groundwater elevation monitoring	
MW-04-03(3)	A							groundwater elevation monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend/VC attributed to offsite
MW-04-04(3)	A							groundwater elevation monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend/VC attributed to offsite
MW-13-27	A							groundwater elevation monitoring	
MW-14-64	A		A					lower 1,4-dioxane monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend
MW-15-71	A		B					lower 1,4-dioxane monitoring	1,4-D Changed from A to B / Stable to Decreasing Trend
PW-14-03	SA		SA					lower 1,4-dioxane monitoring	Remove VOCs / Stable to Decreasing Trend
MW-18-93	SA						SA	Lower PFAS monitoring	Well Added
MW-18-94	SA		A				SA	Lower PFAS, 1,4-Dioxane monitoring	Well Added
MW-18-97	SA		A				SA	Lower PFAS monitoring	Well Added
MW-18-101	SA						SA	Lower PFAS monitoring	Well Added
MW-93-1	A							groundwater elevation monitoring	
Bedrock									
MW-91-5	SA		A(1)					bedrock monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend / 1,4-D Changed from SA to A / ND or Stable to Decreasing Trend
MW-91-6	SA		A(1)					bedrock monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend / 1,4-D Changed from SA to A / ND or Stable to Decreasing Trend
MW-13-28	SA		A(1)					bedrock monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend / 1,4-D Changed from SA to A / ND or Stable to Decreasing Trend
MW-13-38	A		A(1)					bedrock monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend / 1,4-D Changed from SA to A / ND or Stable to Decreasing Trend
MW-13-39B	A							groundwater elevation monitoring	
MW-13-47	SA		A(1)					bedrock monitoring	Removed VOC Analysis / Stable to Decreasing Trend 1,4-D Changed from SA to A / Stable to Decreasing Trend
MW-04-01(3)	Abandon								Anomalous elevation in bedrock / no used for contouring or sampling
MW-04-02(3)	A							groundwater elevation monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend/VC attributed to offsite
MW-12-04	A							groundwater elevation monitoring	
MW-13-37	A		A(1)					1,4-D monitoring	Added Annual 1,4-Dioxane
MW-88-1	A							groundwater elevation monitoring	
MW-91-3	A							bedrock monitoring	Removed VOC Analysis / ND or Stable to Decreasing Trend/VC attributed to offsite
MW-91-4	A							groundwater elevation monitoring	Removed VOC Analysis / Stable to Decreasing Trend
MW-19-119S	A		A(1)					bedrock monitoring	New nested deep bedrock well / 1,4-Dioxane only
MW-19-119D	A		A(1)					bedrock monitoring	New nested deep bedrock well / 1,4-Dioxane only

Notes:

* Site wide gauging to alternate between semi-annual events to account for seasonal variability. Semi-annual gauging includes all wells sampled semi-annually.
** Select metals includes arsenic, nickel, lead, vanadium, chromium, and copper.
(1) - Analyzed for 1,4-dioxane via low-level USEPA Method 522
Q = quarterly
SA = semi-annual
A = annual
B = biennial (starting 2nd quarter of 2020)
Qd = Quadrennial

Table 1
Revised Interim Groundwater Monitoring Summary - Plant 6
Revised May 2019
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Well	Gauging*	Analyte					Primary Function	Reason(s) for Change
		VOCs	1,4-Dioxane	Select Metals**	SVOCs	PFAS		
Plant 6								
Perched								
MW-02-03(6)	A	B	A		Qd		perched 1,4-dioxane monitoring, SVOC monitoring	VOC Changed from A to B / Stable to Decreasing Trend
MW-03-04	A						groundwater elevation monitoring	Removed VOC, 1,4-d Analysis / Stable to Decreasing Trend
MW-03-06	A	B	A				perched 1,4-dioxane monitoring	VOC Changed from A to B / Stable to Decreasing Trend Removed Metals and SVOC Analysis / Stable to Decreasing Trend
MW-03-08	A	B					perched VOC monitoring	VOC Changed from A to B / removed 1,4-d /Stable to Decreasing Trend
MW-04-05(6)	A					A	perched PFAS monitoring	Removed VOC, 1,4-d and Metals Analysis / Stable to Decreasing Trend
MW-12-11	A					A	PFAS monitoring	Removed Metals Analysis / Stable to Decreasing Trend /PFAS Stability
MW-12-12	Q					Q	PFAS monitoring	Removed Metals Analysis / Stable to Decreasing Trend /PFAS Stability
MW-12-13	Q			A		Q	PFAS monitoring	Metals Changed from SA to A / Stable to Decreasing Trend / PFAS Stability
MW-12-16	A						groundwater elevation monitoring	Removed VOC Analysis / Stable to Decreasing Trend Removed Metals / Stable to Decreasing Trend attributed to offsite
MW-13-35	A						groundwater elevation monitoring	Removed VOC Analysis / Stable to Decreasing Trend Removed Metals / Stable to Decreasing Trend attributed to offsite/ Retain well for potential PFAS monitoring
MW-13-36R	Q			A		Q	Metals and PFAS monitoring	Metals Changed from SA to A / Stable to Decreasing Trend / PFAS Stability
MWBP-10-UST1-4	Abandon							Only used for groundwater elevation monitoring. High well density in Area 7
MWBP-10A-UST1-4	Abandon							Only used for groundwater elevation monitoring. High well density in Area 8
MWBP-10-UST5-6	A	B		B			VOCs/metal monitoring	VOC Changed from A to B / Stable to Decreasing Trends Metals Changed from SA to B / Stable to Decreasing Trends
MWBP-11-UST1-4	A	B		B			VOCs/metal monitoring	VOC Changed from A to B / Stable to Decreasing Trends
MWBP-12A-UST1-4	Abandon							Consistently non detect for VOCs/stable metals. High well density in area 7.
MWBP-12-UST1-4	A	B		B	Qd		VOCs/metal monitoring, SVOC monitoring	VOC Changed from A to B / Stable to Decreasing Trends
P6-SB-18	A						groundwater elevation monitoring	
P6-SB-37	A						groundwater elevation monitoring	
MW-02-02(6)	Abandon							Only used for groundwater elevation monitoring.
MW-03-02	A						groundwater elevation monitoring	Removed Metals Analysis / Stable to Decreasing Trend
MW-03-05	A	B	A				perched 1,4-dioxane monitoring, VOCs monitoring	VOC Changed from A to B / Stable to Decreasing Trend
MW-12-10R	A						groundwater elevation monitoring	
MW-12-14	A						groundwater elevation monitoring	
MW-12-15								Removed VOC Analysis / Stable to Decreasing Trend Removed Metals / Stable to Decreasing Trend attributed to offsite/ Retain well for potential PFAS monitoring
MWBP-12-UST5-6	Abandon							Consistently non detect for VOCs/stable metals. High well density in area 7.
MWBP-13A-UST1-4	Abandon							Consistently non detect for VOCs/stable metals. High well density in area 7.
P6-MW-01	A						groundwater elevation monitoring	
P6-SB-07	Q				Qd	Q	PFAS monitoring, SVOCs monitoring	PFAS Stability
P6-SB-21	A						groundwater elevation monitoring	
P6-SB-35	A						groundwater elevation monitoring	
SME-MW-02	Abandon							Only used for groundwater elevation monitoring.
MW-14-66	A			B			metals monitoring	Removed VOC Analysis / Stable to Decreasing Trend / Added PFAS
MW-14-67	Q			B		Q	metals monitoring, PFAS Monitoring	Removed VOC Analysis / Stable to Decreasing Trend
MW-14-70	Q					Q	PFAS monitoring	PFAS Stability
MW-14-68	A						PFAS monitoring	Dry Since Installation in 2014 / Continue to check Annually
MW-14-69	A						PFAS monitoring	Dry Since Installation in 2014 / Continue to check Annually
Deep Overburden and Weathered Bedrock								
MW-13-52	A		A				lower 1,4-dioxane monitoring	Removed VOC Analysis / Stable to Decreasing Trend 1,4-D Changed from B to A
MW-13-53	A		A				lower 1,4-dioxane monitoring	Removed VOC Analysis / Stable to Decreasing Trend 1,4-D Changed from B to A
Bedrock								
MW-04-01(6)	A		B				bedrock 1,4-dioxane monitoring	Removed VOC Analysis / Stable to Decreasing Trend
MW-04-04R	A		B			A	bedrock 1,4-dioxane monitoring, PFAS Monitioring	Removed VOC Analysis / Stable to Decreasing Trend
MW-04-06R	A		B			A	bedrock 1,4-dioxane monitoring, PFAS Monitioring	Removed VOC Analysis / Stable to Decreasing Trend
MW-12-03	A						groundwater elevation monitoring	
MW-13-50	A		B				bedrock 1,4-dioxane monitoring	Removed VOC Analysis / Stable to Decreasing Trend

* Site wide gauging to alternate between semi-annual events to account for seasonal variability. Semi-annual gauging includes all wells sampled semi-annually.
** Select metals includes arsenic, nickel, lead, vanadium, chromium, and copper.
Q = quarterly
SA = semi-annual
A = annual
B = biennial (starting 2nd quarter of 2020)
Qd = Quadrennial

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	CH-14-RO 06/09/22 CH-14-RO_060922	CH-14-RO 11/09/22 CH-14-RO_110922	MW-01(2) 06/04/22 MW-01(2)_060422	MW-02-02(3) 06/10/22 MW-02-02(3)_061022	MW-02-02(6) 06/06/22 MW-02-02(6)_060622	MW-02-04(3) 06/08/22 MW-02-04(3)_060822	MW-02-04(3) 11/07/22 MW-02-04(3)_110722	MW-03-05 06/06/22 MW-03-05_060622	MW-03-06 06/06/22 MW-03-06_060622	MW-04-01(6) 06/03/22 MW-04-01(6)_060322	MW-04-04R 06/03/22 MW-04-04R_060322	MW-04-05(6) 06/02/22 MW-04-05(6)_060222	MW-04-06R 06/03/22 MW-04-06R_060322	MW-05(3) 06/07/22 MW-05(3)_060722	MW-12-01 06/06/22 MW-12-01_060622	MW-12-02 06/07/22 MW-12-02_060722	MW-12-06 06/06/22 MW-12-06_060622	MW-12-09 06/04/22 MW-12-09_060422
Field																						
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.46	7.35	6.72	6.64	7.00	6.72	6.87	7.54	6.79	6.91	6.88	7.26	7.76	8.27	7.05	6.98	7.19	6.99
Conductivity	- -	- -	mS/cm	0.00	0.74	3.21	3.88	6.82	5.37	6.06	1.82	8.57	0.97	1.77	2.79	5.86	0.65	1.64	1.22	0.93	1.49
Turbidity	- -	- -	NTU	14.00	0.02	1.09	9.87	12.50	87.60	531.00	1.21	1.41	43.50	4.28	1.43	11.60	6.00	9.84	21.20	15.70	49.10
Dissolved oxygen (DO)	- -	- -	mg/L	4.48	0.27	0.90	1.31	2.31	0.20	0.36	0.70	0.30	0.16	0.26	1.51	0.13	1.64	9.56	1.22	0.54	0.13
Temperature	- -	- -	Deg C	17.6	17.6	13.9	19.2	15.2	14.6	14.1	14.5	13.9	15.2	15.6	12.0	15.3	14.9	15.2	16.2	23.7	12.5
Oxidation reduction potential (ORP)	- -	- -	millivolts	38.3	38.3	1.4	-40.6	-15.5	-43.5	-49.3	-28.4	-44.0	-6.9	-13.4	12.2	-46.1	11.6	-89.0	-92.7	-149.0	-46.2
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	**1**
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	<1	**11**	**4 [4]**	NA	<1	**5 [5]**	<1	<1	NA	<1 [<1]	NA	NA	NA	NA	<1
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	<25	NA	<25	NA	NA	<25	<25 [<25]	<25	<25	NA	<25 [<25]	<25 [<25]	NA	NA	NA	<25
2-Hexanone	1,000	- -	ug/L	NA	NA	<50	NA	<50	NA	NA	<50	<50 [<50]	<50	<50	NA	<50 [<50]	<50 [<50]	NA	NA	NA	<50
2-Methylnaphthalene	260	19	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	<50	NA	<50	NA	NA	<50	<50 [<50]	<50	<50	NA	<50 [<50]	<50 [<50]	NA	NA	NA	<50
Acetone	730	1,700	ug/L	NA	NA	<50	NA	<50	NA	NA	<50	<50 [<50]	<50	<50	NA	<50 [<50]	<50 [<50]	NA	NA	NA	<50
Acrylonitrile	2.6	2	ug/L	NA	NA	<2	NA	<2	NA	NA	<2	<2 [<2]	<2	<2	NA	<2 [<2]	<2 [<2]	NA	NA	NA	<2
Benzene	5.0	200	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Bromobenzene	18	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Bromodichloromethane	80	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Bromoform	80	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Carbon disulfide	800	- -	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Carbon tetrachloride	5.0	38	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Chlorobenzene	100	25	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Chlorobromomethane	- -	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Chloroethane	430	1,100	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Dibromochloromethane	80	- -	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Dibromomethane	80	- -	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Ethyl ether	10	- -	ug/L	NA	NA	<10	NA	<10	NA	NA	<10	<10 [<10]	<10	<10	NA	<10 [<10]	<10 [<10]	NA	NA	NA	<10
Ethylbenzene	74	18	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Hexachloroethane	7.3	6.7	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Iodomethane	- -	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Isopropyl benzene	800	28	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	**8**	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Methylene chloride	5.0	1,500	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
Naphthalene	520	11	ug/L	NA	NA	<5	NA	<5	NA	NA	<5	<5 [<5]	<5	<5	NA	<5 [<5]	<5 [<5]	NA	NA	NA	<5
N-Butylbenzene	80	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
N-Propylbenzene	80	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Styrene	100	80	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
tert-Butylbenzene	80	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Tetrachloroethene	5.0	60	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Tetrahydrofuran	95	11,000	ug/L	NA	NA	<90	NA	<90	NA	NA	<90	<90 [<90]	<90	<90	NA	<90 [<90]	<90 [<90]	NA	NA	NA	<90
Toluene	790	270	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Trichloroethene	5.0	200	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
Vinyl chloride	2.0	13	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	**11 [11]**	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
o-Xylene	- -	- -	ug/L	NA	NA	<1	NA	<1	NA	NA	<1	<1 [<1]	<1	<1	NA	<1 [<1]	<1 [<1]	NA	NA	NA	<1
m&p-Xylene	- -	- -	ug/L	NA	NA	<2	NA	<2	NA	NA	<2	<2 [<2]	<2	<2	NA	<2 [<2]	<2 [<2]	NA	NA	NA	<2
Xylenes (total)	280	49	ug/L	NA	NA	<2	NA	<2	NA	NA	<2	<2 [<2]	<2	<2	NA	<2 [<2]	<2 [<2]	NA	NA	NA	<2

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface		CH-14-RO	CH-14-RO	MW-01(2)	MW-02-02(3)	MW-02-02(6)	MW-02-04(3)	MW-02-04(3)	MW-03-05	MW-03-06	MW-04-01(6)	MW-04-04R	MW-04-05(6)	MW-04-06R	MW-05(3)	MW-12-01	MW-12-02	MW-12-06	MW-12-09
Date Collected:				06/09/22	11/09/22	06/04/22	06/10/22	06/06/22	06/08/22	11/07/22	06/06/22	06/06/22	06/03/22	06/03/22	06/02/22	06/03/22	06/07/22	06/06/22	06/07/22	06/06/22	06/04/22
Sample Name:			Units	CH-14-RO_060922	CH-14-RO_110922	MW-01(2)_060422	MW-02-02(3)_061022	MW-02-02(6)_060622	MW-02-04(3)_060822	MW-02-04(3)_110722	MW-03-05_060622	MW-03-06_060622	MW-04-01(6)_060322	MW-04-04R_060322	MW-04-05(6)_060222	MW-04-06R_060322	MW-05(3)_060722	MW-12-01_060622	MW-12-02_060722	MW-12-06_060622	MW-12-09_060422
Semi-Volatile Organics (via EPA Method 522)																					
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.20	**0.86 [0.9]**	**0.19 J**	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																					
Arsenic	0.01	0.01	mg/L	<0.002 [<0.002]	NA	NA	NA	NA	**0.051 [0.054]**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	**7.16 [7.45]**	NA	NA	NA	NA	**<0.005 [0.006]**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	**7.4 [7.4]**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	<0.005 [<0.005]	NA	NA	NA	NA	<0.005 [<0.005]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	<0.003 [<0.003]	NA	NA	NA	NA	<0.003 [<0.003]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	**0.011 [0.011]**	NA	NA	NA	NA	**0.022 [0.026]**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	<0.005 [<0.005]	NA	NA	NA	NA	**<0.005 [0.008]**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																					
Arsenic (dissolved)	0.01	0.01	mg/L	<0.002 [<0.002]	NA	NA	NA	NA	**0.016 [0.017]**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	**7.13 [7.31]**	NA	NA	NA	NA	<0.005 [<0.005]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	<0.005 [<0.005]	NA	NA	NA	NA	<0.005 [<0.005]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	<0.003 [<0.003]	NA	NA	NA	NA	<0.003 [<0.003]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	**0.011 [0.011]**	NA	NA	NA	NA	**0.019 [0.019]**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	<0.005 [<0.005]	NA	NA	NA	NA	<0.005 [<0.005]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	CH-14-RO 06/09/22 CH-14-RO_060922	CH-14-RO 11/09/22 CH-14-RO_110922	MW-01(2) 06/04/22 MW-01(2)_060422	MW-02-02(3) 06/10/22 MW-02-02(3)_061022	MW-02-02(6) 06/06/22 MW-02-02(6)_060622	MW-02-04(3) 06/08/22 MW-02-04(3)_060822	MW-02-04(3) 11/07/22 MW-02-04(3)_110722	MW-03-05 06/06/22 MW-03-05_060622	MW-03-06 06/06/22 MW-03-06_060622	MW-04-01(6) 06/03/22 MW-04-01(6)_060322	MW-04-04R 06/03/22 MW-04-04R_060322	MW-04-05(6) 06/02/22 MW-04-05(6)_060222	MW-04-06R 06/03/22 MW-04-06R_060322	MW-05(3) 06/07/22 MW-05(3)_060722	MW-12-01 06/06/22 MW-12-01_060622	MW-12-02 06/07/22 MW-12-02_060722	MW-12-06 06/06/22 MW-12-06_060622	MW-12-09 06/04/22 MW-12-09_060422
General Chemistry																						
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																						
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	<7.2 [<6.7]	<7.5	NA	NA	NA	<6.7 [<7.2]	<6.9	NA	NA	NA	<7.2	<6.7	<7.3 [<7.2]	NA	NA	NA	NA	NA	<6.9
4:2 FTS	- -	- -	ng/L	<7.2 [<6.7]	<7.5	NA	NA	NA	<6.7 [<7.2]	<6.9	NA	NA	NA	<7.2	<6.7	<7.3 [<7.2]	NA	NA	NA	NA	NA	<6.9
6:2FTS	- -	- -	ng/L	<7.2 [<6.7]	<7.5	NA	NA	NA	<6.7 [<7.2]	<6.9	NA	NA	NA	<7.2	<6.7	<7.3 [<7.2]	NA	NA	NA	NA	NA	<6.9
8:2FTS	- -	- -	ng/L	<7.2 [<6.7]	<7.5	NA	NA	NA	<6.7 [<7.2]	<6.9	NA	NA	NA	<7.2	<6.7	<7.3 [<7.2]	NA	NA	NA	NA	NA	<6.9
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	<7.2 [<6.7]	<7.5	NA	NA	NA	<6.7 [<7.2]	<6.9	NA	NA	NA	<7.2	<6.7	<7.3 [<7.2]	NA	NA	NA	NA	NA	<6.9
ADONA	- -	- -	ng/L	<7.2 [<6.7]	<7.5	NA	NA	NA	<6.7 [<7.2]	<6.9	NA	NA	NA	<7.2	<6.7	<7.3 [<7.2]	NA	NA	NA	NA	NA	<6.9
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	<7.2 [<6.7]	<7.5	NA	NA	NA	<6.7 [<7.2]	<6.9	NA	NA	NA	<7.2	<6.7	<7.3 [<7.2]	NA	NA	NA	NA	NA	<6.9
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	<7.2 [<6.7]	<7.5	NA	NA	NA	<6.7 [<7.2]	<6.9	NA	NA	NA	<7.2	<6.7	<7.3 [<7.2]	NA	NA	NA	NA	NA	<6.9
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	<7.2 [<6.7]	<7.5	NA	NA	NA	<6.7 [<7.2]	<6.9	NA	NA	NA	<7.2	<6.7	<7.3 [<7.2]	NA	NA	NA	NA	NA	<6.9
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	**110 [110]**	**64**	NA	NA	NA	**0.78 J [0.98 J]**	**0.75 J**	NA	NA	NA	<3.6	**3.2 J**	<3.7 [<3.6]	NA	NA	NA	NA	NA	**1.7 J**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	**17 [17]**	**15**	NA	NA	NA	**8.1 [7.9]**	**11**	NA	NA	NA	**0.72 J**	**18**	**4.8 [4.7]**	NA	NA	NA	NA	NA	**11**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	<3.6 [<3.4]	<3.7	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	<3.5
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	<3.6 [<3.4]	<3.7	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	<3.5
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	<3.6 [<3.4]	<3.7	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	<3.5
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	**160 [150]**	**200**	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	<3.5
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	**19 [18]**	**14**	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	**24**	**1.4 J [1.3 J]**	NA	NA	NA	NA	NA	**6.6**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	**1,600 [1,800]**	**1,000**	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	**2.0 J**	<3.7 [<3.6]	NA	NA	NA	NA	NA	**3.5**
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	**39 [39]**	**27**	NA	NA	NA	**2.9 J [2.8 J]**	<3.5	NA	NA	NA	<3.6	**39**	**1.9 J [1.8 J]**	NA	NA	NA	NA	NA	**9.5**
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	**<3.6 [0.61 J]**	<3.7	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	<3.5
Perfluorononanoic acid (PFNA)	6	- -	ng/L	**0.89 J [<3.4]**	**0.76 J**	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	**0.53 J**	<3.7 [<3.6]	NA	NA	NA	NA	NA	**0.47 J**
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	<3.6 [<3.4]	<3.7	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	<3.5
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	**10,000 [9,700]**	**7,100**	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	**2.9 J**
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	**130 [120]**	**85**	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	32	**0.91 J [<3.6]**	NA	NA	NA	NA	NA	15
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	**330 [320]**	**190**	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	**0.69 J**
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	**15 [13]**	**11**	NA	NA	NA	**5.3 [5.4]**	**6.2**	NA	NA	NA	**0.55 J**	**33**	**2.3 J [2.3 J]**	NA	NA	NA	NA	NA	**7.0**
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	<3.6 [<3.4]	<3.7	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	<3.5
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	<3.6 [<3.4]	<3.7	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	<3.5
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	<3.6 [<3.4]	<3.7	NA	NA	NA	<3.4 [<3.6]	<3.5	NA	NA	NA	<3.6	<3.4	<3.7 [<3.6]	NA	NA	NA	NA	NA	<3.5

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-12-09 11/01/22 MW-12-09_110122	MW-12-10R 03/02/22 MW-12-10R_030222	MW-12-10R 06/02/22 MW-12-10R_060222	MW-12-11 06/02/22 MW-12-11_060222	MW-12-12 03/01/22 MW-12-12_030122	MW-12-12 06/02/22 MW-12-12_060222	MW-12-12 08/31/22 MW-12-12_083122	MW-12-12 11/09/22 MW-12-12_110922	MW-12-13 03/01/22 MW-12-13_030122	MW-12-13 06/02/22 MW-12-13_060222	MW-12-13 08/31/22 MW-12-13_083122	MW-12-13 11/09/22 MW-12-13_110922	MW-12-18 06/04/22 MW-12-18_060422	MW-12-18 11/02/22 MW-12-18_110222	MW-12-20 06/10/22 MW-12-20_061022	MW-12-21 06/10/22 MW-12-21_061022	MW-12-21 11/04/22 MW-12-21_110422	MW-13-22 03/02/22 MW-13-22_030222
Field																					
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.17	6.90	6.78	6.74	7.97	7.39	7.42	7.56	7.48	7.37	7.33	7.31	7.00	7.14	6.90	6.69	6.85	6.96
Conductivity	- -	- -	mS/cm	1.86	3.23	3.55	4.20	0.39	0.79	0.64	0.76	0.67	0.69	0.77	0.79	1.79	2.92	1.29	1.42	1.66	1.52
Turbidity	- -	- -	NTU	0.02	1.09	1.11	20.00	1.90	18.00	8.27	9.41	1.03	1.22	8.22	5.66	1.23	0.02	2.01	1.81	1.42	8.61
Dissolved oxygen (DO)	- -	- -	mg/L	0.20	0.57	1.05	0.70	0.49	0.26	0.16	1.57	0.93	0.30	0.18	0.30	0.10	1.03	3.18	4.55	1.10	0.35
Temperature	- -	- -	Deg C	17.3	5.8	15.4	10.8	9.2	12.6	18.7	15.8	10.0	11.0	21.7	14.2	13.0	14.6	13.2	14.7	14.7	10.4
Oxidation reduction potential (ORP)	- -	- -	millivolts	-90.5	79.3	73.1	-1.7	113.1	4.9	-42.6	60.5	79.3	-278.6	-45.9	-74.8	-6.5	-27.3	-42.9	-42.2	-39.7	-54.9
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1 [1]**	NA	NA	<1	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	**179**	**150**	**100**
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<25 [<25]	NA	NA	<25	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50 [<50]	NA	NA	<50	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50 [<50]	NA	NA	<50	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50 [<50]	NA	NA	<50	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2 [<2]	NA	NA	<2	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10 [<10]	NA	NA	<10	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5 [<5]	NA	NA	<5	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<90 [<90]	NA	NA	<90	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 [<1]	NA	NA	<1	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2 [<2]	NA	NA	<2	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2 [<2]	NA	NA	<2	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-12-09 11/01/22 MW-12-09_110122	MW-12-10R 03/02/22 MW-12-10R_030222	MW-12-10R 06/02/22 MW-12-10R_060222	MW-12-11 06/02/22 MW-12-11_060222	MW-12-12 03/01/22 MW-12-12_030122	MW-12-12 06/02/22 MW-12-12_060222	MW-12-12 08/31/22 MW-12-12_083122	MW-12-12 11/09/22 MW-12-12_110922	MW-12-13 03/01/22 MW-12-13_030122	MW-12-13 06/02/22 MW-12-13_060222	MW-12-13 08/31/22 MW-12-13_083122	MW-12-13 11/09/22 MW-12-13_110922	MW-12-18 06/04/22 MW-12-18_060422	MW-12-18 11/02/22 MW-12-18_110222	MW-12-20 06/10/22 MW-12-20_061022	MW-12-21 06/10/22 MW-12-21_061022	MW-12-21 11/04/22 MW-12-21_110422	MW-13-22 03/02/22 MW-13-22_030222
Semi-Volatile Organics (via EPA Method 522)																					
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																					
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.002	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.006**	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																					
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-12-09 11/01/22 MW-12-09_110122	MW-12-10R 03/02/22 MW-12-10R_030222	MW-12-10R 06/02/22 MW-12-10R_060222	MW-12-11 06/02/22 MW-12-11_060222	MW-12-12 03/01/22 MW-12-12_030122	MW-12-12 06/02/22 MW-12-12_060222	MW-12-12 08/31/22 MW-12-12_083122	MW-12-12 11/09/22 MW-12-12_110922	MW-12-13 03/01/22 MW-12-13_030122	MW-12-13 06/02/22 MW-12-13_060222	MW-12-13 08/31/22 MW-12-13_083122	MW-12-13 11/09/22 MW-12-13_110922	MW-12-18 06/04/22 MW-12-18_060422	MW-12-18 11/02/22 MW-12-18_110222	MW-12-20 06/10/22 MW-12-20_061022	MW-12-21 06/10/22 MW-12-21_061022	MW-12-21 11/04/22 MW-12-21_110422	MW-13-22 03/02/22 MW-13-22_030222
General Chemistry																					
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																					
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	<7.3	<6.4	<6.9 [<6.6]	<7.2	<6.6	<8.0	<7.0 [<6.8]	<7.6 [<7.3]	<6.7	<6.8	<6.7	<7.1	<7.2 [<7.1]	<7.5	NA	NA	NA	NA
4:2 FTS	- -	- -	ng/L	<7.3	<6.4	<6.9 [<6.6]	<7.2	<6.6	<8.0	<7.0 [<6.8]	<7.6 [<7.3]	<6.7	<6.8	<6.7	<7.1	<7.2 [<7.1]	<7.5	NA	NA	NA	NA
6:2FTS	- -	- -	ng/L	<7.3	<6.4	<6.9 [<6.6]	<7.2	<6.6	**5.4 J**	<7.0 [<6.8]	<7.6 [<7.3]	<6.7	<6.8	<6.7	<7.1	<7.2 [<7.1]	<6.7	NA	NA	NA	NA
8:2FTS	- -	- -	ng/L	<7.3	<6.4	<6.9 [<6.6]	<7.2	<6.6	<8.0	<7.0 [<6.8]	<7.6 [<7.3]	<6.7	<6.8	<6.7	<7.1	<7.2 [<7.1]	<7.5	NA	NA	NA	NA
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	<7.3	<6.4	<6.9 [<6.6]	<7.2	<6.6	<8.0	<7.0 [<6.8]	<7.6 [<7.3]	<6.7	<6.8	<6.7	<7.1	<7.2 [<7.1]	<7.5	NA	NA	NA	NA
ADONA	- -	- -	ng/L	<7.3	<6.4	<6.9 [<6.6]	<7.2	<6.6	<8.0	<7.0 [<6.8]	<7.6 [<7.3]	<6.7	<6.8	<6.7	<7.1	<7.2 [<7.1]	<7.5	NA	NA	NA	NA
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	<7.3	<6.4	<6.9 [<6.6]	<7.2	<6.6	<8.0	<7.0 [<6.8]	<7.6 [<7.3]	<6.7	<6.8	<6.7	<7.1	<7.2 [<7.1]	<7.5	NA	NA	NA	NA
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	<7.3	<6.4	<6.9 [<6.6]	<7.2	<6.6	<8.0	<7.0 [<6.8]	<7.6 [<7.3]	<6.7	<6.8	<6.7	<7.1	<7.2 [<7.1]	<7.5	NA	NA	NA	NA
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	<7.3	<6.4	<6.9 [<6.6]	<7.2	<6.6	<8.0	<7.0 [<6.8]	<7.6 [<7.3]	<6.7	<6.8	<6.7	<7.1	<7.2 [<7.1]	<7.5	NA	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	**1.7 J**	**5.0**	**5.5 [7.9]**	<3.6	**2.1 J**	**2.9 J**	**2.8 J [2 J]**	**1.9 J [1.2 J]**	**2.4 J**	**2.7 J**	**3.2 J**	**4.6**	**0.75 J [0.78 J]**	**0.83 J**	NA	NA	NA	NA
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	**11**	**6.9**	**9.6 [9.4]**	**5.0**	**25**	**49**	**39 [41]**	**45 [48]**	**24**	**26**	**8.9**	**26**	**3.9 [3.9]**	**5.6**	NA	NA	NA	NA
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	<3.7	<3.2	<3.5 [<3.3]	<3.6	<3.3	<4.0	<3.5 [<3.4]	<3.8 [<3.6]	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	<3.7	<3.2	<3.5 [<3.3]	<3.6	**9.5**	**11**	**14 [13]**	**13 [15]**	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	<3.7	<3.2	<3.5 [<3.3]	<3.6	<3.3	<4.0	<3.5 [<3.4]	<3.8 [<3.6]	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	<3.7	<3.2	<3.5 [<3.3]	<3.6	<3.3	<4.0	<3.5 [<3.4]	<3.8 [<3.6]	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	**6.9**	**2.9 J**	**3.5 [3.9]**	<3.6	**26**	**52**	**39 [43]**	**45 [42]**	**12**	**15**	<3.4	**17**	<3.6 [<3.6]	**0.65 J**	NA	NA	NA	NA
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	**3.4 J**	**1.0 J**	**<3.5 [1.4 J]**	<3.6	**1.3 J**	**2.0 J**	**1.5 J [1.9 J]**	**1.9 J [1.6 J]**	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	**9.2**	**3.4**	**4.5 [4.7]**	**0.78 J**	**51**	**150**	**110 [130]**	**120 [120]**	**52**	**54**	**0.98 J**	**57**	<3.6 [<3.6]	**2.8 J**	NA	NA	NA	NA
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	<3.7	<3.2	<3.5 [<3.3]	<3.6	<3.3	<4.0	<3.5 [<3.4]	<3.8 [<3.6]	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluorononanoic acid (PFNA)	6	- -	ng/L	**0.61 J**	**0.53 J**	**0.76 J [0.63 J]**	<3.6	**6.0**	**5.1**	**7.0 [6.7]**	**7.8 [9.2]**	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	<3.7	<3.2	<3.5 [<3.3]	<3.6	<3.3	<4.0	<3.5 [<3.4]	<3.8 [<3.6]	<3.3	<3.4	**0.90 J**	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	**2.5 J**	**6.4**	**7.6 [7.7]**	<3.6	**35**	**33**	**41 [36]**	**43 [47]**	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	**15**	**6.7**	**8.9 [8.8]**	<3.6	**52**	**90**	**88 [94]**	**99 [100]**	**2.2 J**	**2.3 J**	**2.2 J**	**4.1**	<3.6 [<3.6]	**1.0 BJ**	NA	NA	NA	NA
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	**0.74 J**	<3.2	<3.5 [<3.3]	<3.6	<3.3	<4.0	**0.61 J [<3.4]**	<3.8 [<3.6]	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	**7.3**	**4.1**	**5.3 [5.3]**	**1.6 J**	**44**	**96**	**67 [74]**	**71 [74]**	**38**	**38**	**0.70 J**	**36**	**0.77 J [0.83 J]**	**3.3 J**	NA	NA	NA	NA
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	<3.7	<3.2	<3.5 [<3.3]	<3.6	<3.3	<4.0	<3.5 [<3.4]	<3.8 [<3.6]	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	<3.7	<3.2	<3.5 [<3.3]	<3.6	<3.3	<4.0	<3.5 [<3.4]	<3.8 [<3.6]	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	<3.7	<3.2	<3.5 [<3.3]	<3.6	<3.3	<4.0	<3.5 [<3.4]	<3.8 [<3.6]	<3.3	<3.4	<3.4	<3.5	<3.6 [<3.6]	<3.7	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-13-22 06/06/22 MW-13-22_060622	MW-13-22 08/30/22 MW-13-22_083022	MW-13-22 11/05/22 MW-13-22_110522	MW-13-23 06/10/22 MW-13-23_061022	MW-13-24 06/10/22 MW-13-24_061022	MW-13-25 06/10/22 MW-13-25_061022	MW-13-25 11/07/22 MW-13-25_110722	MW-13-28 06/08/22 MW-13-28_060822	MW-13-29 06/06/22 MW-13-29_060622	MW-13-29 11/07/22 MW-13-29_110722	MW-13-32 06/10/22 MW-13-32_061022	MW-13-34 03/02/22 MW-13-34_030222	MW-13-34 06/06/22 MW-13-34_060622	MW-13-34 11/08/22 MW-13-34_110822	MW-13-36R 03/01/22 MW-13-36R_030122	MW-13-36R 06/02/22 MW-13-36R_060222	MW-13-36R 06/06/22 MW-13-36R_060622	MW-13-36R 08/31/22 MW-13-36R_083122
Field																					
pH	6.5 to 8.5	6.5 to 9.0	s.u.	NA	6.83	6.75	6.38	6.96	6.32	6.48	9.78	6.39	6.42	7.10	7.05	7.04	7.01	12.22	11.90	11.67	11.84
Conductivity	- -	- -	mS/cm	NA	2.07	2.09	1.84	0.97	1.58	1.65	0.18	3.07	3.41	0.81	2.24	1.94	2.23	1.14	1.61	1.18	1.52
Turbidity	- -	- -	NTU	NA	0.02	332.00	132.00	9.00	1.40	8.07	17.20	142.00	8.79	10.00	70.30	94.70	9.49	1.29	20.00	1.21	3.68
Dissolved oxygen (DO)	- -	- -	mg/L	NA	6.69	0.22	4.96	0.44	0.84	0.52	0.38	3.46	1.05	0.09	0.86	0.33	0.47	2.02	0.03	0.04	0.07
Temperature	- -	- -	Deg C	NA	23.50	14.4	15.2	15.4	15.2	13.0	17.7	18.2	13.0	11.4	10.3	17.1	13.1	5.9	13.60	13.4	20.7
Oxidation reduction potential (ORP)	- -	- -	millivolts	NA	-75.40	-35.9	52.0	61.3	-12.6	-29.2	-106.8	53.6	21.6	36.2	-96.1	-90.5	-80.1	90.3	17.70	-14.4	-96.9
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	**109**	**137**	**84**	<1	**1**	**4**	**<1 [1]**	NA	**8**	**12**	NA	**75**	**80**	**81**	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	<25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	<90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface		MW-13-22	MW-13-22	MW-13-22	MW-13-23	MW-13-24	MW-13-25	MW-13-25	MW-13-28	MW-13-29	MW-13-29	MW-13-32	MW-13-34	MW-13-34	MW-13-34	MW-13-36R	MW-13-36R	MW-13-36R
Date Collected:				06/06/22	08/30/22	11/05/22	06/10/22	06/10/22	06/10/22	11/07/22	06/08/22	06/06/22	11/07/22	06/10/22	03/02/22	06/06/22	11/08/22	03/01/22	06/02/22	06/06/22	08/31/22
Sample Name:			Units	MW-13-22_060622	MW-13-22_083022	MW-13-22_110522	MW-13-23_061022	MW-13-24_061022	MW-13-25_061022	MW-13-25_110722	MW-13-28_060822	MW-13-29_060622	MW-13-29_110722	MW-13-32_061022	MW-13-34_030222	MW-13-34_060622	MW-13-34_110822	MW-13-36R_030122	MW-13-36R_060222	MW-13-36R_060622	MW-13-36R_083122
Semi-Volatile Organics (via EPA Method 522)																					
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	**0.53**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																					
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.002	NA	NA	NA	NA	NA	<0.002	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.009**	NA	NA	NA	NA	NA	<0.005	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	<0.005	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003	NA	NA	NA	NA	NA	<0.003	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.363**	NA	NA	NA	NA	NA	<0.005	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	<0.005	NA
Inorganics-Filtered (via EPA Method 6020)																					
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-13-22 06/06/22 MW-13-22_060622	MW-13-22 08/30/22 MW-13-22_083022	MW-13-22 11/05/22 MW-13-22_110522	MW-13-23 06/10/22 MW-13-23_061022	MW-13-24 06/10/22 MW-13-24_061022	MW-13-25 06/10/22 MW-13-25_061022	MW-13-25 11/07/22 MW-13-25_110722	MW-13-28 06/08/22 MW-13-28_060822	MW-13-29 06/06/22 MW-13-29_060622	MW-13-29 11/07/22 MW-13-29_110722	MW-13-32 06/10/22 MW-13-32_061022	MW-13-34 03/02/22 MW-13-34_030222	MW-13-34 06/06/22 MW-13-34_060622	MW-13-34 11/08/22 MW-13-34_110822	MW-13-36R 03/01/22 MW-13-36R_030122	MW-13-36R 06/02/22 MW-13-36R_060222	MW-13-36R 06/06/22 MW-13-36R_060622	MW-13-36R 08/31/22 MW-13-36R_083122
General Chemistry																					
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.5	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.02**	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.8**	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																					
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.7	<7.5	NA	<6.9
4:2 FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.7	<7.5	NA	<6.9
6:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.7	<7.5	NA	<6.9
8:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.7	<7.5	NA	<6.9
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.7	<7.5	NA	<6.9
ADONA	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.7	<7.5	NA	<6.9
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.7	<7.5	NA	<6.9
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5.6 J**	**5.6 J**	NA	**6.0 J**
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**3.8 J**	**3.5 J**	NA	**3.5 J**
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**3.4**	**2.7 J**	NA	**2.3 J**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**20**	**20**	NA	**21 H**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.3	<3.8	NA	**0.81 J**
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**23**	**24**	NA	**25**
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.49 J**	<3.8	NA	**0.50 J**
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.55 J**	**0.54 J**	NA	**0.49 J**
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**38**	**38**	NA	**30**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.6 J**	**1.6 J**	NA	**1.2 J**
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**33**	**35**	NA	**30**
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.3	<3.8	NA	<3.5
Perfluorononanoic acid (PFNA)	6	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**15**	**15**	NA	**12**
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**3.3**	**3.6 J**	NA	**3.3 J**
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**41**	**44**	NA	**39**
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**81**	**74**	NA	**65**
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.66 J**	<3.8	NA	<3.5
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**31**	**31**	NA	**22**
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.3	<3.8	NA	<3.5
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.3	<3.8	NA	<3.5
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.68 J**	**0.71 J**	NA	**0.64 J**

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-13-36R 11/09/22 MW-13-36R_110922	MW-13-37 06/07/22 MW-13-37_060722	MW-13-38 06/07/22 MW-13-38_060722	MW-13-41 06/10/22 MW-13-41_061022	MW-13-43 06/07/22 MW-13-43_060722	MW-13-43 11/01/22 MW-13-43_110122	MW-13-44 06/07/22 MW-13-44_060722	MW-13-45 06/07/22 MW-13-45_060722	MW-13-45 11/01/22 MW-13-45_110122	MW-13-46 06/10/22 MW-13-46_061022	MW-13-46 11/07/22 MW-13-46_110722	MW-13-47 06/07/22 MW-13-47_060722	MW-13-48 06/10/22 MW-13-48_061022	MW-13-48 11/08/22 MW-13-48_110822	MW-13-49 06/09/22 MW-13-49_060922	MW-13-50 06/06/22 MW-13-50_060622	MW-13-51 06/07/22 MW-13-51_060722	MW-13-52 06/06/22 MW-13-52_060622
Field																					
pH	6.5 to 8.5	6.5 to 9.0	s.u.	11.96	7.22	10.29	7.25	7.14	7.44	7.04	6.72	6.57	7.03	6.67	6.95	6.73	6.78	6.97	6.89	6.96	6.97
Conductivity	- -	- -	mS/cm	1.64	1.09	2.78	4.23	2.37	2.64	1.74	1.16	1.40	2.58	2.61	1.86	2.75	2.77	1.85	1.47	1.49	1.58
Turbidity	- -	- -	NTU	8.05	15.20	27.10	6.52	857.00	19.10	29.70	34.00	9.73	15.40	22.10	9.69	16.50	9.06	6.41	5.00	29.70	17.00
Dissolved oxygen (DO)	- -	- -	mg/L	0.64	0.88	1.08	0.59	14.84	10.24	1.11	0.39	0.85	5.34	0.99	0.97	0.65	0.37	0.82	0.93	0.74	0.17
Temperature	- -	- -	Deg C	14.90	23.3	24.2	16.9	18.9	16.6	15.5	17.1	15.7	21.4	13.2	21.8	21.7	13.3	21.3	19.2	18.8	14.8
Oxidation reduction potential (ORP)	- -	- -	millivolts	-112.20	-123.6	-150.4	-146.2	53.8	103.1	-93.9	-51.0	-62.8	63.7	-56.6	-101.6	-106.6	-71.7	-86.2	-17.6	-57.4	-11.9
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	**3**	**2**	NA	**32**	**26**	<1	<1	NA	**37**	**24**	<1	<1	<1	<1
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	<25	NA	NA	NA	NA	NA	NA	NA	NA	<25	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	<50	NA	NA	NA	NA	NA	NA	NA	NA	<50	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	<50	NA	NA	NA	NA	NA	NA	NA	NA	<50	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	<50	NA	NA	NA	NA	NA	NA	NA	NA	<50	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	<90	NA	NA	NA	NA	NA	NA	NA	NA	<90	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-13-36R 11/09/22 MW-13-36R_110922	MW-13-37 06/07/22 MW-13-37_060722	MW-13-38 06/07/22 MW-13-38_060722	MW-13-41 06/10/22 MW-13-41_061022	MW-13-43 06/07/22 MW-13-43_060722	MW-13-43 11/01/22 MW-13-43_110122	MW-13-44 06/07/22 MW-13-44_060722	MW-13-45 06/07/22 MW-13-45_060722	MW-13-45 11/01/22 MW-13-45_110122	MW-13-46 06/10/22 MW-13-46_061022	MW-13-46 11/07/22 MW-13-46_110722	MW-13-47 06/07/22 MW-13-47_060722	MW-13-48 06/10/22 MW-13-48_061022	MW-13-48 11/08/22 MW-13-48_110822	MW-13-49 06/09/22 MW-13-49_060922	MW-13-50 06/06/22 MW-13-50_060622	MW-13-51 06/07/22 MW-13-51_060722	MW-13-52 06/06/22 MW-13-52_060622
Semi-Volatile Organics (via EPA Method 522)																					
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	**0.39 [0.4]**	**5.9**	NA	NA	NA	**1.7**	NA	NA	NA	NA	**1.6**	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																					
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																					
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-13-36R 11/09/22 MW-13-36R_110922	MW-13-37 06/07/22 MW-13-37_060722	MW-13-38 06/07/22 MW-13-38_060722	MW-13-41 06/10/22 MW-13-41_061022	MW-13-43 06/07/22 MW-13-43_060722	MW-13-43 11/01/22 MW-13-43_110122	MW-13-44 06/07/22 MW-13-44_060722	MW-13-45 06/07/22 MW-13-45_060722	MW-13-45 11/01/22 MW-13-45_110122	MW-13-46 06/10/22 MW-13-46_061022	MW-13-46 11/07/22 MW-13-46_110722	MW-13-47 06/07/22 MW-13-47_060722	MW-13-48 06/10/22 MW-13-48_061022	MW-13-48 11/08/22 MW-13-48_110822	MW-13-49 06/09/22 MW-13-49_060922	MW-13-50 06/06/22 MW-13-50_060622	MW-13-51 06/07/22 MW-13-51_060722	MW-13-52 06/06/22 MW-13-52_060622
General Chemistry																					
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																					
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	<7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4:2 FTS	- -	- -	ng/L	<7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6:2FTS	- -	- -	ng/L	<7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8:2FTS	- -	- -	ng/L	<7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	<7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ADONA	- -	- -	ng/L	<7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	<7.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	**5.6 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	**3.7 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	**1.7 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	**16**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	<3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	**22**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	**0.45 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	<3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	**28**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	**1.4 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	**31**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	<3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorononanoic acid (PFNA)	6	- -	ng/L	**13**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	**3.4 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	**42**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	**65**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	<3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	**26**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	<3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorotridecanoic Acid (PFTrA)	- -	- -	ng/L	<3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	<3.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-13-53 06/06/22 MW-13-53_060622	MW-14-54 06/04/22 MW-14-54_060422	MW-14-55 06/04/22 MW-14-55_060422	MW-14-56 11/03/22 MW-14-56_110322	MW-14-57 06/04/22 MW-14-57_060422	MW-14-58R 02/10/22 MW-14-58R_021022	MW-14-58R 04/06/22 MW-14-58R_040622	MW-14-58R 06/07/22 MW-14-58R_060722	MW-14-58R 09/12/22 MW-14-58R_091222	MW-14-58R 10/14/22 MW-14-58R_101422	MW-14-58R 11/02/22 MW-14-58R_110222	MW-14-59 06/07/22 MW-14-59_060722	MW-14-59 11/02/22 MW-14-59_110222	MW-14-60 06/07/22 MW-14-60_060722	MW-14-60 11/01/22 MW-14-60_110122	MW-14-61 06/01/22 MW-14-61_060122	MW-14-61 11/02/22 MW-14-61_110222	MW-14-62 06/07/22 MW-14-62_060722
Field																					
pH	6.5 to 8.5	6.5 to 9.0	s.u.	6.86	8.08	7.08	6.83	7.30	7.01	7.41	7.00	6.93	7.07	7.06	7.31	7.39	7.37	7.51	6.92	6.88	11.13
Conductivity	- -	- -	mS/cm	1.58	0.84	0.57	4.28	0.75	1.64	0.58	2.75	2.65	2.29	2.99	0.71	0.66	1.16	1.37	2.05	2.57	0.65
Turbidity	- -	- -	NTU	16.00	1.31	1.04	9.03	1.20	8.79	1.22	8.00	1.60	11.94	0.02	15.00	0.02	15.00	0.02	1.35	32.70	5.00
Dissolved oxygen (DO)	- -	- -	mg/L	0.76	0.04	0.10	0.89	0.14	2.31	0.12	0.04	0.21	0.06	0.28	0.06	0.31	0.02	0.83	2.10	0.48	0.03
Temperature	- -	- -	Deg C	18.3	12.6	12.1	13.4	12.3	17.5	13.9	14.8	16.6	15.2	15.8	13.5	17.6	12.9	17.7	17.5	16.1	16.5
Oxidation reduction potential (ORP)	- -	- -	millivolts	-7.9	-143.9	-18.3	-38.0	42.8	70.6	50.1	-20.0	-72.7	-77.3	-89.2	-3.1	-13.8	-13.3	-128.3	63.3	113.1	1.7
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	**2**	NA	<1	NA	<1	<1	**71**
1,1-Dichloroethene	7.0	130	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	**20**	NA	<1	NA	<1	<1	<1
1,1,1-Trichloroethane	200	89	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,1,2-Trichloroethane	5.0	330	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,2-Dichlorobenzene	600	13	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,2-Dichloroethane	5.0	360	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,2-Dichloropropane	5.0	230	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
1,2,3-Trichloropropane	42	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	**160 Y**	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	**2**
1,2,4-Trichlorobenzene	70	99	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
1,2,4-Trimethylbenzene	63	17	ug/L	NA	**540 Y**	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	**2**
1,3-Dichlorobenzene	6.6	28	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,3,5-Trimethylbenzene	72	45	ug/L	NA	**20 Y**	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,4-Dichlorobenzene	75	17	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
1,4-Dioxane	7.2	280	ug/L	<1	NA	NA	NA	**1**	**520 Y**	**410 Y**	**310 Y**	**187**	**173 [173]**	NA	**20**	NA	**10**	NA	**16**	**21**	**63**
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	<250 Y	<25	NA	NA	NA	<25	<25	NA	NA	NA	<25	NA	<25	NA	<25	<25	<25
2-Hexanone	1,000	- -	ug/L	NA	<500 Y	<50	NA	NA	NA	<50	<50	NA	NA	NA	<50	NA	<50	NA	<50	<50	<50
2-Methylnaphthalene	260	19	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	<500 Y	<50	NA	NA	NA	<50	<50	NA	NA	NA	<50	NA	<50	NA	<50	<50	<50
Acetone	730	1,700	ug/L	NA	<500 Y	<50	NA	NA	NA	<50	<50	NA	NA	NA	<50	NA	<50	NA	<50	<50	<50
Acrylonitrile	2.6	2	ug/L	NA	<20 Y	<2	NA	NA	NA	<2	<2	NA	NA	NA	<2	NA	<2	NA	<2	<2	<2
Benzene	5.0	200	ug/L	NA	**820 Y**	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Bromobenzene	18	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Bromodichloromethane	80	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Bromoform	80	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Carbon disulfide	800	- -	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Carbon tetrachloride	5.0	38	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Chlorobenzene	100	25	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Chlorobromomethane	- -	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Chloroethane	430	1,100	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Chloroform (Trichloromethane)	80	350	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
cis-1,2-Dichloroethene	70	620	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Dibromochloromethane	80	- -	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Dibromomethane	80	- -	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Ethyl ether	10	- -	ug/L	NA	<100 Y	<10	NA	NA	NA	<10	<10	NA	NA	NA	<10	NA	<10	NA	<10	<10	<10
Ethylbenzene	74	18	ug/L	NA	**1,110 Y**	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Hexachloroethane	7.3	6.7	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Iodomethane	- -	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Isopropyl benzene	800	28	ug/L	NA	**50 Y**	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Methylene chloride	5.0	1,500	ug/L	NA	<50 Y	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
Naphthalene	520	11	ug/L	NA	**150 Y**	<5	NA	NA	NA	<5	<5	NA	NA	NA	<5	NA	<5	NA	<5	<5	<5
N-Butylbenzene	80	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
N-Propylbenzene	80	- -	ug/L	NA	**150 Y**	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Styrene	100	80	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
tert-Butylbenzene	80	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Tetrachloroethene	5.0	60	ug/L	NA	<10 Y	**1**	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Tetrahydrofuran	95	11,000	ug/L	NA	<900 Y	<90	NA	NA	NA	<90	<90	NA	NA	NA	<90	NA	<90	NA	<90	<90	<90
Toluene	790	270	ug/L	NA	**270 Y**	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Trichloroethene	5.0	200	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
Vinyl chloride	2.0	13	ug/L	NA	<10 Y	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	**4**	NA	<1	<1	**2**
o-Xylene	- -	- -	ug/L	NA	**200 Y**	<1	NA	NA	NA	<1	<1	NA	NA	NA	<1	NA	<1	NA	<1	<1	<1
m&p-Xylene	- -	- -	ug/L	NA	**1,610 Y**	<2	NA	NA	NA	<2	<2	NA	NA	NA	<2	NA	<2	NA	<2	<2	<2
Xylenes (total)	280	49	ug/L	NA	**1,810 Y**	<2	NA	NA	NA	<2	<2	NA	NA	NA	<2	NA	<2	NA	<2	<2	<2

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-13-53 06/06/22 MW-13-53_060622	MW-14-54 06/04/22 MW-14-54_060422	MW-14-55 06/04/22 MW-14-55_060422	MW-14-56 11/03/22 MW-14-56_110322	MW-14-57 06/04/22 MW-14-57_060422	MW-14-58R 02/10/22 MW-14-58R_021022	MW-14-58R 04/06/22 MW-14-58R_040622	MW-14-58R 06/07/22 MW-14-58R_060722	MW-14-58R 09/12/22 MW-14-58R_091222	MW-14-58R 10/14/22 MW-14-58R_101422	MW-14-58R 11/02/22 MW-14-58R_110222	MW-14-59 06/07/22 MW-14-59_060722	MW-14-59 11/02/22 MW-14-59_110222	MW-14-60 06/07/22 MW-14-60_060722	MW-14-60 11/01/22 MW-14-60_110122	MW-14-61 06/01/22 MW-14-61_060122	MW-14-61 11/02/22 MW-14-61_110222	MW-14-62 06/07/22 MW-14-62_060722
Semi-Volatile Organics (via EPA Method 522)																					
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																					
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																					
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-13-53 06/06/22 MW-13-53_060622	MW-14-54 06/04/22 MW-14-54_060422	MW-14-55 06/04/22 MW-14-55_060422	MW-14-56 11/03/22 MW-14-56_110322	MW-14-57 06/04/22 MW-14-57_060422	MW-14-58R 02/10/22 MW-14-58R_021022	MW-14-58R 04/06/22 MW-14-58R_040622	MW-14-58R 06/07/22 MW-14-58R_060722	MW-14-58R 09/12/22 MW-14-58R_091222	MW-14-58R 10/14/22 MW-14-58R_101422	MW-14-58R 11/02/22 MW-14-58R_110222	MW-14-59 06/07/22 MW-14-59_060722	MW-14-59 11/02/22 MW-14-59_110222	MW-14-60 06/07/22 MW-14-60_060722	MW-14-60 11/01/22 MW-14-60_110122	MW-14-61 06/01/22 MW-14-61_060122	MW-14-61 11/02/22 MW-14-61_110222	MW-14-62 06/07/22 MW-14-62_060722
General Chemistry																					
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.5	<0.5	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.11**	**0.13**	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.3**	**0.3**	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																					
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	NA	NA	NA	<7.1	NA	NA	NA	<6.9	NA	NA	<7.2 [<8.3]	<8.4	<7.7	<6.8	<7.4	<7.1	<7.0	<6.9
4:2 FTS	- -	- -	ng/L	NA	NA	NA	<7.1	NA	NA	NA	<6.9	NA	NA	<7.2 [<8.3]	<8.4	<7.7	<6.8	<7.4	<7.1	<7.0	<6.9
6:2FTS	- -	- -	ng/L	NA	NA	NA	<7.1	NA	NA	NA	<6.9	NA	NA	**<7.4 [2.6 BJ]**	<8.4	<7.7	<6.8	<7.4	<7.1	<7.0	**18**
8:2FTS	- -	- -	ng/L	NA	NA	NA	<7.1	NA	NA	NA	<6.9	NA	NA	<7.2 [<8.3]	<8.4	<7.7	<6.8	<7.4	<7.1	<7.0	**3.9 J**
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	NA	NA	NA	<7.1	NA	NA	NA	<6.9	NA	NA	<7.2 [<8.3]	<8.4	<7.7	<6.8	<7.4	<7.1	<7.0	<6.9
ADONA	- -	- -	ng/L	NA	NA	NA	<7.1	NA	NA	NA	<6.9	NA	NA	<7.2 [<8.3]	<8.4	<7.7	<6.8	<7.4	<7.1	<7.0	<6.9
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	NA	NA	NA	<7.1	NA	NA	NA	<6.9	NA	NA	<7.2 [<8.3]	<8.4	<7.7	<6.8	<7.4	<7.1	<7.0	<6.9
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	NA	NA	NA	<7.1	NA	NA	NA	<6.9	NA	NA	<7.2 [<8.3]	<8.4	<7.7	<6.8	<7.4	<7.1	<7.0	**1.5 J**
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	NA	NA	NA	<7.1	NA	NA	NA	<6.9	NA	NA	<7.2 [<8.3]	<8.4	<7.7	<6.8	<7.4	<7.1	<7.0	**0.82 J**
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	**2.0 J**	NA	NA	**6.2 [<4.1]**	**1.7 J**	<3.8	**2.5 J**	**2.3 J**	<3.5	<3.5	**1.6 J**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	NA	NA	NA	**7.2**	NA	NA	NA	**9.8**	NA	NA	**8.2 [<4.1]**	**8.6**	<3.8	**26**	**22**	**2.4 J**	**3.0 J**	**15**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	<3.6 [<4.1]	<4.2	<3.8	<3.4	<3.7	<3.5	<3.5	<3.5
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	<3.6 [<4.1]	<4.2	<3.8	**1.7 J**	**2.4 J**	<3.5	<3.5	**2.4 J**
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	<3.6 [<4.1]	<4.2	<3.8	<3.4	<3.7	<3.5	<3.5	<3.5
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	<3.6 [<4.1]	<4.2	<3.8	**0.87 J**	<3.7	<3.5	<3.5	**1.2 J**
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	**6.8**	NA	NA	**5.0 [<4.1]**	**2.5 J**	<3.8	**18**	**16**	<3.5	<3.5	**19**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	**2.4 J**	NA	NA	**2.4 J [<4.1]**	**1.1 J**	<3.8	**6.3**	**6.3**	<3.5	<3.5	**6.6**
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	NA	NA	NA	**1.8 J**	NA	NA	NA	**8.8**	NA	NA	**7.1 [<4.1]**	**4.8**	<3.8	**29**	**24**	<3.5	<3.5	**21**
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	<3.6 [<4.1]	<4.2	<3.8	<3.4	<3.7	<3.5	<3.5	<3.5
Perfluorononanoic acid (PFNA)	6	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	**0.77 BJ [<4.1]**	<4.2	<3.8	**3.6**	**4.4**	<3.5	<3.5	**7.7**
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	<3.6 [<4.1]	<4.2	<3.8	**1.3 J**	<3.7	<3.5	<3.5	**3.1 J**
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	NA	NA	NA	<3.6	NA	NA	NA	**2.4 J**	NA	NA	**4.0 [<4.1]**	<4.2	<3.8	**33**	**32**	<3.5	<3.5	**52**
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	NA	NA	NA	<3.6	NA	NA	NA	**15**	NA	NA	**12 B [<4.1]**	**9.0**	<3.8	**39**	**41**	<3.5	<3.5	**52**
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	<3.6 [<4.1]	<4.2	<3.8	<3.4	**1.0 J**	<3.5	<3.5	**1.0 J**
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	NA	NA	NA	**7.9**	NA	NA	NA	**7.1**	NA	NA	**<3.7 [1.3 BJ]**	**3.5 J**	**0.88 BJ**	**20**	**17**	<3.5	<3.5	**17**
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	<3.6 [<4.1]	<4.2	<3.8	<3.4	<3.7	<3.5	<3.5	<3.5
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	<3.6 [<4.1]	<4.2	<3.8	<3.4	<3.7	<3.5	<3.5	<3.5
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	NA	NA	NA	<3.6	NA	NA	NA	<3.5	NA	NA	<3.6 [<4.1]	<4.2	<3.8	<3.4	<3.7	<3.5	<3.5	<3.5

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-14-62 11/01/22 MW-14-62_110122	MW-14-63 06/08/22 MW-14-63_060822	MW-14-64 06/09/22 MW-14-64_060922	MW-14-66 06/03/22 MW-14-66_060322	MW-14-67 03/01/22 MW-14-67_030122	MW-14-67 06/03/22 MW-14-67_060322	MW-14-67 08/29/22 MW-14-67_082922	MW-14-67 11/09/22 MW-14-67_110922	MW-14-70 03/01/22 MW-14-70_030122	MW-14-70 06/02/22 MW-14-70_060222	MW-14-70 08/31/22 MW-14-70_083122	MW-14-70 11/09/22 MW-14-70_110922	MW-15-71 06/09/22 MW-15-71_060922	MW-15-72 06/01/22 MW-15-72_060122	MW-15-72 11/03/22 MW-15-72_110322	MW-15-73 06/07/22 MW-15-73_060722	MW-16-74 06/01/22 MW-16-74_060122	MW-16-74 11/01/22 MW-16-74_110122
Field																					
pH	6.5 to 8.5	6.5 to 9.0	s.u.	11.47	6.99	7.01	7.41	7.38	7.20	7.04	7.27	7.43	7.28	7.17	7.25	6.94	6.95	7.00	6.63	6.97	6.85
Conductivity	- -	- -	mS/cm	0.43	1.06	1.64	0.58	0.96	1.12	1.20	1.37	0.96	0.98	1.29	1.45	1.46	1.10	1.15	3.04	1.97	2.34
Turbidity	- -	- -	NTU	0.02	57.70	8.79	1.22	1.28	1.20	1.22	7.27	2.66	1.05	5.67	9.12	12.60	0.02	5.65	777.00	384.00	94.70
Dissolved oxygen (DO)	- -	- -	mg/L	0.07	0.15	2.31	0.12	0.22	0.65	5.45	0.26	0.44	0.10	0.23	0.79	1.00	0.11	0.46	0.62	0.17	0.71
Temperature	- -	- -	Deg C	17.6	15.5	17.5	13.9	8.2	12.8	17.0	15.1	9.6	10.8	20.9	13.9	14.8	17.2	14.8	16.2	17.2	16.5
Oxidation reduction potential (ORP)	- -	- -	millivolts	-312.7	-76.7	70.6	50.1	185.2	120.3	100.2	54.4	177.9	-388.4	-1.7	14.6	61.7	-92.6	-79.7	-50.7	-66.2	-35.1
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	<1	<1 [<1]	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	**144**	**11**	**9**	**2**	**2**
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<25	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<90	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-14-62	MW-14-63	MW-14-64	MW-14-66	MW-14-67	MW-14-67	MW-14-67	MW-14-67	MW-14-70	MW-14-70	MW-14-70	MW-14-70	MW-15-71	MW-15-72	MW-15-72	MW-15-73	MW-16-74	MW-16-74
Date Collected:				11/01/22	06/08/22	06/09/22	06/03/22	03/01/22	06/03/22	08/29/22	11/09/22	03/01/22	06/02/22	08/31/22	11/09/22	06/09/22	06/01/22	11/03/22	06/07/22	06/01/22	11/01/22
Sample Name:				MW-14-62_110122	MW-14-63_060822	MW-14-64_060922	MW-14-66_060322	MW-14-67_030122	MW-14-67_060322	MW-14-67_082922	MW-14-67_110922	MW-14-70_030122	MW-14-70_060222	MW-14-70_083122	MW-14-70_110922	MW-15-71_060922	MW-15-72_060122	MW-15-72_110322	MW-15-73_060722	MW-16-74_060122	MW-16-74_110122
Semi-Volatile Organics (via EPA Method 522)																					
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																					
Arsenic	0.01	0.01	mg/L	NA	NA	NA	**0.003**	NA	<0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	<0.005	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	<0.005	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	<0.003	NA	<0.003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	<0.005	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	<0.005	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																					
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-14-62 11/01/22 MW-14-62_110122	MW-14-63 06/08/22 MW-14-63_060822	MW-14-64 06/09/22 MW-14-64_060922	MW-14-66 06/03/22 MW-14-66_060322	MW-14-67 03/01/22 MW-14-67_030122	MW-14-67 06/03/22 MW-14-67_060322	MW-14-67 08/29/22 MW-14-67_082922	MW-14-67 11/09/22 MW-14-67_110922	MW-14-70 03/01/22 MW-14-70_030122	MW-14-70 06/02/22 MW-14-70_060222	MW-14-70 08/31/22 MW-14-70_083122	MW-14-70 11/09/22 MW-14-70_110922	MW-15-71 06/09/22 MW-15-71_060922	MW-15-72 06/01/22 MW-15-72_060122	MW-15-72 11/03/22 MW-15-72_110322	MW-15-73 06/07/22 MW-15-73_060722	MW-16-74 06/01/22 MW-16-74_060122	MW-16-74 11/01/22 MW-16-74_110122
General Chemistry																					
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																					
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	<7.4	NA	NA	NA	<6.5	<7.0	<6.8	<7.2	<6.4	<6.8	<6.8	<7.1	NA	<6.8	<7.0	NA	NA	NA
4:2 FTS	- -	- -	ng/L	<7.4	NA	NA	NA	<6.5	<7.0	<6.8	<7.2	<6.4	<6.8	<6.8	<7.1	NA	<6.8	<7.0	NA	NA	NA
6:2FTS	- -	- -	ng/L	**16**	NA	NA	NA	<6.5	<7.0	<6.8	<7.2	<6.4	<6.8	<6.8	<7.1	NA	<6.8	**2.1 BJ**	NA	NA	NA
8:2FTS	- -	- -	ng/L	**4.2 J**	NA	NA	NA	<6.5	<7.0	<6.8	<7.2	<6.4	<6.8	<6.8	<7.1	NA	<6.8	<7.0	NA	NA	NA
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	<7.4	NA	NA	NA	<6.5	<7.0	<6.8	<7.2	<6.4	<6.8	<6.8	<7.1	NA	<6.8	<7.0	NA	NA	NA
ADONA	- -	- -	ng/L	<7.4	NA	NA	NA	<6.5	<7.0	<6.8	<7.2	<6.4	<6.8	<6.8	<7.1	NA	<6.8	<7.0	NA	NA	NA
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	<7.4	NA	NA	NA	<6.5	<7.0	<6.8	<7.2	<6.4	<6.8	<6.8	<7.1	NA	<6.8	<7.0	NA	NA	NA
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	**1.2 J**	NA	NA	NA	<6.5	<7.0	<6.8	<7.2	<6.4	<6.8	<6.8	<7.1	NA	<6.8	<7.0	NA	NA	NA
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	<7.4	NA	NA	NA	<6.5	<7.0	<6.8	<7.2	<6.4	<6.8	<6.8	<7.1	NA	<6.8	<7.0	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	**1.7 J**	NA	NA	NA	**10**	**9.8**	**8.8**	**1.6 J**	**7.2**	**7.9**	**6.6**	**6.7**	NA	<3.4	<3.5	NA	NA	NA
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	**16**	NA	NA	NA	**36**	**45**	**41**	**43**	**42**	**44**	**120**	**100**	NA	**4.1**	**6.3**	NA	NA	NA
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	<3.7	NA	NA	NA	<3.2	<3.5	<3.4	<3.6	<3.2	<3.4	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	**2.2 J**	NA	NA	NA	**1.6 J**	**1.7 J**	**1.2 J**	**1.3 J**	<3.2	<3.4	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	<3.7	NA	NA	NA	<3.2	<3.5	<3.4	<3.6	<3.2	<3.4	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	**1.3 J**	NA	NA	NA	<3.2	<3.5	<3.4	<3.6	<3.2	<3.4	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	**16**	NA	NA	NA	**27**	**30**	**28**	**29**	**55**	**46**	**130**	**130**	NA	<3.4	<3.5	NA	NA	NA
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	**6.1**	NA	NA	NA	<3.2	<3.5	<3.4	<3.6	**2.7 J**	**3.0 J**	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	**21**	NA	NA	NA	**74**	**87**	**85**	**78**	**84**	**80**	**330**	**280**	NA	**1.7 J**	**2.1 J**	NA	NA	NA
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	<3.7	NA	NA	NA	<3.2	<3.5	<3.4	<3.6	<3.2	<3.4	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluorononanoic acid (PFNA)	6	- -	ng/L	7.7	NA	NA	NA	**0.88 J**	**0.77 J**	**0.48 J**	**0.72 J**	**0.45 J**	**0.44 J**	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	**3.3 J**	NA	NA	NA	<3.2	<3.5	<3.4	<3.6	<3.2	<3.4	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	**47**	NA	NA	NA	**3.1 J**	**2.6 J**	<3.4	**2.2 J**	<3.2	<3.4	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	**53**	NA	NA	NA	**13**	**16**	**12**	**15**	**36**	**34**	**11**	**18**	NA	<3.4	<3.5	NA	NA	NA
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	**0.94 J**	NA	NA	NA	<3.2	<3.5	<3.4	**0.54 J**	**1.2 J**	<3.4	<3.4	**0.52 J**	NA	<3.4	<3.5	NA	NA	NA
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	**15**	NA	NA	NA	**58**	**68**	**51**	**57**	**120**	**100**	**440 H**	**350**	NA	**3.4**	**4.1**	NA	NA	NA
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	<3.7	NA	NA	NA	<3.2	<3.5	<3.4	<3.6	<3.2	<3.4	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	<3.7	NA	NA	NA	<3.2	<3.5	<3.4	<3.6	<3.2	<3.4	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	<3.7	NA	NA	NA	<3.2	<3.5	<3.4	<3.6	<3.2	<3.4	<3.4	<3.5	NA	<3.4	<3.5	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-16-75 06/08/22 MW-16-75_060822	MW-16-75 11/01/22 MW-16-75_110122	MW-16-76 06/08/22 MW-16-76_060822	MW-16-77 06/08/22 MW-16-77_060822	MW-16-77 11/02/22 MW-16-77_110222	MW-16-78 06/02/22 MW-16-78_060222	MW-16-78 11/02/22 MW-16-78_110222	MW-16-79 06/02/22 MW-16-79_060222	MW-16-79 11/02/22 MW-16-79_110222	MW-16-80 06/08/22 MW-16-80_060822	MW-16-80 11/04/22 MW-16-80_110422	MW-16-81 06/02/22 MW-16-81_060222	MW-16-81 11/03/22 MW-16-81_110322	MW-16-82 06/02/22 MW-16-82_060222	MW-16-82 11/03/22 MW-16-82_110322	MW-16-83 06/06/22 MW-16-83_060622	MW-16-84 06/02/22 MW-16-84_060222	MW-16-84 11/03/22 MW-16-84_110322
Field																					
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.11	7.01	7.13	7.03	7.00	6.97	6.96	7.14	NA	6.63	6.49	6.74	6.78	7.00	7.00	6.72	7.14	7.10
Conductivity	- -	- -	mS/cm	1.85	2.07	2.04	2.77	3.04	1.33	1.52	0.97	NA	2.75	3.42	3.12	2.79	1.20	1.25	3.43	1.55	1.81
Turbidity	- -	- -	NTU	317.00	9.21	10.10	57.20	2.62	3.49	9.70	84.50	NA	4.90	1.74	21.60	6.45	0.02	2.89	1.51	46.90	72.90
Dissolved oxygen (DO)	- -	- -	mg/L	0.11	0.47	0.33	0.61	0.50	0.12	0.51	0.71	NA	0.10	0.97	6.55	1.00	0.09	0.30	0.05	0.14	0.59
Temperature	- -	- -	Deg C	16.5	16.5	14.8	17.6	12.0	16.2	14.1	15.7	NA	13.3	12.7	19.8	17.1	21.0	15.7	15.7	16.6	18.1
Oxidation reduction potential (ORP)	- -	- -	millivolts	-88.7	-97.8	-63.9	-62.9	14.3	-84.4	-48.6	-73.4	NA	-57.4	-13.1	24.7	99.7	-122.7	-60.8	-68.0	-96.5	-80.9
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
1,4-Dioxane	7.2	280	ug/L	**2**	**2**	**3**	**1**	<1	<1	<1	<1	<1	**22**	**19**	**143**	**70**	**1**	**1**	<1	**44 [44]**	**29 [30]**
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<25	NA	NA	<25	<25	NA	NA	NA	<25 [<25]	<25 [<25]
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<50	NA	NA	<50	<50	NA	NA	NA	<50 [<50]	<50 [<50]
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<50	NA	NA	<50	<50	NA	NA	NA	<50 [<50]	<50 [<50]
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<50	NA	NA	<50	<50	NA	NA	NA	<50 [<50]	<50 [<50]
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	NA	NA	NA	<2 [<2]	<2 [<2]
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	<10	<10	NA	NA	NA	<10 [<10]	<10 [<10]
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	<5	<5	NA	NA	NA	<5 [<5]	<5 [<5]
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<90	NA	NA	<90	<90	NA	NA	NA	<90 [<90]	<90 [<90]
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	<1	<1	NA	NA	NA	<1 [<1]	<1 [<1]
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	NA	NA	NA	<2 [<2]	<2 [<2]
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	NA	<2	<2	NA	NA	NA	<2 [<2]	<2 [<2]

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-16-75 06/08/22 MW-16-75_060822	MW-16-75 11/01/22 MW-16-75_110122	MW-16-76 06/08/22 MW-16-76_060822	MW-16-77 06/08/22 MW-16-77_060822	MW-16-77 11/02/22 MW-16-77_110222	MW-16-78 06/02/22 MW-16-78_060222	MW-16-78 11/02/22 MW-16-78_110222	MW-16-79 06/02/22 MW-16-79_060222	MW-16-79 11/02/22 MW-16-79_110222	MW-16-80 06/08/22 MW-16-80_060822	MW-16-80 11/04/22 MW-16-80_110422	MW-16-81 06/02/22 MW-16-81_060222	MW-16-81 11/03/22 MW-16-81_110322	MW-16-82 06/02/22 MW-16-82_060222	MW-16-82 11/03/22 MW-16-82_110322	MW-16-83 06/06/22 MW-16-83_060622	MW-16-84 06/02/22 MW-16-84_060222	MW-16-84 11/03/22 MW-16-84_110322
Semi-Volatile Organics (via EPA Method 522)																					
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<25	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<25	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<20	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<25	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<25	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<25	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<20	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	**9 X**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<4 X	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	**9 X**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	**5**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																					
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																					
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-16-75 06/08/22 MW-16-75_060822	MW-16-75 11/01/22 MW-16-75_110122	MW-16-76 06/08/22 MW-16-76_060822	MW-16-77 06/08/22 MW-16-77_060822	MW-16-77 11/02/22 MW-16-77_110222	MW-16-78 06/02/22 MW-16-78_060222	MW-16-78 11/02/22 MW-16-78_110222	MW-16-79 06/02/22 MW-16-79_060222	MW-16-79 11/02/22 MW-16-79_110222	MW-16-80 06/08/22 MW-16-80_060822	MW-16-80 11/04/22 MW-16-80_110422	MW-16-81 06/02/22 MW-16-81_060222	MW-16-81 11/03/22 MW-16-81_110322	MW-16-82 06/02/22 MW-16-82_060222	MW-16-82 11/03/22 MW-16-82_110322	MW-16-83 06/06/22 MW-16-83_060622	MW-16-84 06/02/22 MW-16-84_060222	MW-16-84 11/03/22 MW-16-84_110322
General Chemistry																					
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																					
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<6.9	NA	NA	NA	NA	NA
4:2 FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<6.9	NA	NA	NA	NA	NA
6:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<6.9	NA	NA	NA	NA	NA
8:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<6.9	NA	NA	NA	NA	NA
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<6.9	NA	NA	NA	NA	NA
ADONA	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<6.9	NA	NA	NA	NA	NA
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<6.9	NA	NA	NA	NA	NA
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<6.9	NA	NA	NA	NA	NA
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<6.9	NA	NA	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	**1.2 J**	NA	NA	NA	NA	NA
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**9.1**	**5.6**	NA	NA	NA	NA	NA
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.2 J**	**2.6 J**	NA	NA	NA	NA	NA
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**3.5**	**7.3**	NA	NA	NA	NA	NA
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluorononanoic acid (PFNA)	6	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	**1.2 BJ**	NA	NA	NA	NA	NA
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**4.8**	**7.9**	NA	NA	NA	NA	NA
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.5	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-16-85 06/06/22 MW-16-85_060622	MW-16-85 11/04/22 MW-16-85_110422	MW-17-86 06/02/22 MW-17-86_060222	MW-17-86 11/03/22 MW-17-86_110322	MW-17-87 06/06/22 MW-17-87_060622	MW-18-88 03/02/22 MW-18-88_030222	MW-18-88 06/09/22 MW-18-88_060922	MW-18-88 08/31/22 MW-18-88_083122	MW-18-88 11/08/22 MW-18-88_110822	MW-18-89 03/02/22 MW-18-89_030222	MW-18-89 06/08/22 MW-18-89_060822	MW-18-89 08/30/22 MW-18-89_083022	MW-18-89 11/08/22 MW-18-89_110822	MW-18-90 03/02/22 MW-18-90_030222	MW-18-90 06/08/22 MW-18-90_060822	MW-18-90 08/30/22 MW-18-90_083022	MW-18-90 11/09/22 MW-18-90_110922	MW-18-91 03/01/22 MW-18-91_030122
Field																						
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.16	7.25	6.99	7.01	7.11	7.18	6.87	6.88	7.06	7.71	8.15	7.53	7.74	12.31	11.33	11.69	12.31	7.80
Conductivity	- -	- -	mS/cm	0.65	0.90	2.05	2.15	3.27	0.64	0.67	0.72	0.71	0.91	0.75	0.79	0.84	2.16	0.00	2.13	2.20	0.71
Turbidity	- -	- -	NTU	1.03	3.12	9.23	2.38	27.80	7.49	11.00	7.47	1.29	6.20	8.00	0.02	1.93	0.02	8.00	0.02	0.02	6.41
Dissolved oxygen (DO)	- -	- -	mg/L	0.03	1.47	0.42	0.34	0.49	0.63	0.42	0.15	0.08	0.51	8.51	0.19	0.19	1.17	4.85	0.32	0.12	0.63
Temperature	- -	- -	Deg C	15.6	15.0	22.5	16.7	18.7	4.0	15.9	22.5	15.9	5.8	18.1	22.6	16.0	9.8	15.5	20.2	14.2	7.7
Oxidation reduction potential (ORP)	- -	- -	millivolts	-46.2	-38.9	-91.4	-77.0	-128.3	95.0	8.9	1.1	-18.3	121.4	-2.8	-87.9	60.3	-150.7	17.6	-195.7	82.7	1.3
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	**8**	**6**	**27**	**19**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	<25	NA	<25	<25	NA	NA	<25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	<50	NA	<50	<50	NA	NA	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	<50	NA	<50	<50	NA	NA	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	<50	NA	<50	<50	NA	NA	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	<2	NA	<2	<2	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	<10	NA	<10	<10	NA	NA	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	<5	NA	<5	<5	NA	NA	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	<90	NA	<90	<90	NA	NA	<90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	<1	NA	<1	<1	NA	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	<2	NA	<2	<2	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	<2	NA	<2	<2	NA	NA	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-16-85 06/06/22 MW-16-85_060622	MW-16-85 11/04/22 MW-16-85_110422	MW-17-86 06/02/22 MW-17-86_060222	MW-17-86 11/03/22 MW-17-86_110322	MW-17-87 06/06/22 MW-17-87_060622	MW-18-88 03/02/22 MW-18-88_030222	MW-18-88 06/09/22 MW-18-88_060922	MW-18-88 08/31/22 MW-18-88_083122	MW-18-88 11/08/22 MW-18-88_110822	MW-18-89 03/02/22 MW-18-89_030222	MW-18-89 06/08/22 MW-18-89_060822	MW-18-89 08/30/22 MW-18-89_083022	MW-18-89 11/08/22 MW-18-89_110822	MW-18-90 03/02/22 MW-18-90_030222	MW-18-90 06/08/22 MW-18-90_060822	MW-18-90 08/30/22 MW-18-90_083022	MW-18-90 11/09/22 MW-18-90_110922	MW-18-91 03/01/22 MW-18-91_030122
Semi-Volatile Organics (via EPA Method 522)																						
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	**6.5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																						
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	<0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	<0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	<0.003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																						
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	<0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	<0.003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-16-85 06/06/22 MW-16-85_060622	MW-16-85 11/04/22 MW-16-85_110422	MW-17-86 06/02/22 MW-17-86_060222	MW-17-86 11/03/22 MW-17-86_110322	MW-17-87 06/06/22 MW-17-87_060622	MW-18-88 03/02/22 MW-18-88_030222	MW-18-88 06/09/22 MW-18-88_060922	MW-18-88 08/31/22 MW-18-88_083122	MW-18-88 11/08/22 MW-18-88_110822	MW-18-89 03/02/22 MW-18-89_030222	MW-18-89 06/08/22 MW-18-89_060822	MW-18-89 08/30/22 MW-18-89_083022	MW-18-89 11/08/22 MW-18-89_110822	MW-18-90 03/02/22 MW-18-90_030222	MW-18-90 06/08/22 MW-18-90_060822	MW-18-90 08/30/22 MW-18-90_083022	MW-18-90 11/09/22 MW-18-90_110922	MW-18-91 03/01/22 MW-18-91_030122
General Chemistry																						
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																						
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	NA	NA	NA	NA	NA	<7.1	<6.6	<7.2	<7.1	<7.1	<7.0	<6.7	<6.9	<7.3	<6.8 [<6.8]	<6.9 [<6.6]	<7.9 [<7.5]	<6.9
4:2 FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	<7.1	<6.6	<7.2	<7.1	<7.1	<7.0	<6.7	<6.9	<7.3	<6.8 [<6.8]	<6.9 [<6.6]	<7.9 [<7.5]	<6.9
6:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	<7.1	<6.6	<7.2	**17**	<7.1	<7.0	<6.7	<6.9	<7.3	<6.8 [<6.8]	<6.9 [<6.6]	<7.9 [<7.5]	**2.3 J**
8:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	<7.1	<6.6	<7.2	<7.1	<7.1	<7.0	<6.7	<6.9	<7.3	<6.8 [<6.8]	<6.9 [<6.6]	<7.9 [<7.5]	<6.9
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	NA	NA	NA	NA	NA	<7.1	<6.6	<7.2	<7.1	<7.1	<7.0	<6.7	<6.9	<7.3	<6.8 [<6.8]	<6.9 [<6.6]	<7.9 [<7.5]	<6.9
ADONA	- -	- -	ng/L	NA	NA	NA	NA	NA	<7.1	<6.6	<7.2	<7.1	<7.1	<7.0	<6.7	<6.9	<7.3	<6.8 [<6.8]	<6.9 [<6.6]	<7.9 [<7.5]	<6.9
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	NA	NA	NA	NA	NA	<7.1	<6.6	<7.2	<7.1	<7.1	<7.0	<6.7	<6.9	<7.3	<6.8 [<6.8]	<6.9 [<6.6]	<7.9 [<7.5]	<6.9
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<7.1	<6.6	<7.2	<7.1	<7.1	<7.0	<6.7	<6.9	<7.3	<6.8 [<6.8]	<6.9 [<6.6]	<7.9 [<7.5]	<6.9
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<7.1	<6.6	<7.2	<7.1	<7.1	<7.0	<6.7	<6.9	<7.3	<6.8 [<6.8]	<6.9 [<6.6]	<7.9 [<7.5]	<6.9
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	NA	NA	NA	NA	NA	**2.0 J**	**2.4 J**	**1.9 J**	**1.8 J**	**1.3 J**	**1.0 J**	**0.97 J**	**0.96 J**	**1.8 J**	**1.5 J [1.5 J]**	**1.4 J [2.2 J]**	**1.3 J [1.2 J]**	**1.6 J**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	NA	NA	NA	NA	NA	**9.5**	**13**	**10**	**8.4**	**8.6**	**8.5**	**8.3**	**7.7**	**9.6**	**9.3 [7.8]**	**9.4 [9.9]**	**9.9 [10]**	**8.0**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.6	<3.3	<3.6	<3.5	<3.5	<3.5	<3.3	<3.4	<3.6	<3.4 [<3.4]	**0.69 J [<3.3]**	<3.9 [<3.7]	**0.68 J**
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.6	<3.3	<3.6	<3.5	**1.0 J**	**0.61 J**	**1.0 J**	**1.1 J**	**1.8 J**	**1.8 J [1.8 J]**	**1.6 J [1.6 J]**	**1.6 J [1.4 J]**	**0.91 J**
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.6	<3.3	<3.6	<3.5	<3.5	<3.5	<3.3	<3.4	<3.6	<3.4 [<3.4]	<3.4 [<3.3]	<3.9 [<3.7]	<3.4
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	NA	NA	NA	NA	NA	**1.1 J**	**1.7 J**	**2.3 J**	**2.3 J**	**1.9 J**	**1.6 J**	**2.2 J**	**2.6 J**	**21**	**22 [22]**	**20 [19]**	**20 [19]**	**0.75 J**
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	NA	NA	NA	NA	NA	**0.40 J**	**0.66 J**	**0.70 J**	**0.54 J**	**3.4 J**	**3.2 J**	**4.2**	**3.6**	**3.9**	**4.1 [4]**	**3.6 [4.2]**	**3.9 [3.8]**	**2.4 J**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	NA	NA	NA	NA	NA	**2.6 J**	**4.1**	**4.6**	**3.9**	**3.9**	**3.8**	**4.5**	**4.6**	**19**	**18 [18]**	**21 [21]**	**19 [19]**	**2.1 J**
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	NA	NA	NA	NA	NA	**0.66 J**	**1.3 J**	**0.89 J**	<3.5	**5.3**	**5.3**	**6.1**	**6.1**	**5.0**	**5.1 [5.4]**	**6.1 [6.3]**	**6.7 [6.9]**	**3.0 J**
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.6	<3.3	<3.6	<3.5	<3.5	<3.5	<3.3	<3.4	<3.6	<3.4 [<3.4]	<3.4 [<3.3]	<3.9 [<3.7]	<3.4
Perfluorononanoic acid (PFNA)	6	- -	ng/L	NA	NA	NA	NA	NA	<3.6	<3.3	**0.67 J**	<3.5	**1.2 J**	**0.78 J**	**1.3 J**	**1.2 J**	**1.6 J**	**1.5 J [1.5 J]**	**1.3 J [1.4 J]**	**1.3 J [1.2 J]**	**1.2 J**
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.6	<3.3	<3.6	<3.5	<3.5	<3.5	<3.3	<3.4	**0.95 J**	**0.77 J [0.72 J]**	**0.59 J [0.71 J]**	**0.75 J [0.74 J]**	**1.5 J**
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	NA	NA	NA	NA	NA	**120**	**200**	**310**	**220**	**110**	**74**	**120**	**130**	**1,000**	**960 [1,000]**	**980 [930]**	**920 [930]**	**44**
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	NA	NA	NA	NA	NA	**5.6**	**7.8**	**9.2**	**7.1**	**12**	**10**	**13**	**12**	**17**	**17 [16]**	**16 [17]**	**15 [15]**	**7.7**
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	NA	NA	NA	NA	NA	**0.60 J**	**0.69 J**	**0.69 J**	**0.55 J**	**0.78 J**	<3.5	**1.1 J**	**0.69 J**	**2.5 J**	**2.5 J [3.3 J]**	**3.2 J [3.3]**	**2.6 J [2.7 J]**	**0.61 J**
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	**0.81 J**	**1.2 J**	**0.68 J**	<3.5	**6.0**	**5.4**	**5.4**	**5.1**	**3.5 J**	**3.6 [3.3 J]**	**3.1 J [3 J]**	**4.0 [4.3]**	**3.6**
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.6	<3.3	<3.6	<3.5	<3.5	<3.5	<3.3	<3.4	<3.6	<3.4 [<3.4]	<3.4 [<3.3]	<3.9 [<3.7]	<3.4
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.6	<3.3	<3.6	<3.5	<3.5	<3.5	<3.3	<3.4	<3.6	<3.4 [<3.4]	<3.4 [<3.3]	<3.9 [<3.7]	<3.4
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.6	<3.3	<3.6	<3.5	<3.5	<3.5	<3.3	<3.4	<3.6	<3.4 [<3.4]	<3.4 [<3.3]	<3.9 [<3.7]	<3.4

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-18-91 06/08/22 MW-18-91_060822	MW-18-91 08/31/22 MW-18-91_083122	MW-18-91 11/08/22 MW-18-91_110822	MW-18-92 06/09/22 MW-18-92_060922	MW-18-92 11/08/22 MW-18-92_110822	MW-18-93 06/09/22 MW-18-93_060922	MW-18-93 11/07/22 MW-18-93_110722	MW-18-94 06/08/22 MW-18-94_060822	MW-18-94 11/08/22 MW-18-94_110822	MW-18-95 03/02/22 MW-18-95_030222	MW-18-95 06/09/22 MW-18-95_060922	MW-18-95 08/31/22 MW-18-95_083122	MW-18-95 11/09/22 MW-18-95_110922	MW-18-97 06/08/22 MW-18-97_060822	MW-18-97 11/07/22 MW-18-97_110722	MW-18-98 03/01/22 MW-18-98_030122	MW-18-98 06/09/22 MW-18-98_060922	MW-18-98 08/30/22 MW-18-98_083022
Field																					
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.65	7.60	7.68	6.78	6.95	7.48	7.56	6.88	7.03	7.71	7.13	7.04	7.23	6.79	6.90	7.72	7.11	7.16
Conductivity	- -	- -	mS/cm	0.69	0.76	0.71	1.03	1.24	0.68	0.66	5.13	6.39	0.51	0.52	0.66	0.62	1.64	1.98	2.46	2.03	0.77
Turbidity	- -	- -	NTU	8.00	7.37	1.56	1.51	0.02	10.40	1.90	3.55	1.38	8.89	10.00	8.96	1.03	1.20	1.58	5.02	10.00	0.02
Dissolved oxygen (DO)	- -	- -	mg/L	0.03	0.13	0.13	0.31	0.26	1.49	4.11	0.24	0.15	3.74	3.21	0.17	1.31	0.46	0.21	0.80	0.38	0.22
Temperature	- -	- -	Deg C	14.2	23.0	15.6	11.9	13.4	20.5	12.6	13.9	13.4	2.6	14.8	22.7	15.4	13.4	13.3	6.2	14.7	22.8
Oxidation reduction potential (ORP)	- -	- -	millivolts	-19.9	-159.8	-6.7	-15.0	17.9	-152.1	-68.4	-74.0	-74.3	142.7	16.3	-41.2	101.9	-47.4	-35.0	-21.7	-11.0	-68.6
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	**5**	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-18-91 06/08/22 MW-18-91_060822	MW-18-91 08/31/22 MW-18-91_083122	MW-18-91 11/08/22 MW-18-91_110822	MW-18-92 06/09/22 MW-18-92_060922	MW-18-92 11/08/22 MW-18-92_110822	MW-18-93 06/09/22 MW-18-93_060922	MW-18-93 11/07/22 MW-18-93_110722	MW-18-94 06/08/22 MW-18-94_060822	MW-18-94 11/08/22 MW-18-94_110822	MW-18-95 03/02/22 MW-18-95_030222	MW-18-95 06/09/22 MW-18-95_060922	MW-18-95 08/31/22 MW-18-95_083122	MW-18-95 11/09/22 MW-18-95_110922	MW-18-97 06/08/22 MW-18-97_060822	MW-18-97 11/07/22 MW-18-97_110722	MW-18-98 03/01/22 MW-18-98_030122	MW-18-98 06/09/22 MW-18-98_060922	MW-18-98 08/30/22 MW-18-98_083022
Semi-Volatile Organics (via EPA Method 522)																						
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																						
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																						
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-18-91 06/08/22 MW-18-91_060822	MW-18-91 08/31/22 MW-18-91_083122	MW-18-91 11/08/22 MW-18-91_110822	MW-18-92 06/09/22 MW-18-92_060922	MW-18-92 11/08/22 MW-18-92_110822	MW-18-93 06/09/22 MW-18-93_060922	MW-18-93 11/07/22 MW-18-93_110722	MW-18-94 06/08/22 MW-18-94_060822	MW-18-94 11/08/22 MW-18-94_110822	MW-18-95 03/02/22 MW-18-95_030222	MW-18-95 06/09/22 MW-18-95_060922	MW-18-95 08/31/22 MW-18-95_083122	MW-18-95 11/09/22 MW-18-95_110922	MW-18-97 06/08/22 MW-18-97_060822	MW-18-97 11/07/22 MW-18-97_110722	MW-18-98 03/01/22 MW-18-98_030122	MW-18-98 06/09/22 MW-18-98_060922	MW-18-98 08/30/22 MW-18-98_083022
General Chemistry																						
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																						
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	<7.2	<7.1	<7.0	<6.9	<7.7	<6.8	<7.0	<7.3	<7.1	<7.0 [<7]	<7.5	<7.1	<6.8	<6.8	<7.0 [<7.6]	<7.1	<6.9	<6.7
4:2 FTS	- -	- -	ng/L	<7.2	<7.1	<7.0	<6.9	<7.7	<6.8	<7.0	<7.3	<7.1	<7.0 [<7]	<7.5	<7.1	<6.8	<6.8	<7.0 [<7.6]	<7.1	<6.9	<6.7
6:2FTS	- -	- -	ng/L	<7.2	<7.1	**2.4 J**	<6.9	<7.7	<6.8	<7.0	<7.3	<7.1	<7.0 [<7]	<7.5	<7.1	<6.8	<6.8	<7.0 [<7.6]	<6.8	<6.9	<6.7
8:2FTS	- -	- -	ng/L	<7.2	<7.1	<7.0	<6.9	<7.7	<6.8	<7.0	<7.3	<7.1	<7.0 [<7]	<7.5	<7.1	<6.8	<6.8	<7.0 [<7.6]	<7.1	<6.9	<6.7
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	<7.2	<7.1	<7.0	<6.9	<7.7	<6.8	<7.0	<7.3	<7.1	<7.0 [<7]	<7.5	<7.1	<6.8	<6.8	<7.0 [<7.6]	<7.1	<6.9	<6.7
ADONA	- -	- -	ng/L	<7.2	<7.1	<7.0	<6.9	<7.7	<6.8	<7.0	<7.3	<7.1	<7.0 [<7]	<7.5	<7.1	<6.8	<6.8	<7.0 [<7.6]	<7.1	<6.9	<6.7
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	<7.2	<7.1	<7.0	<6.9	<7.7	<6.8	<7.0	<7.3	<7.1	<7.0 [<7]	<7.5	<7.1	<6.8	<6.8	<7.0 [<7.6]	<7.1	<6.9	<6.7
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	<7.2	<7.1	<7.0	<6.9	<7.7	<6.8	<7.0	<7.3	<7.1	<7.0 [<7]	<7.5	<7.1	<6.8	<6.8	<7.0 [<7.6]	<7.1	<6.9	<6.7
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	<7.2	<7.1	<7.0	<6.9	<7.7	<6.8	<7.0	<7.3	<7.1	<7.0 [<7]	<7.5	<7.1	<6.8	<6.8	<7.0 [<7.6]	<7.1	<6.9	<6.7
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	**2.9 J**	**1.7 J**	**1.4 J**	**0.72 J**	**0.52 J**	<3.4	<3.5	<3.7	<3.5	**2.8 J [2.6 J]**	**1.5 J**	**1.8 J**	**2.0 J**	<3.4	**0.39 J [<3.8]**	**2.0 J**	**0.60 J**	**1.0 J**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	**8.2**	**8.2**	**8.7**	**1.0 J**	<3.9	<3.4	<3.5	**5.0**	**4.2**	**9.5 [9.8]**	**6.0**	**9.6**	**23**	**0.99 J**	**1.7 J [1.5 J]**	**18**	**7.1**	**18**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	**2.0 J**	**2.2 J**	**1.2 J**	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	<3.5 [<3.5]	<3.8	<3.5	<3.4	<3.4	<3.5 [<3.8]	<3.5	<3.4	<3.4
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	**0.97 J**	**1.1 J**	**1.1 J**	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	<3.5 [<3.5]	<3.8	<3.5	<3.4	<3.4	<3.5 [<3.8]	<3.5	<3.4	**1.1 J**
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	<3.6	<3.6	<3.5	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	<3.5 [<3.5]	<3.8	<3.5	<3.4	<3.4	<3.5 [<3.8]	<3.5	<3.4	<3.4
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	**0.69 J**	**0.60 J**	**0.69 J**	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	<3.5 [<3.5]	<3.8	**0.75 J**	**1.2 J**	<3.4	<3.5 [<3.8]	**0.61 J**	**1.6 J**	**2.2 J**
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	**2.4 J**	**2.5 J**	**2.7 J**	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	**0.84 J [0.81 J]**	<3.8	<3.5	**1.5 J**	<3.4	<3.5 [<3.8]	**3.8**	**4.2**	**3.0 J**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	**2.1 J**	**1.7 J**	**1.5 J**	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	**1.0 J [0.86 J]**	**1.0 J**	**1.2 J**	**2.0 J**	**0.47 J**	<3.5 [<3.8]	**0.52 J**	**0.60 J**	<3.4
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	**2.7 J**	**3.1 J**	**3.0 J**	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	**0.81 J [0.72 J]**	<3.8	<3.5	**2.2 J**	<3.4	<3.5 [<3.8]	**7.4**	**4.9**	**5.5**
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	<3.6	<3.6	<3.5	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	<3.5 [<3.5]	<3.8	<3.5	<3.4	<3.4	<3.5 [<3.8]	<3.5	<3.4	<3.4
Perfluorononanoic acid (PFNA)	6	- -	ng/L	**1.2 J**	**1.3 J**	**1.2 J**	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	**0.45 J [0.78 J]**	**0.64 J**	**0.89 J**	**1.1 J**	<3.4	<3.5 [<3.8]	**1.4 J**	**3.1 J**	**13**
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	<3.6	**0.70 J**	<3.5	**0.53 J**	<3.9	<3.4	<3.5	<3.7	<3.5	<3.5 [<3.5]	<3.8	<3.5	<3.4	<3.4	<3.5 [<3.8]	**4.9**	<3.4	<3.4
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	**41**	**48**	**50**	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	**27 [25]**	**28**	**41**	**46**	<3.4	<3.5 [<3.8]	**33**	**97**	**430**
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	**7.1**	**7.9**	**7.9**	**1.1 J**	<3.9	<3.4	<3.5	<3.7	<3.5	**2.3 J [2.6 J]**	**2.7 J**	**5.2**	**11**	<3.4	<3.5 [<3.8]	**9.5**	**24**	**14**
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	<3.6	<3.6	<3.5	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	<3.5 [<3.5]	<3.8	<3.5	<3.4	<3.4	<3.5 [<3.8]	<3.5	<3.4	<3.4
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	**3.4 J**	**2.8 J**	**2.9 J**	<3.4	<3.9	<3.4	<3.5	**0.72 J**	**0.54 J**	**1.2 J [1 J]**	<3.8	**0.58 J**	**1.9 J**	**0.47 J**	<3.5 [<3.8]	**5.6**	**2.4 J**	**2.0 J**
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	<3.6	<3.6	<3.5	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	<3.5 [<3.5]	**0.76 J**	<3.5	<3.4	<3.4	<3.5 [<3.8]	<3.5	<3.4	<3.4
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	<3.6	<3.6	<3.5	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	<3.5 [<3.5]	<3.8	<3.5	<3.4	<3.4	<3.5 [<3.8]	<3.5	<3.4	<3.4
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	<3.6	<3.6	<3.5	<3.4	<3.9	<3.4	<3.5	<3.7	<3.5	<3.5 [<3.5]	<3.8	<3.5	<3.4	<3.4	<3.5 [<3.8]	<3.5	<3.4	<3.4

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface		MW-18-98	MW-18-99	MW-18-99	MW-18-99	MW-18-99	MW-18-100	MW-18-100	MW-18-101	MW-18-101	MW-18-102	MW-18-102	MW-18-103	MW-18-103	MW-18-103	MW-18-103	MW-18-104	MW-18-104	MW-18-105
Date Collected:				11/08/22	03/01/22	06/08/22	08/30/22	11/07/22	06/08/22	11/07/22	06/09/22	11/07/22	06/09/22	11/09/22	03/01/22	06/09/22	08/31/22	11/09/22	06/09/22	11/09/22	03/01/22
Sample Name:			Units	MW-18-98_110822	MW-18-99_030122	MW-18-99_060822	MW-18-99_083022	MW-18-99_110722	MW-18-100_060822	MW-18-100_110722	MW-18-101_060922	MW-18-101_110722	MW-18-102_060922	MW-18-102_110922	MW-18-103_030122	MW-18-103_060922	MW-18-103_083122	MW-18-103_110922	MW-18-104_060922	MW-18-104_110922	MW-18-105_030122
Field																					
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.68	8.14	9.05	8.11	8.56	7.48	7.76	6.97	6.91	7.25	7.20	7.02	7.08	6.92	6.99	7.14	7.15	6.95
Conductivity	- -	- -	mS/cm	0.53	1.92	1.54	1.70	1.47	0.83	0.85	1.69	4.74	0.53	0.66	0.81	0.61	0.81	0.84	0.55	0.65	0.78
Turbidity	- -	- -	NTU	5.08	6.16	7.00	0.02	0.02	10.00	47.20	6.12	1.48	2.22	1.22	9.15	2.07	9.44	1.71	1.75	1.22	8.57
Dissolved oxygen (DO)	- -	- -	mg/L	0.21	0.58	1.14	0.26	0.17	2.43	6.75	1.60	0.11	1.30	0.91	0.93	0.22	0.24	0.27	0.22	1.37	1.01
Temperature	- -	- -	Deg C	15.2	7.6	13.6	21.7	15.8	14.3	14.1	25.1	13.2	13.1	13.4	6.2	14.1	16.6	13.2	14.3	14.1	5.0
Oxidation reduction potential (ORP)	- -	- -	millivolts	22.8	-9.7	5.0	-152.9	35.2	-4.2	36.6	-295.1	-109.6	33.0	-28.5	43.4	19.6	17.8	-19.1	24.0	22.9	-4.5
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-18-98 11/08/22 MW-18-98_110822	MW-18-99 03/01/22 MW-18-99_030122	MW-18-99 06/08/22 MW-18-99_060822	MW-18-99 08/30/22 MW-18-99_083022	MW-18-99 11/07/22 MW-18-99_110722	MW-18-100 06/08/22 MW-18-100_060822	MW-18-100 11/07/22 MW-18-100_110722	MW-18-101 06/09/22 MW-18-101_060922	MW-18-101 11/07/22 MW-18-101_110722	MW-18-102 06/09/22 MW-18-102_060922	MW-18-102 11/09/22 MW-18-102_110922	MW-18-103 03/01/22 MW-18-103_030122	MW-18-103 06/09/22 MW-18-103_060922	MW-18-103 08/31/22 MW-18-103_083122	MW-18-103 11/09/22 MW-18-103_110922	MW-18-104 06/09/22 MW-18-104_060922	MW-18-104 11/09/22 MW-18-104_110922	MW-18-105 03/01/22 MW-18-105_030122
Semi-Volatile Organics (via EPA Method 522)																					
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																					
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																					
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-18-98 11/08/22 MW-18-98_110822	MW-18-99 03/01/22 MW-18-99_030122	MW-18-99 06/08/22 MW-18-99_060822	MW-18-99 08/30/22 MW-18-99_083022	MW-18-99 11/07/22 MW-18-99_110722	MW-18-100 06/08/22 MW-18-100_060822	MW-18-100 11/07/22 MW-18-100_110722	MW-18-101 06/09/22 MW-18-101_060922	MW-18-101 11/07/22 MW-18-101_110722	MW-18-102 06/09/22 MW-18-102_060922	MW-18-102 11/09/22 MW-18-102_110922	MW-18-103 03/01/22 MW-18-103_030122	MW-18-103 06/09/22 MW-18-103_060922	MW-18-103 08/31/22 MW-18-103_083122	MW-18-103 11/09/22 MW-18-103_110922	MW-18-104 06/09/22 MW-18-104_060922	MW-18-104 11/09/22 MW-18-104_110922	MW-18-105 03/01/22 MW-18-105_030122
General Chemistry																					
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																					
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	<7.8	<7.0	<7.3	<7.0	<7.4	<6.9	<7.8	<7.2	<6.9	<7.3	<7.0	<9.9	<7.0	<6.8	<7.0	<7.0	<6.9	<6.9
4:2 FTS	- -	- -	ng/L	<7.8	<7.0	<7.3	<7.0	<7.4	<6.9	<7.8	<7.2	<6.9	<7.3	<7.0	<9.9	<7.0	<6.8	<7.0	<7.0	<6.9	<6.9
6:2FTS	- -	- -	ng/L	<7.8	<6.9	<7.3	<7.0	<7.4	<6.9	<7.8	<7.2	<6.9	<7.3	<7.0	<9.9	<7.0	<6.8	<7.0	<7.0	<6.9	<6.9
8:2FTS	- -	- -	ng/L	<7.8	<7.0	<7.3	<7.0	<7.4	<6.9	<7.8	<7.2	<6.9	<7.3	<7.0	<9.9	<7.0	<6.8	<7.0	<7.0	<6.9	<6.9
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	<7.8	<7.0	<7.3	<7.0	<7.4	<6.9	<7.8	<7.2	<6.9	<7.3	<7.0	<9.9	<7.0	<6.8	<7.0	<7.0	<6.9	<6.9
ADONA	- -	- -	ng/L	<7.8	<7.0	<7.3	<7.0	<7.4	<6.9	<7.8	<7.2	<6.9	<7.3	<7.0	<9.9	<7.0	<6.8	<7.0	<7.0	<6.9	<6.9
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	<7.8	<7.0	<7.3	<7.0	<7.4	<6.9	<7.8	<7.2	<6.9	<7.3	<7.0	<9.9	<7.0	<6.8	<7.0	<7.0	<6.9	<6.9
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	<7.8	<7.0	<7.3	<7.0	<7.4	<6.9	<7.8	<7.2	<6.9	<7.3	<7.0	<9.9	<7.0	<6.8	<7.0	<7.0	<6.9	<6.9
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	<7.8	<7.0	<7.3	<7.0	<7.4	<6.9	<7.8	<7.2	<6.9	<7.3	<7.0	<9.9	<7.0	<6.8	<7.0	<7.0	<6.9	<6.9
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	**0.45 J**	**0.70 J**	**0.90 J**	**0.81 J**	**0.87 J**	**1.4 J**	<3.9	<3.6	<3.4	<3.6	<3.5	**13**	**6.2**	**8.0**	**12**	**1.6 J**	**1.6 J**	**5.6**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	**8.3**	**11**	**12**	**9.8**	**7.8**	**7.5**	**9.5**	**3.8**	**4.4**	<3.6	<3.5	**14**	**3.6**	**7.9**	**11**	**1.2 J**	**1.4 J**	**6.7**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	<3.9	**1.1 J**	**0.84 J**	**0.68 J**	<3.7	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	<3.5	<3.5	<3.4	<3.5
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	**0.87 J**	**1.4 J**	**0.89 J**	**0.94 J**	**0.98 J**	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	<3.5	<3.5	<3.4	<3.5
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	<3.9	<3.5	<3.6	<3.5	<3.7	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	<3.5	<3.5	<3.4	<3.5
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	**0.93 J**	**1.0 J**	**1.1 J**	**0.98 J**	**0.91 J**	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	<3.5	<3.5	<3.4	<3.5
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	**1.4 J**	**3.4 J**	**2.7 J**	**2.8 J**	**2.4 J**	**1.6 J**	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	**0.46 J**	<3.5	<3.4	**0.57 J**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	<3.9	**2.1 J**	**1.3 J**	**1.7 J**	**1.6 J**	**3.0 J**	<3.9	<3.6	<3.4	<3.6	<3.5	**62**	**44**	**63**	**84**	**1.4 J**	**1.1 J**	**2.2 J**
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	**2.5 J**	**5.4**	**4.1**	**4.5**	**4.0**	**3.4 J**	<3.9	<3.6	<3.4	<3.6	<3.5	**1.3 J**	<3.5	**1.1 J**	**1.5 J**	<3.5	<3.4	**0.72 J**
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	<3.9	<3.5	<3.6	<3.5	<3.7	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	<3.5	<3.5	<3.4	<3.5
Perfluorononanoic acid (PFNA)	6	- -	ng/L	**9.5**	**1.7 J**	**1.3 J**	**1.3 J**	**1.1 J**	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	<3.5	<3.5	<3.4	<3.5
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	<3.9	<3.5	<3.6	<3.5	<3.7	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	<3.5	<3.5	<3.4	<3.5
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	**440**	**93**	**78**	**84**	**70**	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	**5.3**	**2.9 J**	**3.8**	**4.9**	**5.7**	**3.2 J**	**13**
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	**5.3**	**7.3**	**5.5**	**5.8**	**4.6**	**2.9 J**	<3.9	<3.6	<3.4	<3.6	<3.5	**2.2 J**	<3.5	**1.2 J**	**1.1 J**	<3.5	<3.4	**2.6 J**
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	<3.9	<3.5	<3.6	<3.5	<3.7	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	**8.4**	**5.2**	**6.8**	**9.5**	<3.5	<3.4	**0.67 J**
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	**1.4 J**	**3.4 J**	**3.4 J**	**3.1 J**	**2.4 J**	**2.2 J**	<3.9	**0.56 J**	<3.4	<3.6	<3.5	**2.1 J**	<3.5	**1.2 J**	**2.1 J**	<3.5	<3.4	**1.1 J**
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	<3.9	<3.5	<3.6	<3.5	<3.7	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	<3.5	<3.5	<3.4	<3.5
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	<3.9	<3.5	<3.6	<3.5	<3.7	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	<3.5	<3.5	<3.4	<3.5
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	<3.9	**0.56 J**	<3.6	<3.5	<3.7	<3.5	<3.9	<3.6	<3.4	<3.6	<3.5	<5.0	<3.5	<3.4	<3.5	<3.5	<3.4	<3.5

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-18-105 06/09/22 MW-18-105_060922	MW-18-105 08/31/22 MW-18-105_083122	MW-18-105 11/09/22 MW-18-105_110922	MW-18-106 06/09/22 MW-18-106_060922	MW-19-107 06/09/22 MW-19-107_060922	MW-19-107 11/08/22 MW-19-107_110822	MW-19-108 06/09/22 MW-19-108_060922	MW-19-108 11/09/22 MW-19-108_110922	MW-19-111 06/09/22 MW-19-111_060922	MW-19-111 11/08/22 MW-19-111_110822	MW-19-112 06/09/22 MW-19-112_060922	MW-19-112 11/07/22 MW-19-112_110722	MW-19-114 06/09/22 MW-19-114_060922	MW-19-114 11/09/22 MW-19-114_110922	MW-19-115 06/03/22 MW-19-115_060322	MW-19-115 11/02/22 MW-19-115_110222	MW-19-116 06/03/22 MW-19-116_060322
Field																				
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.13	7.16	7.13	7.11	6.50	6.94	6.59	6.85	6.53	6.89	6.54	6.55	7.21	7.18	7.05	6.93	6.96
Conductivity	- -	- -	mS/cm	0.54	0.59	0.60	0.61	0.84	1.00	1.25	1.63	1.28	1.51	7.98	7.83	0.47	0.55	2.52	3.05	1.29
Turbidity	- -	- -	NTU	2.10	9.06	1.24	2.55	1.94	0.02	2.72	0.02	1.08	231.00	11	47.6	0.96	1.22	0.02	811.00	0.02
Dissolved oxygen (DO)	- -	- -	mg/L	0.25	0.59	1.51	0.30	0.21	0.28	0.20	0.27	0.44	0.36	0.09	0.55	0.21	0.30	1.63	0.39	7.01
Temperature	- -	- -	Deg C	13.1	16.3	13.1	15.0	11.3	13.2	11.6	14.4	11.8	13.6	16	17.6	13.3	14.1	19.2	14.8	17.6
Oxidation reduction potential (ORP)	- -	- -	millivolts	10.2	12.2	36.7	-53.8	-38.5	-34.1	9.2	42.1	22.3	21.0	-28.1	-73.8	5.3	44.3	-90.8	-3.3	-81.9
Volatile Organics (via EPA Method SW5030C/8260C)																				
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**7**	**7**	**69**
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-18-105 06/09/22 MW-18-105_060922	MW-18-105 08/31/22 MW-18-105_083122	MW-18-105 11/09/22 MW-18-105_110922	MW-18-106 06/09/22 MW-18-106_060922	MW-19-107 06/09/22 MW-19-107_060922	MW-19-107 11/08/22 MW-19-107_110822	MW-19-108 06/09/22 MW-19-108_060922	MW-19-108 11/09/22 MW-19-108_110922	MW-19-111 06/09/22 MW-19-111_060922	MW-19-111 11/08/22 MW-19-111_110822	MW-19-112 06/09/22 MW-19-112_060922	MW-19-112 11/07/22 MW-19-112_110722	MW-19-114 06/09/22 MW-19-114_060922	MW-19-114 11/09/22 MW-19-114_110922	MW-19-115 06/03/22 MW-19-115_060322	MW-19-115 11/02/22 MW-19-115_110222	MW-19-116 06/03/22 MW-19-116_060322
Semi-Volatile Organics (via EPA Method 522)																				
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																				
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																				
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-18-105 06/09/22 MW-18-105_060922	MW-18-105 08/31/22 MW-18-105_083122	MW-18-105 11/09/22 MW-18-105_110922	MW-18-106 06/09/22 MW-18-106_060922	MW-19-107 06/09/22 MW-19-107_060922	MW-19-107 11/08/22 MW-19-107_110822	MW-19-108 06/09/22 MW-19-108_060922	MW-19-108 11/09/22 MW-19-108_110922	MW-19-111 06/09/22 MW-19-111_060922	MW-19-111 11/08/22 MW-19-111_110822	MW-19-112 06/09/22 MW-19-112_060922	MW-19-112 11/07/22 MW-19-112_110722	MW-19-114 06/09/22 MW-19-114_060922	MW-19-114 11/09/22 MW-19-114_110922	MW-19-115 06/03/22 MW-19-115_060322	MW-19-115 11/02/22 MW-19-115_110222	MW-19-116 06/03/22 MW-19-116_060322
General Chemistry																				
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																				
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	<7.3	<6.9	<7.1	<7.2	<6.7	<7.5	<7.4	<7.6	<6.9	<8.2	<7.2	<7.8	<7.4	<7.1	NA	NA	NA
4:2 FTS	- -	- -	ng/L	<7.3	<6.9	<7.1	<7.2	<6.7	<7.5	<7.4	<7.6	<6.9	<8.2	<7.2	<7.8	<7.4	<7.1	NA	NA	NA
6:2FTS	- -	- -	ng/L	<7.3	<6.9	<7.1	<7.2	<6.7	<7.5	<7.4	<7.6	<6.9	<8.2	<7.2	<7.8	<7.4	<7.1	NA	NA	NA
8:2FTS	- -	- -	ng/L	<7.3	<6.9	<7.1	<7.2	<6.7	<7.5	<7.4	<7.6	<6.9	<8.2	<7.2	<7.8	<7.4	<7.1	NA	NA	NA
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	<7.3	<6.9	<7.1	<7.2	<6.7	<7.5	<7.4	<7.6	<6.9	<8.2	<7.2	<7.8	<7.4	<7.1	NA	NA	NA
ADONA	- -	- -	ng/L	<7.3	<6.9	<7.1	<7.2	<6.7	<7.5	<7.4	<7.6	<6.9	<8.2	<7.2	<7.8	<7.4	<7.1	NA	NA	NA
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	<7.3	<6.9	<7.1	<7.2	<6.7	<7.5	<7.4	<7.6	<6.9	<8.2	<7.2	<7.8	<7.4	<7.1	NA	NA	NA
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	<7.3	<6.9	<7.1	<7.2	<6.7	<7.5	<7.4	<7.6	<6.9	<8.2	<7.2	<7.8	<7.4	<7.1	NA	NA	NA
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	<7.3	<6.9	<7.1	<7.2	<6.7	<7.5	<7.4	<7.6	<6.9	<8.2	<7.2	<7.8	<7.4	<7.1	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	**5.6**	**4.6**	**1.2 J**	**2.3 J**	**2.1 J**	**2.1 J**	**1.3 J**	**1.4 J**	**1.4 J**	**1.1 J**	<3.6	<3.9	**1.2 J**	**4.6**	NA	NA	NA
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	**5.1**	**0.93 J**	**2.5 J**	**1.6 J**	**2.9 J**	**2.6 J**	**1.6 J**	**1.5 J**	**2.5 J**	**2.3 J**	**2.2 J**	<3.9	<3.7	**1.2 J**	NA	NA	NA
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	<3.6	<3.5	<3.6	**0.43 J**	**0.59 J**	<3.7	**0.51 J**	**0.53 J**	**0.98 J**	**0.51 J**	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	**2.0 J**	**1.3 J**	**0.59 J**	**3.7**	**4.6**	**4.7**	**1.2 J**	**0.85 J**	**1.5 J**	**0.91 J**	<3.6	<3.9	**0.68 J**	**1.4 J**	NA	NA	NA
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	**0.70 J**	**0.90 J**	**0.76 J**	<3.4	**0.76 J**	**1.4 J**	<3.9	<3.7	<3.6	NA	NA	NA
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluorononanoic acid (PFNA)	6	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	**9.5**	**2.9 J**	**2.7 J**	**4.3**	**2.0 J**	<3.7	**5.8**	**4.9**	<3.4	<4.1	<3.6	<3.9	**2.3 J**	**4.1**	NA	NA	NA
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	**1.7 J**	<3.5	<3.6	**0.84 J**	**3.6**	**2.0 J**	**5.2**	**3.2 J**	**7.1**	**4.4**	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	**0.54 J**	<3.5	<3.6	**0.57 J**	**0.61 J**	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	**1.0 J**	<3.5	<3.6	**0.77 J**	**1.5 J**	<3.7	<3.7	<3.8	<3.4	<4.1	**4.2**	<3.9	<3.7	<3.6	NA	NA	NA
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	<3.6	<3.5	<3.6	<3.6	<3.4	<3.7	<3.7	<3.8	<3.4	<4.1	<3.6	<3.9	<3.7	<3.6	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-19-116 11/02/22 MW-19-116_110222	MW-19-117 06/02/22 MW-19-117_060222	MW-19-117 11/03/22 MW-19-117_110322	MW-19-118D 06/06/22 MW-19-118D_060622	MW-19-118S 06/06/22 MW-19-118S_060622	MW-19-119D 06/08/22 MW-19-119D_060822	MW-19-119S 06/08/22 MW-19-119S_060822	MW-19-120 06/02/22 MW-19-120_060222	MW-19-120 11/03/22 MW-19-120_110322	MW-19-121 03/01/22 MW-19-121_030122	MW-19-121 06/01/22 MW-19-121_060122	MW-19-121 11/02/22 MW-19-121_110222	MW-19-122 06/02/22 MW-19-122_060222	MW-19-122 11/01/22 MW-19-122_110122	MW-19-123 06/01/22 MW-19-123_060122	MW-19-123 11/02/22 MW-19-123_110222	MW-19-124 06/02/22 MW-19-124_060222
Field																				
pH	6.5 to 8.5	6.5 to 9.0	s.u.	6.96	6.98	6.98	7.26	7.07	7.07	7.04	7.05	7.02	7.12	7.02	6.87	7.08	6.89	6.84	6.84	6.77
Conductivity	- -	- -	mS/cm	1.45	1.16	1.12	1.81	2.45	1.23	1.28	2.62	2.76	1.56	1.89	2.10	4.50	5.04	2.18	2.45	3.43
Turbidity	- -	- -	NTU	1.51	23.90	4.31	38.10	13.60	13.30	9.14	20.10	5.58	0.02	0.02	38.70	91.30	16.10	0.02	13.10	47.80
Dissolved oxygen (DO)	- -	- -	mg/L	0.20	0.48	0.16	2.09	3.40	0.46	0.59	1.08	1.14	1.89	5.79	4.55	6.05	5.12	4.25	5.10	0.48
Temperature	- -	- -	Deg C	15.0	22.7	16.0	21.2	21.2	16.7	18.0	21.6	15.4	10.5	19.1	18.0	16.4	16.4	18.6	16.8	17.9
Oxidation reduction potential (ORP)	- -	- -	millivolts	-61.4	-124.6	-86.8	-89.7	-111.2	-93.2	-58.5	34.4	-15.1	230.0	69.8	129.5	109.2	53.4	118.8	133.5	-73.4
Volatile Organics (via EPA Method SW5030C/8260C)																				
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	**65**	**1**	<1	NA	NA	NA	NA	**12**	**13**	<1	<1	<1	**3**	**6**	**25**	**21**	**90 Y**
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	<25	<25	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	<90	<90	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-19-116 11/02/22 MW-19-116_110222	MW-19-117 06/02/22 MW-19-117_060222	MW-19-117 11/03/22 MW-19-117_110322	MW-19-118D 06/06/22 MW-19-118D_060622	MW-19-118S 06/06/22 MW-19-118S_060622	MW-19-119D 06/08/22 MW-19-119D_060822	MW-19-119S 06/08/22 MW-19-119S_060822	MW-19-120 06/02/22 MW-19-120_060222	MW-19-120 11/03/22 MW-19-120_110322	MW-19-121 03/01/22 MW-19-121_030122	MW-19-121 06/01/22 MW-19-121_060122	MW-19-121 11/02/22 MW-19-121_110222	MW-19-122 06/02/22 MW-19-122_060222	MW-19-122 11/01/22 MW-19-122_110122	MW-19-123 06/01/22 MW-19-123_060122	MW-19-123 11/02/22 MW-19-123_110222	MW-19-124 06/02/22 MW-19-124_060222
Semi-Volatile Organics (via EPA Method 522)																				
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	**0.19 JF2**	**1.2**	**0.50**	**0.43**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																				
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																				
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-19-116 11/02/22 MW-19-116_110222	MW-19-117 06/02/22 MW-19-117_060222	MW-19-117 11/03/22 MW-19-117_110322	MW-19-118D 06/06/22 MW-19-118D_060622	MW-19-118S 06/06/22 MW-19-118S_060622	MW-19-119D 06/08/22 MW-19-119D_060822	MW-19-119S 06/08/22 MW-19-119S_060822	MW-19-120 06/02/22 MW-19-120_060222	MW-19-120 11/03/22 MW-19-120_110322	MW-19-121 03/01/22 MW-19-121_030122	MW-19-121 06/01/22 MW-19-121_060122	MW-19-121 11/02/22 MW-19-121_110222	MW-19-122 06/02/22 MW-19-122_060222	MW-19-122 11/01/22 MW-19-122_110122	MW-19-123 06/01/22 MW-19-123_060122	MW-19-123 11/02/22 MW-19-123_110222	MW-19-124 06/02/22 MW-19-124_060222
General Chemistry																				
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**18.6**	**15.0**	NA	NA	<0.5	<0.5	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**4.1**	**15.3**	NA	NA	**0.01**	<0.01	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.4**	**0.8**	NA	NA	**0.3**	**0.3**	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																				
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4:2 FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
8:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ADONA	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorononanoic acid (PFNA)	6	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorotridecanoic Acid (PFTrA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-19-124 11/01/22 MW-19-124_110122	MW-19-125 06/06/22 MW-19-125_060622	MW-20-126 03/01/22 MW-20-126_030122	MW-20-126 06/03/22 MW-20-126_060322	MW-20-126 11/01/22 MW-20-126_110122	MW-20-127 03/01/22 MW-20-127_030122	MW-20-127 06/01/22 MW-20-127_060122	MW-20-127 11/02/22 MW-20-127_110222	MW-20-128 06/01/22 MW-20-128_060122	MW-20-128 11/02/22 MW-20-128_110222	MW-20-129 06/03/22 MW-20-129_060322	MW-20-129 11/01/22 MW-20-129_110122	MW-20-130 06/07/22 MW-20-130_060722	MW-20-130 11/03/22 MW-20-130_110322	MW-20-131 06/02/22 MW-20-131_060222	MW-20-131 11/10/22 MW-20-131_111022	MW-20-132 06/02/22 MW-20-132_060222
Field																				
pH	6.5 to 8.5	6.5 to 9.0	s.u.	6.76	9.31	7.24	7.02	6.96	6.92	6.81	6.81	7.45	7.67	6.94	6.94	6.71	6.93	7.20	7.14	7.23
Conductivity	- -	- -	mS/cm	3.20	0.96	2.81	3.20	3.94	2.34	3.33	3.27	3.37	3.35	2.86	2.66	0.92	1.45	5.52	4.66	2.17
Turbidity	- -	- -	NTU	10.70	13.80	71.40	63.80	9.84	0.02	9.59	9.43	832.00	202.00	0.02	1.53	9.41	10.50	37.30	1.13	19.00
Dissolved oxygen (DO)	- -	- -	mg/L	0.26	1.60	10.04	4.65	2.87	0.78	0.60	0.43	7.13	7.59	0.17	0.31	0.01	1.92	1.11	0.15	0.10
Temperature	- -	- -	Deg C	16.0	20.0	11.4	15.7	13.6	11.20	18.7	14.3	20.1	19.0	26.7	15.9	14.0	18.4	16.2	16.0	11.5
Oxidation reduction potential (ORP)	- -	- -	millivolts	-40.1	-80.7	119.5	54.9	30.5	4.10	-54.5	-40.2	135.7	84.7	-82.9	-24.9	22.2	4.8	-27.8	57.3	-0.5
Volatile Organics (via EPA Method SW5030C/8260C)																				
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	**137**	NA	**130 Y**	**120 Y**	**85**	**130 Y**	**142 [143]**	**126 [122]**	**6**	<1	**80**	**60**	**13 [13]**	**10 [11]**	NA	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface		MW-19-124	MW-19-125	MW-20-126	MW-20-126	MW-20-126	MW-20-127	MW-20-127	MW-20-127	MW-20-128	MW-20-128	MW-20-129	MW-20-129	MW-20-130	MW-20-130	MW-20-131	MW-20-131	MW-20-132
Date Collected:				11/01/22	06/06/22	03/01/22	06/03/22	11/01/22	03/01/22	06/01/22	11/02/22	06/01/22	11/02/22	06/03/22	11/01/22	06/07/22	11/03/22	06/02/22	11/10/22	06/02/22
Sample Name:			Units	MW-19-124_110122	MW-19-125_060622	MW-20-126_030122	MW-20-126_060322	MW-20-126_110122	MW-20-127_030122	MW-20-127_060122	MW-20-127_110222	MW-20-128_060122	MW-20-128_110222	MW-20-129_060322	MW-20-129_110122	MW-20-130_060722	MW-20-130_110322	MW-20-131_060222	MW-20-131_111022	MW-20-132_060222
Semi-Volatile Organics (via EPA Method 522)																				
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	**0.31**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																				
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																				
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-19-124 11/01/22 MW-19-124_110122	MW-19-125 06/06/22 MW-19-125_060622	MW-20-126 03/01/22 MW-20-126_030122	MW-20-126 06/03/22 MW-20-126_060322	MW-20-126 11/01/22 MW-20-126_110122	MW-20-127 03/01/22 MW-20-127_030122	MW-20-127 06/01/22 MW-20-127_060122	MW-20-127 11/02/22 MW-20-127_110222	MW-20-128 06/01/22 MW-20-128_060122	MW-20-128 11/02/22 MW-20-128_110222	MW-20-129 06/03/22 MW-20-129_060322	MW-20-129 11/01/22 MW-20-129_110122	MW-20-130 06/07/22 MW-20-130_060722	MW-20-130 11/03/22 MW-20-130_110322	MW-20-131 06/02/22 MW-20-131_060222	MW-20-131 11/10/22 MW-20-131_111022	MW-20-132 06/02/22 MW-20-132_060222
General Chemistry																				
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	<0.5 [<0.5]	<0.5 [<0.5]	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	**0.06 [0.07]**	**0.04 [0.04]**	**0.39**	**0.6**	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	**0.7 [0.8]**	**0.8 [0.7]**	**2.2**	**1.6**	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																				
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<7.1]	<7.0 [<7.2]	<6.9	<6.9 [<7]	<6.8
4:2 FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<7.1]	<7.0 [<7.2]	<6.9	<6.9 [<7]	<6.8
6:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<7.1]	<7.0 [<7.2]	<6.9	<6.9 [<7]	<6.8
8:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<7.1]	<7.0 [<7.2]	<6.9	<6.9 [<7]	<6.8
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<7.1]	<7.0 [<7.2]	<6.9	<6.9 [<7]	<6.8
ADONA	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<7.1]	<7.0 [<7.2]	<6.9	<6.9 [<7]	<6.8
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<7.1]	<7.0 [<7.2]	<6.9	<6.9 [<7]	<6.8
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<7.1]	<7.0 [<7.2]	<6.9	<6.9 [<7]	<6.8
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<7.1]	<7.0 [<7.2]	<6.9	<6.9 [<7]	<6.8
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**8.7 [9.6]**	**24 [27]**	**1.8 J**	**1.0 J [0.98 J]**	**2.5 J**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**7.6 [7.6]**	**26 [22]**	**17**	**20 [19]**	**15**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	<3.5	<3.4 [<3.5]	<3.4
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	**1.0 J**	<3.4 [<3.5]	**1.6 J**
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	<3.5	<3.4 [<3.5]	<3.4
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	<3.5	<3.4 [<3.5]	<3.4
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**3.9 [3.7]**	**9.7 [11]**	**20**	**25 [26]**	**18**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.6 J [2 J]**	**4.2 [5.1]**	**2.1 J**	**1.8 J [1.8 J]**	**1.8 J**
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**18 [18]**	**60 [55]**	**24**	**27 [26]**	**19**
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	<3.5	<3.4 [<3.5]	<3.4
Perfluorononanoic acid (PFNA)	6	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	**1.4 J**	**2.1 J [2.2 J]**	**4.5**
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	<3.5	<3.4 [<3.5]	<3.4
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	**6.2**	**4.8 [4.9]**	**12**
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.2 J [1.3 J]**	**3.2 J [3.6]**	**27**	**38 [36]**	**29**
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.7 J [2.9 J]**	**7.2 [6.6]**	<3.5	<3.4 [<3.5]	<3.4
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**9.6 [10]**	**32 [30]**	**28**	**29 [28]**	**22**
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	<3.5	<3.4 [<3.5]	<3.4
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	<3.5	<3.4 [<3.5]	<3.4
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.6]	<3.5 [<3.6]	<3.5	<3.4 [<3.5]	<3.4

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-20-132 11/09/22 MW-20-132_110922	MW-21-133 06/02/22 MW-21-133_060222	MW-21-133 11/09/22 MW-21-133_110922	MW-21-134 06/02/22 MW-21-134_060222	MW-21-134 11/09/22 MW-21-134_110922	MW-21-135 06/02/22 MW-21-135_060222	MW-21-135 11/09/22 MW-21-135_110922	MW-21-136 06/02/22 MW-21-136_060222	MW-21-136 11/10/22 MW-21-136_111022	MW-21-137 06/02/22 MW-21-137_060222	MW-21-137 11/10/22 MW-21-137_111022	MW-21-138 06/02/22 MW-21-138_060222	MW-21-138 11/10/22 MW-21-138_111022	MW-21-139 06/07/22 MW-21-139_060722	MW-21-139 06/10/22 MW-21-139_061022	MW-21-139 08/29/22 MW-21-139_082922	MW-21-139 11/02/22 MW-21-139_110222
Field																				
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.11	6.87	6.91	7.09	7.17	7.51	7.23	7.09	7.15	6.72	6.77	6.93	6.90	7.50	7.72	7.49	7.80
Conductivity	- -	- -	mS/cm	6.59	0.68	0.96	0.56	0.81	0.77	0.93	1.73	0.92	1.07	1.01	1.65	1.57	1.77	2.04	1.38	1.28
Turbidity	- -	- -	NTU	0.02	1.16	8.34	1.29	6.82	1.78	5.27	19	8.27	20.00	8.20	18.00	5.91	7.00	11.00	2.59	0.02
Dissolved oxygen (DO)	- -	- -	mg/L	0.22	0.12	0.31	1.32	0.56	0.51	0.31	1.19	0.32	2.07	0.26	0.28	0.32	0.11	0.04	1.06	0.14
Temperature	- -	- -	Deg C	15.6	10.3	15.7	10.6	15.6	12.7	14.2	12.4	15.5	11.6	15.7	12.8	16.0	15.2	16.8	22.8	15.1
Oxidation reduction potential (ORP)	- -	- -	millivolts	10.1	-451.3	37.8	-29.4	51.4	100.2	60.4	-6.2	-37	2.1	107.5	2.5	-41.1	-13.6	-39.6	-63.2	26.1
Volatile Organics (via EPA Method SW5030C/8260C)																				
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**4**	**2**	**1**
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-20-132 11/09/22 MW-20-132_110922	MW-21-133 06/02/22 MW-21-133_060222	MW-21-133 11/09/22 MW-21-133_110922	MW-21-134 06/02/22 MW-21-134_060222	MW-21-134 11/09/22 MW-21-134_110922	MW-21-135 06/02/22 MW-21-135_060222	MW-21-135 11/09/22 MW-21-135_110922	MW-21-136 06/02/22 MW-21-136_060222	MW-21-136 11/10/22 MW-21-136_111022	MW-21-137 06/02/22 MW-21-137_060222	MW-21-137 11/10/22 MW-21-137_111022	MW-21-138 06/02/22 MW-21-138_060222	MW-21-138 11/10/22 MW-21-138_111022	MW-21-139 06/07/22 MW-21-139_060722	MW-21-139 06/10/22 MW-21-139_061022	MW-21-139 08/29/22 MW-21-139_082922	MW-21-139 11/02/22 MW-21-139_110222
Semi-Volatile Organics (via EPA Method 522)																				
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																				
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																				
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-20-132 11/09/22 MW-20-132_110922	MW-21-133 06/02/22 MW-21-133_060222	MW-21-133 11/09/22 MW-21-133_110922	MW-21-134 06/02/22 MW-21-134_060222	MW-21-134 11/09/22 MW-21-134_110922	MW-21-135 06/02/22 MW-21-135_060222	MW-21-135 11/09/22 MW-21-135_110922	MW-21-136 06/02/22 MW-21-136_060222	MW-21-136 11/10/22 MW-21-136_111022	MW-21-137 06/02/22 MW-21-137_060222	MW-21-137 11/10/22 MW-21-137_111022	MW-21-138 06/02/22 MW-21-138_060222	MW-21-138 11/10/22 MW-21-138_111022	MW-21-139 06/07/22 MW-21-139_060722	MW-21-139 06/10/22 MW-21-139_061022	MW-21-139 08/29/22 MW-21-139_082922	MW-21-139 11/02/22 MW-21-139_110222
General Chemistry																				
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																				
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	<7.8	<6.8	<6.9	<6.7	<7.1	<6.8	<7.4	<6.7	<7.2	<7.0	<7.1	<8.4	<6.8	<6.9	NA	<6.9	<7.2
4:2 FTS	- -	- -	ng/L	<7.8	<6.8	<6.9	<6.7	<7.1	<6.8	<7.4	<6.7	<7.2	<7.0	<7.1	<8.4	<6.8	<6.9	NA	<6.9	<7.2
6:2FTS	- -	- -	ng/L	<7.8	<6.8	<6.9	<6.7	<7.1	<6.8	<7.4	**11**	<7.2	<7.0	**2.6 BJ**	<8.4	**3.8 BJ**	**29**	NA	**46**	**45**
8:2FTS	- -	- -	ng/L	<7.8	<6.8	<6.9	<6.7	<7.1	<6.8	<7.4	<6.7	<7.2	<7.0	<7.1	<8.4	<6.8	**12**	NA	**53**	**66**
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	<7.8	<6.8	<6.9	<6.7	<7.1	<6.8	<7.4	<6.7	<7.2	<7.0	<7.1	<8.4	<6.8	<6.9	NA	<6.9	<7.2
ADONA	- -	- -	ng/L	<7.8	<6.8	<6.9	<6.7	<7.1	<6.8	<7.4	<6.7	<7.2	<7.0	<7.1	<8.4	<6.8	<6.9	NA	<6.9	<7.2
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	<7.8	<6.8	<6.9	<6.7	<7.1	<6.8	<7.4	<6.7	<7.2	<7.0	<7.1	<8.4	<6.8	<6.9	NA	<6.9	<7.2
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	<7.8	<6.8	<6.9	<6.7	<7.1	<6.8	<7.4	<6.7	<7.2	<7.0	<7.1	<8.4	<6.8	<6.9	NA	<6.9	<7.2
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	<7.8	<6.8	<6.9	<6.7	<7.1	<6.8	<7.4	<6.7	<7.2	<7.0	<7.1	<8.4	<6.8	<6.9	NA	<6.9	<7.2
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	**1.5 J**	**2.0 J**	**2.6 J**	**1.9 J**	**2.4 J**	**1.9 J**	**1.8 J**	**0.85 J**	**0.62 J**	<3.5	<3.6	<4.2	<3.4	**29**	NA	**20**	**20**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	**17**	**14**	**36**	**13**	**23**	**12**	**9.5**	**1.8 J**	**2.0 J**	<3.5	<3.6	<4.2	<3.4	**25**	NA	**31**	**43**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	<3.9	<3.4	<3.4	<3.4	<3.5	<3.4	<3.7	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	<3.5	NA	<3.5	<3.6
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	**1.8 J**	<3.4	<3.4	<3.4	<3.5	<3.4	<3.7	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	**2.1 J**	NA	**6.9**	**6.5**
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	<3.9	<3.4	<3.4	<3.4	<3.5	<3.4	<3.7	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	<3.5	NA	<3.5	<3.6
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	<3.9	<3.4	<3.4	<3.4	**0.49 J**	<3.4	<3.7	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	**12**	NA	**27**	**33**
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	**23**	**17**	**47**	**15**	**35**	**47**	**54**	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	**37**	NA	**55**	**62 B**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	**1.8 J**	**1.7 J**	**2.6 J**	**2.0 J**	**2.7 J**	**1.6 J**	**1.8 J**	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	**180**	NA	**230**	**280**
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	**26**	**24**	**63**	**22**	**52**	**39**	**34**	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	**66**	NA	**78**	**100 B**
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	<3.9	<3.4	<3.4	<3.4	<3.5	<3.4	<3.7	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	<3.5	NA	**0.89 J**	**0.66 J**
Perfluorononanoic acid (PFNA)	6	- -	ng/L	**5.0**	**1.1 J**	**3.7**	<3.4	**0.60 J**	**1.1 J**	**1.0 J**	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	**6.5**	NA	**18**	**22 B**
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	<3.9	<3.4	<3.4	<3.4	<3.5	<3.4	<3.7	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	**0.73 J**	NA	**1.3 J**	<3.6
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	**13**	**4.6**	**10**	**4.2**	**5.0**	**2.1 J**	<3.7	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	**680**	NA	**1,700**	**1,400**
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	**33**	**43**	**110**	**23**	**55**	**38**	**41**	**0.70 J**	<3.6	<3.5	<3.6	<4.2	<3.4	**49**	NA	**83**	**84 B**
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	<3.9	**0.54 J**	**0.93 J**	**0.77 J**	**0.82 J**	**1.2 J**	**1.1 J**	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	**29**	NA	**23**	**25**
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	**25**	**22**	**43**	**21**	**52**	**39**	**31**	**0.82 J**	**0.80 J**	**0.56 J**	<3.6	**0.69 J**	<3.4	**56**	NA	**80**	**110**
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	<3.9	<3.4	<3.4	<3.4	<3.5	<3.4	<3.7	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	<3.5	NA	<3.5	<3.6
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	<3.9	<3.4	<3.4	<3.4	<3.5	<3.4	<3.7	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	<3.5	NA	<3.5	<3.6
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	<3.9	<3.4	<3.4	<3.4	<3.5	<3.4	<3.7	<3.4	<3.6	<3.5	<3.6	<4.2	<3.4	<3.5	NA	<3.5	<3.6

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-21-140 06/07/22 MW-21-140_060722	MW-21-140 08/30/22 MW-21-140_083022	MW-21-140 11/04/22 MW-21-140_110422	MW-21-141 06/06/22 MW-21-141_060622	MW-21-141 11/04/22 MW-21-141_110422	MW-21-142 06/07/22 MW-21-142_060722	MW-21-142 08/30/22 MW-21-142_083022	MW-21-142 11/02/22 MW-21-142_110222	MW-22-143 04/05/22 MW-22-143_040522	MW-22-143 06/01/22 MW-22-143_060122	MW-22-143 08/30/22 MW-22-143_083022	MW-22-143 11/10/22 MW-22-143_111022	MW-22-144 04/04/22 MW-22-144_040422	MW-22-144 06/01/22 MW-22-144_060122	MW-22-144 08/30/22 MW-22-144_083022	MW-22-144 11/10/22 MW-22-144_111022	MW-22-145 04/04/22 MW-22-145_040422
Field																				
pH	6.5 to 8.5	6.5 to 9.0	s.u.	6.93	7.11	6.94	6.87	6.96	6.78	6.89	6.92	7.14	7.14	6.95	7.04	7.14	7.18	6.88	7.08	7.08
Conductivity	- -	- -	mS/cm	0.65	0.70	0.82	0.95	0.87	1.56	1.60	1.91	1.36	2.54	2.66	3.21	1.60	0.88	1.14	1.16	2.60
Turbidity	- -	- -	NTU	1.61	49.80	8.22	16.00	3.69	10.00	17.00	82.40	20.01	1.25	10.00	5.78	4.80	1.20	2.21	8.82	1.50
Dissolved oxygen (DO)	- -	- -	mg/L	0.23	3.15	0.32	0.18	0.18	0.04	0.29	0.51	0.09	0.26	0.92	0.21	4.35	0.25	2.48	0.19	0.75
Temperature	- -	- -	Deg C	13.5	17.9	13.4	14.6	15.1	13.2	16.4	14.3	15.4	13.0	14.9	17.0	18.9	12.5	16.2	17.7	13.2
Oxidation reduction potential (ORP)	- -	- -	millivolts	-37.9	-28.2	16.2	-12.5	-21.8	-79.9	-71.9	-59.2	-87.8	-638.1	-58.7	-85.5	-125.2	-292.7	26.3	57.4	-58.1
Volatile Organics (via EPA Method SW5030C/8260C)																				
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	<1	<1	<1	<1	<1	**81**	**65**	**64**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-21-140 06/07/22 MW-21-140_060722	MW-21-140 08/30/22 MW-21-140_083022	MW-21-140 11/04/22 MW-21-140_110422	MW-21-141 06/06/22 MW-21-141_060622	MW-21-141 11/04/22 MW-21-141_110422	MW-21-142 06/07/22 MW-21-142_060722	MW-21-142 08/30/22 MW-21-142_083022	MW-21-142 11/02/22 MW-21-142_110222	MW-22-143 04/05/22 MW-22-143_040522	MW-22-143 06/01/22 MW-22-143_060122	MW-22-143 08/30/22 MW-22-143_083022	MW-22-143 11/10/22 MW-22-143_111022	MW-22-144 04/04/22 MW-22-144_040422	MW-22-144 06/01/22 MW-22-144_060122	MW-22-144 08/30/22 MW-22-144_083022	MW-22-144 11/10/22 MW-22-144_111022	MW-22-145 04/04/22 MW-22-145_040422
Semi-Volatile Organics (via EPA Method 522)																				
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																				
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																				
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-21-140 06/07/22 MW-21-140_060722	MW-21-140 08/30/22 MW-21-140_083022	MW-21-140 11/04/22 MW-21-140_110422	MW-21-141 06/06/22 MW-21-141_060622	MW-21-141 11/04/22 MW-21-141_110422	MW-21-142 06/07/22 MW-21-142_060722	MW-21-142 08/30/22 MW-21-142_083022	MW-21-142 11/02/22 MW-21-142_110222	MW-22-143 04/05/22 MW-22-143_040522	MW-22-143 06/01/22 MW-22-143_060122	MW-22-143 08/30/22 MW-22-143_083022	MW-22-143 11/10/22 MW-22-143_111022	MW-22-144 04/04/22 MW-22-144_040422	MW-22-144 06/01/22 MW-22-144_060122	MW-22-144 08/30/22 MW-22-144_083022	MW-22-144 11/10/22 MW-22-144_111022	MW-22-145 04/04/22 MW-22-145_040422
General Chemistry																				
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																				
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<6.9]	<6.9	<7.0	<6.9	<7.1	<7.3	<6.8	<6.8	<7.2
4:2 FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<6.9]	<6.9	<7.0	<6.9	<7.1	<7.3	<6.8	<6.8	<7.2
6:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<6.9]	<6.9	<7.0	<6.9	<7.1	<7.3	<6.8	<6.8	<7.2
8:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<6.9]	<6.9	<7.0	<6.9	<7.1	<7.3	<6.8	<6.8	<7.2
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<6.9]	<6.9	<7.0	<6.9	<7.1	<7.3	<6.8	<6.8	<7.2
ADONA	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<6.9]	<6.9	<7.0	<6.9	<7.1	<7.3	<6.8	<6.8	<7.2
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<6.9]	<6.9	<7.0	<6.9	<7.1	<7.3	<6.8	<6.8	<7.2
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<6.9]	<6.9	<7.0	<6.9	<7.1	<7.3	<6.8	<6.8	<7.2
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<6.9 [<6.9]	<6.9	<7.0	<6.9	<7.1	<7.3	<6.8	<6.8	<7.2
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	**0.81 J [0.91 J]**	**1.0 J**	**1.4 J**	**1.3 J**	**1.9 J**	**2.3 J**	**2.0 J**	**2.0 J**	**3.4 J**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	**11 [11]**	**9.7**	**11**	**10**	**5.3**	**5.4**	**5.5**	**3.8**	**5.2**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	<3.6
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	<3.6
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	<3.6
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	<3.6
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	**3.7 [3.7]**	**5.9**	**6.1**	**6.7**	**3.6**	**4.5**	**5.6**	**3.6**	**5.7**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	**2.3 J**	**2.2 J**	**3.2 J**	**5.6**	**1.9 J**
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	**19 [19]**	**16**	**17**	**15**	**7.7**	**10**	**9.3**	**6.2**	**9.9**
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	<3.6
Perfluorononanoic acid (PFNA)	6	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	<3.6
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	**1.1 J**
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	**3.6**
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	**1.5 J [1.5 J]**	**4.1**	**5.8**	**6.0**	**5.3**	**7.5**	**9.0**	**5.9**	**16**
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	**0.55 J**	<3.6
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	**18 [20]**	**12**	**12**	**12**	**8.8**	**9.9**	**9.3**	**5.1**	**9.3**
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	<3.6
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	<3.6
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	<3.5 [<3.5]	<3.5	<3.5	<3.5	<3.5	<3.6	<3.4	<3.4	<3.6

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-22-145 06/01/22 MW-22-145_060122	MW-22-145 08/30/22 MW-22-145_083022	MW-22-145 11/10/22 MW-22-145_111022	MW-22-146 04/05/22 MW-22-146_040522	MW-22-146 06/01/22 MW-22-146_060122	MW-22-146 08/30/22 MW-22-146_083022	MW-22-146 11/10/22 MW-22-146_111022	MW-22-147 04/04/22 MW-22-147_040422	MW-22-147 06/01/22 MW-22-147_060122	MW-22-147 08/30/22 MW-22-147_083022	MW-22-147 11/10/22 MW-22-147_111022	MW-22-148 04/04/22 MW-22-148_040422	MW-22-148 06/01/22 MW-22-148_060122	MW-22-148 08/30/22 MW-22-148_083022	MW-22-148 11/10/22 MW-22-148_111022	MW-22-149 04/05/22 MW-22-149_040522	MW-22-149 06/01/22 MW-22-149_060122
Field																				
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.08	6.85	7.07	NA	7.25	6.93	7.20	7.14	7.20	6.97	7.14	7.08	7.51	7.05	7.19	7.33	7.09
Conductivity	- -	- -	mS/cm	0.66	1.04	1.28	NA	0.74	0.81	1.10	0.98	1.06	1.42	1.62	0.61	0.76	0.76	0.89	2.29	0.64
Turbidity	- -	- -	NTU	1.03	1.78	7.71	NA	1.24	1.43	9.24	1.16	1.70	1.65	1.40	1.45	1.50	1.84	1.12	2.01	15.00
Dissolved oxygen (DO)	- -	- -	mg/L	1.13	5.38	0.43	NA	5.65	6.48	1.98	0.15	3.41	2.26	1.84	5.23	0.39	2.30	0.85	7.18	5.06
Temperature	- -	- -	Deg C	12.4	16.7	17.1	NA	12.0	16.6	15.7	12.2	11.8	17.4	16.2	17.7	13.2	16.2	15.3	15.0	13.3
Oxidation reduction potential (ORP)	- -	- -	millivolts	-78.9	29.5	-0.6	NA	9.1	79.9	4.2	-26.9	-52.4	3.9	54.8	13.5	-173.1	122.9	44.9	30.6	10.4
Volatile Organics (via EPA Method SW5030C/8260C)																				
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-22-145 06/01/22 MW-22-145_060122	MW-22-145 08/30/22 MW-22-145_083022	MW-22-145 11/10/22 MW-22-145_111022	MW-22-146 04/05/22 MW-22-146_040522	MW-22-146 06/01/22 MW-22-146_060122	MW-22-146 08/30/22 MW-22-146_083022	MW-22-146 11/10/22 MW-22-146_111022	MW-22-147 04/04/22 MW-22-147_040422	MW-22-147 06/01/22 MW-22-147_060122	MW-22-147 08/30/22 MW-22-147_083022	MW-22-147 11/10/22 MW-22-147_111022	MW-22-148 04/04/22 MW-22-148_040422	MW-22-148 06/01/22 MW-22-148_060122	MW-22-148 08/30/22 MW-22-148_083022	MW-22-148 11/10/22 MW-22-148_111022	MW-22-149 04/05/22 MW-22-149_040522	MW-22-149 06/01/22 MW-22-149_060122
Semi-Volatile Organics (via EPA Method 522)																				
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																				
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																				
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-22-145 06/01/22 MW-22-145_060122	MW-22-145 08/30/22 MW-22-145_083022	MW-22-145 11/10/22 MW-22-145_111022	MW-22-146 04/05/22 MW-22-146_040522	MW-22-146 06/01/22 MW-22-146_060122	MW-22-146 08/30/22 MW-22-146_083022	MW-22-146 11/10/22 MW-22-146_111022	MW-22-147 04/04/22 MW-22-147_040422	MW-22-147 06/01/22 MW-22-147_060122	MW-22-147 08/30/22 MW-22-147_083022	MW-22-147 11/10/22 MW-22-147_111022	MW-22-148 04/04/22 MW-22-148_040422	MW-22-148 06/01/22 MW-22-148_060122	MW-22-148 08/30/22 MW-22-148_083022	MW-22-148 11/10/22 MW-22-148_111022	MW-22-149 04/05/22 MW-22-149_040522	MW-22-149 06/01/22 MW-22-149_060122
General Chemistry																				
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																				
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	<6.8 [<6.7]	<7.0	<6.7	<7.0	<7.0	<6.9 [<6.8]	<6.9 [<6.9]	<6.9	<6.8	<6.9	<6.9	<7.0	<7.2	<6.8	<7.1	<6.9	<7.0
4:2 FTS	- -	- -	ng/L	<6.8 [<6.7]	<7.0	<6.7	<7.0	<7.0	<6.9 [<6.8]	<6.9 [<6.9]	<6.9	<6.8	<6.9	<6.9	<7.0	<7.2	<6.8	<7.1	<6.9	<7.0
6:2FTS	- -	- -	ng/L	<6.8 [<6.7]	<7.0	**9.6 B**	<7.0	<7.0	<6.9 [<6.8]	<6.9 [<6.9]	<6.9	<6.8	<6.9	**3.3 BJ**	<7.0	<7.2	<6.8	<7.1	<6.9	<7.0
8:2FTS	- -	- -	ng/L	<6.8 [<6.7]	<7.0	<6.7	<7.0	<7.0	<6.9 [<6.8]	<6.9 [<6.9]	<6.9	<6.8	<6.9	<6.9	<7.0	<7.2	<6.8	<7.1	<6.9	<7.0
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	<6.8 [<6.7]	<7.0	<6.7	<7.0	<7.0	<6.9 [<6.8]	<6.9 [<6.9]	<6.9	<6.8	<6.9	<6.9	<7.0	<7.2	<6.8	<7.1	<6.9	<7.0
ADONA	- -	- -	ng/L	<6.8 [<6.7]	<7.0	<6.7	<7.0	<7.0	<6.9 [<6.8]	<6.9 [<6.9]	<6.9	<6.8	<6.9	<6.9	<7.0	<7.2	<6.8	<7.1	<6.9	<7.0
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	<6.8 [<6.7]	<7.0	<6.7	<7.0	<7.0	<6.9 [<6.8]	<6.9 [<6.9]	<6.9	<6.8	<6.9	<6.9	<7.0	<7.2	<6.8	<7.1	<6.9	<7.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	<6.8 [<6.7]	<7.0	<6.7	<7.0	<7.0	<6.9 [<6.8]	<6.9 [<6.9]	<6.9	<6.8	<6.9	<6.9	<7.0	<7.2	<6.8	<7.1	<6.9	<7.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	<6.8 [<6.7]	<7.0	<6.7	<7.0	<7.0	<6.9 [<6.8]	<6.9 [<6.9]	<6.9	<6.8	<6.9	<6.9	<7.0	<7.2	<6.8	<7.1	<6.9	<7.0
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	**3.0 J [2.8 J]**	**2.5 J**	**2.0 J**	**4.0**	**6.0**	**4.5 [3.7]**	**2.5 J [2.7 J]**	**2.5 J**	**3.2 J**	**3.1 J**	**3.0 J**	**1.6 J**	**1.0 J**	**2.4 J**	**2.0 J**	**1.8 J**	**1.4 J**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	**5.5 [5.6]**	**8.9**	**7.2**	**14**	**16**	**24 [10]**	**5.5 [5.7]**	**3.8**	**6.1**	**6.4**	**6.5**	**3.0 J**	**0.88 J**	**0.57 J**	**1.7 J**	**1.2 J**	**0.91 J**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	<3.4 [<3.4]	<3.5	<3.3	<3.5	<3.5	<3.5 [<3.4]	<3.5 [<3.5]	<3.5	<3.4	<3.4	<3.4	<3.5	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	<3.4 [<3.4]	<3.5	<3.3	<3.5	<3.5	<3.5 [<3.4]	<3.5 [<3.5]	<3.5	<3.4	<3.4	<3.4	<3.5	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	<3.4 [<3.4]	<3.5	<3.3	<3.5	<3.5	<3.5 [<3.4]	<3.5 [<3.5]	<3.5	<3.4	<3.4	<3.4	<3.5	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	<3.4 [<3.4]	<3.5	<3.3	<3.5	<3.5	<3.5 [<3.4]	<3.5 [<3.5]	<3.5	<3.4	<3.4	<3.4	<3.5	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	**5.8 [6]**	**15**	**9.5**	**0.59 J**	**1.0 J**	**17 [<3.4]**	<3.5 [<3.5]	**0.69 J**	**1.4 J**	**1.1 J**	**1.1 J**	**0.39 J**	<3.6	<3.4	<3.6	<3.5	**0.41 J**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	**1.9 J [2.1 J]**	**2.4 J**	**3.5**	**1.1 J**	**1.2 J**	**<3.5 [0.78 J]**	**0.57 J [0.61 J]**	**1.3 J**	**1.4 J**	**1.4 J**	**1.8 J**	<3.5	<3.6	<3.4	<3.6	**0.88 J**	**0.91 J**
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	**9.7 [8.7]**	**23**	**15**	**6.7**	**5.8**	**57 [1.1 J]**	<3.5 [<3.5]	**1.1 J**	**2.7 J**	**2.0 J**	**2.0 J**	**1.1 J**	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	<3.4 [<3.4]	<3.5	<3.3	<3.5	<3.5	<3.5 [<3.4]	<3.5 [<3.5]	<3.5	<3.4	<3.4	<3.4	<3.5	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluorononanoic acid (PFNA)	6	- -	ng/L	**0.75 J [0.79 J]**	<3.5	<3.3	<3.5	<3.5	<3.5 [<3.4]	<3.5 [<3.5]	<3.5	<3.4	<3.4	<3.4	<3.5	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	<3.4 [<3.4]	<3.5	<3.3	<3.5	<3.5	**<3.5 [0.52 J]**	<3.5 [<3.5]	**0.67 J**	<3.4	<3.4	<3.4	**2.0 J**	<3.6	**1.3 J**	<3.6	**0.53 J**	<3.5
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	**6.8 [6.9]**	<3.5	<3.3	**1.7 J**	**1.9 J**	<3.5 [<3.4]	**1.7 J [1.8 J]**	**2.0 J**	**2.2 J**	**2.1 J**	**2.6 J**	<3.5	<3.6	<3.4	<3.6	**2.1 J**	<3.5
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	**14 [14]**	**23**	**17**	**6.5**	**5.8**	**2.9 J [2.4 J]**	**1.4 J [1.3 J]**	**2.8 J**	**3.7**	**4.6**	**4.6**	**1.1 J**	<3.6	<3.4	<3.6	**0.72 J**	**1.1 J**
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	**0.54 J [0.51 J]**	**0.76 J**	**0.73 J**	<3.5	<3.5	<3.5 [<3.4]	<3.5 [<3.5]	<3.5	<3.4	<3.4	<3.4	<3.5	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	**9.5 [8.8]**	**17**	**13**	**5.4**	**4.9**	**33 [0.97 J]**	<3.5 [<3.5]	**1.2 J**	**2.9 J**	**2.0 J**	**2.3 J**	**0.92 J**	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	<3.4 [<3.4]	<3.5	<3.3	<3.5	<3.5	<3.5 [<3.4]	<3.5 [<3.5]	<3.5	<3.4	<3.4	<3.4	<3.5	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	<3.4 [<3.4]	<3.5	<3.3	<3.5	<3.5	<3.5 [<3.4]	<3.5 [<3.5]	<3.5	<3.4	<3.4	<3.4	<3.5	<3.6	<3.4	<3.6	<3.5	<3.5
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	<3.4 [<3.4]	<3.5	<3.3	<3.5	<3.5	<3.5 [<3.4]	<3.5 [<3.5]	<3.5	<3.4	<3.4	<3.4	<3.5	<3.6	<3.4	<3.6	<3.5	<3.5

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-22-149 08/31/22 MW-22-149_083122	MW-22-149 11/10/22 MW-22-149_111022	MW-22-150 04/05/22 MW-22-150_040522	MW-22-150 06/01/22 MW-22-150_060122	MW-22-150 08/31/22 MW-22-150_083122	MW-22-150 11/10/22 MW-22-150_111022	MW-22-151 04/05/22 MW-22-151_040522	MW-22-151 06/01/22 MW-22-151_060122	MW-22-151 08/31/22 MW-22-151_083122	MW-22-151 11/10/22 MW-22-151_111022	MW-22-152 04/05/22 MW-22-152_040522	MW-22-152 06/01/22 MW-22-152_060122	MW-22-152 08/31/22 MW-22-152_083122	MW-22-152 11/10/22 MW-22-152_111022	MW-22-153 04/06/22 MW-22-153_040622	MW-22-153 06/04/22 MW-22-153_060422	MW-22-153 08/30/22 MW-22-153_083022
Field																				
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.06	7.20	6.90	7.19	7.16	7.41	7.65	6.79	6.76	6.88	7.01	6.88	6.84	7.00	8.38	6.91	6.95
Conductivity	- -	- -	mS/cm	0.55	0.60	3.20	5.36	4.30	4.85	5.00	2.11	2.18	2.48	3.01	0.87	0.88	1.00	0.67	1.54	1.44
Turbidity	- -	- -	NTU	2.01	0.91	84.80	18.00	1.56	1.08	289.00	15.00	1.92	0.96	78.40	15.00	1.34	1.49	0.02	1.21	1.79
Dissolved oxygen (DO)	- -	- -	mg/L	5.91	4.08	5.53	0.63	1.22	0.23	8.07	0.12	1.52	0.13	0.02	0.16	0.95	0.09	1.27	0.10	0.26
Temperature	- -	- -	Deg C	18.5	17.0	16.4	13.0	16.6	16.2	21.0	13.4	18.4	17.3	13.5	12.1	17.3	16.1	15.7	13.8	15.8
Oxidation reduction potential (ORP)	- -	- -	millivolts	223.8	-5.1	56.4	-6.4	-51.9	-1.7	168.6	-3.0	-36.5	-24.4	120.1	0.5	-11.3	26.3	64.8	-58.2	-66.6
Volatile Organics (via EPA Method SW5030C/8260C)																				
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2**	**3**	**4 [5]**
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**92**	**91**	**48 [53]**
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<25	<25	<25 [<25]
2-Hexanone	1,000	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	<50 [<50]
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	<50 [<50]
Acetone	730	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	<50 [<50]
Acrylonitrile	2.6	2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	<2 [<2]
Benzene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Bromobenzene	18	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Bromodichloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Bromoform	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
Carbon disulfide	800	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
Carbon tetrachloride	5.0	38	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Chlorobromomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**10**	**10**	**6 [6]**
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
Dibromochloromethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
Dibromomethane	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
Ethyl ether	10	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	<10	<10 [<10]
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
Iodomethane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
Methylene chloride	5.0	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	<5 [<5]
N-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
N-Propylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Styrene	100	80	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
tert-Butylbenzene	80	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Tetrachloroethene	5.0	60	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Tetrahydrofuran	95	11,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<90	<90	<90 [<90]
Toluene	790	270	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Trichloroethene	5.0	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
Vinyl chloride	2.0	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1**	**1**	<1 [<1]
o-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1 [<1]
m&p-Xylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	<2 [<2]
Xylenes (total)	280	49	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	<2 [<2]

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-22-149 08/31/22 MW-22-149_083122	MW-22-149 11/10/22 MW-22-149_111022	MW-22-150 04/05/22 MW-22-150_040522	MW-22-150 06/01/22 MW-22-150_060122	MW-22-150 08/31/22 MW-22-150_083122	MW-22-150 11/10/22 MW-22-150_111022	MW-22-151 04/05/22 MW-22-151_040522	MW-22-151 06/01/22 MW-22-151_060122	MW-22-151 08/31/22 MW-22-151_083122	MW-22-151 11/10/22 MW-22-151_111022	MW-22-152 04/05/22 MW-22-152_040522	MW-22-152 06/01/22 MW-22-152_060122	MW-22-152 08/31/22 MW-22-152_083122	MW-22-152 11/10/22 MW-22-152_111022	MW-22-153 04/06/22 MW-22-153_040622	MW-22-153 06/04/22 MW-22-153_060422	MW-22-153 08/30/22 MW-22-153_083022
Semi-Volatile Organics (via EPA Method 522)																				
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																				
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																				
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-22-149 08/31/22 MW-22-149_083122	MW-22-149 11/10/22 MW-22-149_111022	MW-22-150 04/05/22 MW-22-150_040522	MW-22-150 06/01/22 MW-22-150_060122	MW-22-150 08/31/22 MW-22-150_083122	MW-22-150 11/10/22 MW-22-150_111022	MW-22-151 04/05/22 MW-22-151_040522	MW-22-151 06/01/22 MW-22-151_060122	MW-22-151 08/31/22 MW-22-151_083122	MW-22-151 11/10/22 MW-22-151_111022	MW-22-152 04/05/22 MW-22-152_040522	MW-22-152 06/01/22 MW-22-152_060122	MW-22-152 08/31/22 MW-22-152_083122	MW-22-152 11/10/22 MW-22-152_111022	MW-22-153 04/06/22 MW-22-153_040622	MW-22-153 06/04/22 MW-22-153_060422	MW-22-153 08/30/22 MW-22-153_083022
General Chemistry																				
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																				
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	<7.0	<6.9	<7.1	<6.8	<7.1	<6.8	<7.2	<6.8	<6.9	<7.0	<6.8	<6.8	<7.0	<6.9	NA	NA	NA
4:2 FTS	- -	- -	ng/L	<7.0	<6.9	<7.1	<6.8	<7.1	<6.8	<7.2	<6.8	<6.9	<7.0	<6.8	<6.8	<7.0	<6.9	NA	NA	NA
6:2FTS	- -	- -	ng/L	<7.0	<6.9	<7.1	<6.8	<7.1	<6.8	<7.2	**5.3 J**	<6.9	<7.0	<6.8	<6.8	<7.0	<6.9	NA	NA	NA
8:2FTS	- -	- -	ng/L	<7.0	<6.9	<7.1	<6.8	<7.1	<6.8	<7.2	<6.8	<6.9	<7.0	<6.8	<6.8	<7.0	<6.9	NA	NA	NA
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	<7.0	<6.9	<7.1	<6.8	<7.1	<6.8	<7.2	<6.8	<6.9	<7.0	<6.8	<6.8	<7.0	<6.9	NA	NA	NA
ADONA	- -	- -	ng/L	<7.0	<6.9	<7.1	<6.8	<7.1	<6.8	<7.2	<6.8	<6.9	<7.0	<6.8	<6.8	<7.0	<6.9	NA	NA	NA
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	<7.0	<6.9	<7.1	<6.8	<7.1	<6.8	<7.2	<6.8	<6.9	<7.0	<6.8	<6.8	<7.0	<6.9	NA	NA	NA
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	<7.0	<6.9	<7.1	<6.8	<7.1	<6.8	<7.2	<6.8	<6.9	<7.0	<6.8	<6.8	<7.0	<6.9	NA	NA	NA
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	<7.0	<6.9	<7.1	<6.8	<7.1	<6.8	<7.2	<6.8	<6.9	<7.0	<6.8	<6.8	<7.0	<6.9	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	**1.7 J**	**1.3 J**	<3.5	<3.4	<3.6	<3.4	**7.9**	**8.4**	**7.4**	**7.2**	**1.8 J**	**2.1 J**	**7.4**	**9.1**	NA	NA	NA
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	**0.99 J**	**0.62 J**	**3.1 J**	**2.9 J**	**2.7 J**	**2.7 J**	**11**	**10**	**12**	**11**	**3.7**	**4.0**	**5.6**	**5.6**	NA	NA	NA
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	<3.5	<3.5	<3.5	<3.4	<3.6	<3.4	<3.6	<3.4	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	NA	NA	NA
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	<3.5	<3.5	<3.5	<3.4	<3.6	<3.4	<3.6	<3.4	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	NA	NA	NA
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	<3.5	<3.5	<3.5	<3.4	<3.6	<3.4	<3.6	<3.4	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	NA	NA	NA
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	<3.5	**2.3 J**	<3.5	<3.4	<3.6	<3.4	<3.6	<3.4	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	NA	NA	NA
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	<3.5	<3.5	<3.5	<3.4	<3.6	<3.4	**3.5 J**	**2.7 J**	**3.3 J**	**3.7**	**1.0 J**	**0.99 J**	**1.5 J**	**1.5 J**	NA	NA	NA
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	**0.95 J**	**0.79 J**	<3.5	<3.4	<3.6	<3.4	**1.8 J**	<3.4	**1.2 J**	**0.98 J**	**1.1 J**	**1.8 J**	**4.1**	**3.5**	NA	NA	NA
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	<3.5	<3.5	**1.7 J**	**1.2 J**	**1.7 J**	<3.4	**6.0**	**6.2**	**10**	**9.1**	**2.4 J**	**2.6 J**	**3.0 J**	**3.6**	NA	NA	NA
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	<3.5	<3.5	<3.5	<3.4	<3.6	<3.4	<3.6	<3.4	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	NA	NA	NA
Perfluorononanoic acid (PFNA)	6	- -	ng/L	**0.52 J**	**0.46 J**	<3.5	<3.4	<3.6	<3.4	**0.59 J**	**0.39 J**	**0.55 J**	**0.42 J**	<3.4	<3.4	<3.5	<3.5	NA	NA	NA
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	**1.2 J**	<3.5	**0.57 J**	**1.6 J**	**1.2 J**	<3.4	<3.6	<3.4	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	NA	NA	NA
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	**2.7 J**	**2.2 J**	<3.5	<3.4	<3.6	<3.4	**2.0 J**	**3.4**	**4.2**	**4.3**	<3.4	<3.4	<3.5	**2.1 J**	NA	NA	NA
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	**1.8 J**	**0.93 J**	<3.5	<3.4	<3.6	<3.4	**9.4**	**7.7**	**8.1**	**7.8**	**2.4 J**	**2.5 J**	**4.6**	**5.5**	NA	NA	NA
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	<3.5	<3.5	<3.5	<3.4	<3.6	<3.4	<3.6	<3.4	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	NA	NA	NA
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	<3.5	<3.5	**2.1 J**	**1.7 J**	**1.6 J**	**2.8 J**	**13**	**14**	**19**	**19**	**2.7 J**	**3.0 J**	**4.6**	**5.4**	NA	NA	NA
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	<3.5	<3.5	<3.5	<3.4	<3.6	<3.4	<3.6	<3.4	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	NA	NA	NA
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	<3.5	<3.5	<3.5	<3.4	<3.6	<3.4	<3.6	<3.4	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	NA	NA	NA
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	<3.5	<3.5	<3.5	<3.4	<3.6	<3.4	<3.6	<3.4	<3.4	<3.5	<3.4	<3.4	<3.5	<3.5	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-22-153 09/12/22 MW-22-153_091222	MW-22-153 10/14/22 MW-22-153_101422	MW-22-153 11/02/22 MW-22-153_110222	MW-22-154 09/12/22 MW-22-154_091222	MW-22-154 10/14/22 MW-22-154_101422	MW-22-155 09/12/22 MW-22-155_091222	MW-22-155 10/14/22 MW-22-155_101422	MW-22-156 09/12/22 MW-22-156_091222	MW-22-156 10/14/22 MW-22-156_101422	MW-22-157 09/12/22 MW-22-157_091222	MW-22-157 10/14/22 MW-22-157_101422	MW-22-158 12/15/22 MW-22-158_121522	MW-22-160 12/13/22 MW-22-160_121322	MW-23 06/08/22 MW-23_060822	MW-23 11/08/22 MW-23_110822	MW-91-2R 06/09/22 MW-91-2R_060922	MW-91-2R 11/08/22 MW-91-2R_110822	MW-91-5 06/08/22 MW-91-5_060822
Field																					
pH	6.5 to 8.5	6.5 to 9.0	s.u.	6.97	7.13	7.14	6.89	6.94	7.03	7.17	6.94	7.18	7.01	7.14	7.15	6.95	8.05	7.60	7.14	7.17	6.85
Conductivity	- -	- -	mS/cm	1.67	1.49	1.84	5.77	5.47	1.70	1.49	1.41	1.32	1.46	1.36	3.29	1.13	1.00	1.18	1.60	1.84	0.20
Turbidity	- -	- -	NTU	1.43	11.01	0.02	1.41	2.30	3.78	16.85	3.21	12.03	1.51	20.01	1.76	1.69	1.30	1.21	4.80	5.83	12.80
Dissolved oxygen (DO)	- -	- -	mg/L	0.05	0.12	0.15	2.26	0.70	0.05	0.06	3.17	0.11	0.23	0.09	2.58	0.31	0.09	0.47	4.35	0.17	1.20
Temperature	- -	- -	Deg C	15.1	14.3	16.40	16.20	15.91	13.9	13.6	14.8	15.1	16.6	15.4	13.50	12.90	14.10	13.30	18.90	13.60	17.50
Oxidation reduction potential (ORP)	- -	- -	millivolts	-76.1	-66.3	-61.40	62.20	62.10	-106.9	-85.0	-69.8	-69.2	-95.2	-87.8	206.90	54.80	4.10	-40.40	-125.20	-87.90	42.10
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	NA	NA	**6**	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	NA	<5	<5	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	<5	<5	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	**55**	**52**	NA	NA	<1	**410 Y**	**400 Y**	**76**	**81**	**3**	**3**	NA	NA	NA	NA	**6**	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	<25	<25	<20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	NA	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	NA	<50	<50	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	<50	<50	<20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	NA	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	NA	<5	<5	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	NA	**6**	<5	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	NA	<5	<5	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	<1	**8**	**5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	NA	<5	<5	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	NA	<5	<5	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	NA	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	<5	<5	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	<5	<5	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	NA	<90	<90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	NA	<1	**2**	**1**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	NA	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	NA	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-22-153 09/12/22 MW-22-153_091222	MW-22-153 10/14/22 MW-22-153_101422	MW-22-153 11/02/22 MW-22-153_110222	MW-22-154 09/12/22 MW-22-154_091222	MW-22-154 10/14/22 MW-22-154_101422	MW-22-155 09/12/22 MW-22-155_091222	MW-22-155 10/14/22 MW-22-155_101422	MW-22-156 09/12/22 MW-22-156_091222	MW-22-156 10/14/22 MW-22-156_101422	MW-22-157 09/12/22 MW-22-157_091222	MW-22-157 10/14/22 MW-22-157_101422	MW-22-158 12/15/22 MW-22-158_121522	MW-22-160 12/13/22 MW-22-160_121322	MW-23 06/08/22 MW-23_060822	MW-23 11/08/22 MW-23_110822	MW-91-2R 06/09/22 MW-91-2R_060922	MW-91-2R 11/08/22 MW-91-2R_110822	MW-91-5 06/08/22 MW-91-5_060822
Semi-Volatile Organics (via EPA Method 522)																					
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.20
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																					
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.010**	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005	NA	NA
Inorganics-Filtered (via EPA Method 6020)																					
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-22-153 09/12/22 MW-22-153_091222	MW-22-153 10/14/22 MW-22-153_101422	MW-22-153 11/02/22 MW-22-153_110222	MW-22-154 09/12/22 MW-22-154_091222	MW-22-154 10/14/22 MW-22-154_101422	MW-22-155 09/12/22 MW-22-155_091222	MW-22-155 10/14/22 MW-22-155_101422	MW-22-156 09/12/22 MW-22-156_091222	MW-22-156 10/14/22 MW-22-156_101422	MW-22-157 09/12/22 MW-22-157_091222	MW-22-157 10/14/22 MW-22-157_101422	MW-22-158 12/15/22 MW-22-158_121522	MW-22-160 12/13/22 MW-22-160_121322	MW-23 06/08/22 MW-23_060822	MW-23 11/08/22 MW-23_110822	MW-91-2R 06/09/22 MW-91-2R_060922	MW-91-2R 11/08/22 MW-91-2R_110822	MW-91-5 06/08/22 MW-91-5_060822
General Chemistry																					
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																					
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.58	< 0.57 [< 0.58]	<7.2	<9.6	<6.9	<7.8	NA
4:2 FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.77	< 0.75 [< 0.77]	<7.2	<9.6	<6.9	<7.8	NA
6:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.8	< 1.7 [< 1.8]	<7.2	<9.6	<6.9	<7.8	NA
8:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.4	< 1.4 [< 1.4]	<7.2	<9.6	<6.9	<7.8	NA
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.42	< 0.41 [< 0.42]	<7.2	<9.6	<6.9	<7.8	NA
ADONA	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.42	< 0.41 [< 0.43]	<7.2	<9.6	<6.9	<7.8	NA
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.8	< 1.8 [< 1.8]	<7.2	<9.6	<6.9	<7.8	NA
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.66	< 0.64 [< 0.66]	<7.2	<9.6	<6.9	<7.8	NA
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.82	< 0.80 [< 0.82]	<7.2	<9.6	<6.9	<7.8	NA
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.4 J**	< 0.35 [< 0.36]	<3.6	<4.8	<3.5	**1.4 J**	NA
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**7.1 B**	**4.9 B [3.1 BJ]**	**1.7 J**	**2.5 J**	**7.3**	**9.3**	NA
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.68	< 0.67 [< 0.68]	<3.6	<4.8	<3.5	<3.9	NA
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.46	< 0.45 [< 0.46]	<3.6	<4.8	<3.5	<3.9	NA
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.41	< 0.40 [< 0.42]	<3.6	<4.8	<3.5	<3.9	NA
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.44	< 0.43 [< 0.44]	<3.6	<4.8	<3.5	<3.9	NA
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1.6 J**	< 0.38 [< 0.39]	**0.44 J**	<4.8	<3.5	**1.7 J**	NA
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.48	< 0.47 [< 0.49]	<3.6	<4.8	<3.5	**2.5 J**	NA
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**3.9**	< 0.59 [< 0.61]	<3.6	<4.8	<3.5	**4.2**	NA
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.62	< 0.61 [< 0.63]	<3.6	<4.8	<3.5	<3.9	NA
Perfluorononanoic acid (PFNA)	6	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.41	< 0.40 [< 0.41]	<3.6	<4.8	<3.5	<3.9	NA
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.54	< 0.52 [< 0.54]	<3.6	<4.8	<3.5	<3.9	NA
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.8	< 1.7 [< 1.8]	**3.1 J**	**3.0 J**	<3.5	<3.9	NA
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.73	< 0.71 [< 0.73]	**0.99 J**	<4.8	<3.5	**2.1 J**	NA
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.52	< 0.51 [< 0.52]	<3.6	<4.8	<3.5	<3.9	NA
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**3.2 J**	**0.54 J [0.49 J]**	**0.68 J**	<4.8	<3.5	**2.6 J**	NA
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.53	< 0.51 [< 0.53]	<3.6	<4.8	<3.5	<3.9	NA
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.46	< 0.45 [< 0.47]	<3.6	<4.8	<3.5	<3.9	NA
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.55	< 0.54 [< 0.55]	<3.6	<4.8	<3.5	<3.9	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-91-6 06/07/22 MW-91-6_060722	MWBP-10-UST5-6 06/03/22 MWBP-10-UST5-6_060322	MWBP-11-UST1-4 06/03/22 MWBP-11-UST1-4_060322	MWBP-12-UST1-4 06/03/22 MWBP-12-UST1-4_060322	P2-MW-04 06/04/22 P2-MW-04_060422	P6-SB-07 03/02/22 P6-SB-07_030222	P6-SB-07 06/03/22 P6-SB-07_060322	P6-SB-07 08/29/22 P6-SB-07_082922	P6-SB-07 11/09/22 P6-SB-07_110922	PW-14-01 06/07/22 PW-14-01_060722	PW-14-01 11/03/22 PW-14-01_110322	PW-14-02 03/01/22 PW-14-02_030122	PW-14-02 06/01/22 PW-14-02_060122	PW-14-02 11/03/22 PW-14-02_110322	PW-14-03 03/02/22 PW-14-03_030222	PW-14-03 06/06/22 PW-14-03_060622	PW-14-03 11/05/22 PW-14-03_110522	TW-14-02 03/02/22 TW-14-02_030222
Field																						
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.56	7.08	8.90	7.65	7.14	7.46	7.18	7.08	7.64	6.99	7.46	7.84	7.23	7.41	7.20	7.09	6.90	7.67
Conductivity	- -	- -	mS/cm	1.57	2.60	0.76	0.34	0.98	0.63	0.66	0.61	0.59	3.27	3.88	1.53	2.37	2.28	2.68	3.46	3.20	3.29
Turbidity	- -	- -	NTU	8.70	1.50	1.22	2.51	1.16	1.82	1.45	1.45	9.10	22.30	3.53	0.02	9.23	2.16	1.11	0.02	84.80	270.00
Dissolved oxygen (DO)	- -	- -	mg/L	0.34	0.75	0.10	0.01	0.15	1.03	0.10	5.23	2.31	5.76	8.90	10.81	5.46	8.20	10.37	12.18	5.53	9.44
Temperature	- -	- -	Deg C	18.70	13.20	15.10	14.00	12.20	8.70	12.90	17.70	15.40	14.80	15.30	7.10	22.50	15.00	10.20	21.10	16.40	6.30
Oxidation reduction potential (ORP)	- -	- -	millivolts	-177.70	-58.10	30.30	61.70	-26.90	-97.00	20.90	13.50	81.60	-9.20	-10.20	209.80	7.10	32.90	190.60	66.30	56.40	160.90
Volatile Organics (via EPA Method SW5030C/8260C)																						
1,1-Dichloroethane	880	740	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	**25 [25]**	NA	NA	NA	NA	**1**	<1	**11 [12]**	**26**	**9**	**3 [2]**	**3 [3]**	**8 [8]**	<1
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	<25	<25	<25	NA	NA	NA	NA	NA	NA	NA	NA	<25	<25	NA	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	NA	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	NA	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	<50	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	NA	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	NA	NA	NA	NA
Benzene	5.0	200	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Bromobenzene	18	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Bromoform	80	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Carbon disulfide	800	- -	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Chlorobenzene	100	25	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Chloroethane	430	1,100	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Dibromomethane	80	- -	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Ethyl ether	10	- -	ug/L	NA	<10	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	<10	<10	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Iodomethane	- -	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	<5	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	NA	<1	<1	**1**	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	NA	<90	<90	<90	NA	NA	NA	NA	NA	NA	NA	NA	<90	<90	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Trichloroethene	5.0	200	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
o-Xylene	- -	- -	ug/L	NA	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	NA	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	NA	NA	NA	NA
Xylenes (total)	280	49	ug/L	NA	<2	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: / Date Collected: / Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-91-6 06/07/22 MW-91-6_060722	MWBP-10-UST5-6 06/03/22 MWBP-10-UST5-6_060322	MWBP-11-UST1-4 06/03/22 MWBP-11-UST1-4_060322	MWBP-12-UST1-4 06/03/22 MWBP-12-UST1-4_060322	P2-MW-04 06/04/22 P2-MW-04_060422	P6-SB-07 03/02/22 P6-SB-07_030222	P6-SB-07 06/03/22 P6-SB-07_060322	P6-SB-07 08/29/22 P6-SB-07_082922	P6-SB-07 11/09/22 P6-SB-07_110922	PW-14-01 06/07/22 PW-14-01_060722	PW-14-01 11/03/22 PW-14-01_110322	PW-14-02 03/01/22 PW-14-02_030122	PW-14-02 06/01/22 PW-14-02_060122	PW-14-02 11/03/22 PW-14-02_110322	PW-14-03 03/02/22 PW-14-03_030222	PW-14-03 06/06/22 PW-14-03_060622	PW-14-03 11/05/22 PW-14-03_110522	TW-14-02 03/02/22 TW-14-02_030222
Semi-Volatile Organics (via EPA Method 522)																						
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	**0.41**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																						
Arsenic	0.01	0.01	mg/L	NA	**0.010**	**0.006**	**0.003**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	<0.003	<0.003	<0.003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																						
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	MW-91-6 06/07/22 MW-91-6_060722	MWBP-10-UST5-6 06/03/22 MWBP-10-UST5-6_060322	MWBP-11-UST1-4 06/03/22 MWBP-11-UST1-4_060322	MWBP-12-UST1-4 06/03/22 MWBP-12-UST1-4_060322	P2-MW-04 06/04/22 P2-MW-04_060422	P6-SB-07 03/02/22 P6-SB-07_030222	P6-SB-07 06/03/22 P6-SB-07_060322	P6-SB-07 08/29/22 P6-SB-07_082922	P6-SB-07 11/09/22 P6-SB-07_110922	PW-14-01 06/07/22 PW-14-01_060722	PW-14-01 11/03/22 PW-14-01_110322	PW-14-02 03/01/22 PW-14-02_030122	PW-14-02 06/01/22 PW-14-02_060122	PW-14-02 11/03/22 PW-14-02_110322	PW-14-03 03/02/22 PW-14-03_030222	PW-14-03 06/06/22 PW-14-03_060622	PW-14-03 11/05/22 PW-14-03_110522	TW-14-02 03/02/22 TW-14-02_030222
General Chemistry																						
Nitrate (as N)	10	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.5	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.03**	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.4**	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																						
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	NA	NA	NA	NA	NA	<6.8 [<7]	<6.9	<6.9	<7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
4:2 FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	<6.8 [<7]	<6.9	<6.9	<7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
6:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	<6.8 [<7]	<6.9	<6.9	<7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
8:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	<6.8 [<7]	<6.9	<6.9	<7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	NA	NA	NA	NA	NA	<6.8 [<7]	<6.9	<6.9	<7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
ADONA	- -	- -	ng/L	NA	NA	NA	NA	NA	<6.8 [<7]	<6.9	<6.9	<7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	NA	NA	NA	NA	NA	<6.8 [<7]	<6.9	<6.9	<7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<6.8 [<7]	<6.9	<6.9	<7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<6.8 [<7]	<6.9	<6.9	<7.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	NA	NA	NA	NA	NA	**2.9 J [3.1 J]**	**3.4 J**	**4.7**	**5.0**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	NA	NA	NA	NA	NA	**190 [180]**	**220**	**250**	**350**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.4 [<3.5]	<3.5	<3.5	<3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	NA	NA	NA	NA	NA	**20 [19]**	**24**	**33**	**46**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.4 [<3.5]	<3.5	<3.5	<3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	NA	NA	NA	NA	NA	**<3.4 [0.43 J]**	**0.57 J**	**0.46 J**	**0.98 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	NA	NA	NA	NA	NA	**480 [450]**	**530**	**680**	**1,000**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	NA	NA	NA	NA	NA	**2.6 J [2.4 J]**	**2.5 J**	**3.8**	**5.3**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	NA	NA	NA	NA	NA	**640 [630]**	**740**	**780**	**1,300**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.4 [<3.5]	<3.5	<3.5	<3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorononanoic acid (PFNA)	6	- -	ng/L	NA	NA	NA	NA	NA	**78 [74]**	**82**	**120**	**170**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.4 [<3.5]	<3.5	<3.5	**0.72 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	NA	NA	NA	NA	NA	**38 [34]**	**42**	**48**	**91**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	NA	NA	NA	NA	NA	**640 [610]**	**720**	**930**	**1,500**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	NA	NA	NA	NA	NA	**0.71 J [1.1 J]**	**1.0 J**	**0.90 J**	**2.0 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	**730 [710]**	**790**	**700**	**1,400**	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.4 [<3.5]	<3.5	<3.5	<3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.4 [<3.5]	<3.5	<3.5	<3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	NA	NA	NA	NA	NA	<3.4 [<3.5]	<3.5	<3.5	<3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	TW-14-02 06/01/22 TW-14-02_060122	TW-14-02 11/03/22 TW-14-02_110322	TW-14-06 03/02/22 TW-14-06_030222	TW-14-06 06/06/22 TW-14-06_060622	TW-14-06 11/07/22 TW-14-06_110722	TW-15-11 03/02/22 TW-15-11_030222	TW-15-11 06/06/22 TW-15-11_060622	TW-15-11 11/05/22 TW-15-11_110522	TW-15-12 03/02/22 TW-15-12_030222	TW-15-12 06/01/22 TW-15-12_060122	TW-15-12 11/02/22 TW-15-12_110222	TWP-90-03 11/08/22 TWP-90-03_110822	TWP-90-04 11/08/22 TWP-90-04_110822	UNK-10 06/08/22 UNK-10_060822	UNK-11 06/08/22 UNK-11_060822	UNK-15 06/09/22 UNK-15_060922	UNK-15 08/29/22 UNK-15_082922	UNK-15 11/09/22 UNK-15_110922
Field																					
pH	6.5 to 8.5	6.5 to 9.0	s.u.	7.66	7.71	7.41	7.55	6.96	7.01	7.16	6.76	7.60	7.63	7.65	NR	NR	6.92	8.52	7.65	7.27	8.38
Conductivity	- -	- -	mS/cm	4.99	4.87	2.55	2.99	3.33	3.01	3.20	3.47	1.69	2.32	2.42	NR	NR	0.40	0.32	0.68	0.70	0.67
Turbidity	- -	- -	NTU	273.00	239.00	1000.00	NR	313.00	78.40	248.00	30.30	NR	819.00	48.40	NR	NR	15.00	8.00	10.00	9.27	0.02
Dissolved oxygen (DO)	- -	- -	mg/L	8.07	13.03	12.34	15.09	9.53	0.02	13.66	9.82	11.92	7.33	10.14	NR	NR	0.01	1.01	0.02	0.22	1.27
Temperature	- -	- -	Deg C	21.20	15.00	10.60	16.60	12.70	13.50	17.60	15.40	7.30	22.40	13.80	NR	NR	14.8	14.5	14.4	23.4	15.70
Oxidation reduction potential (ORP)	- -	- -	millivolts	165.40	206.50	315.80	64.10	149.70	120.10	74.10	35.10	176.90	101.90	150.90	NR	NR	-14.0	22.9	5.7	17.2	64.80
Volatile Organics (via EPA Method SW5030C/8260C)																					
1,1-Dichloroethane	880	740	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,1-Dichloroethene	7.0	130	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,1,1-Trichloroethane	200	89	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,1,1,2-Tetrachloroethane	77	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,1,2-Trichloroethane	5.0	330	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	0.2	- -	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,2-Dichloroethane	5.0	360	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,2-Dichloropropane	5.0	230	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,2,3-Trichlorobenzene	- -	- -	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
1,2,3-Trichloropropane	42	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,2,3-Trimethylbenzene	- -	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,3,5-Trimethylbenzene	72	45	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	<1	<1	**7**	**2**	**10**	**5**	**5**	**22**	**4**	**9**	**2**	NA	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	<25	<25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<25	<25	NA	NA	NA
2-Hexanone	1,000	- -	ug/L	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
2-Phenylbutane (sec-Butylbenzene)	80	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	- -	ug/L	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA
Acetone	730	1,700	ug/L	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<50	<50	NA	NA	NA
Acrylonitrile	2.6	2	ug/L	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	NA	NA	NA
Benzene	5.0	200	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	**7**	NA	NA	NA
Bromobenzene	18	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Bromodichloromethane	80	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Bromoform	80	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Bromomethane (Methyl bromide)	10	5.0	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Carbon disulfide	800	- -	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Carbon tetrachloride	5.0	38	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Chlorobenzene	100	25	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Chlorobromomethane	- -	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Chloroethane	430	1,100	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Chloroform (Trichloromethane)	80	350	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Chloromethane (Methyl chloride)	260	- -	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
cis-1,3-Dichloropropene	- -	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Cymene (p-Isopropyltoluene)	- -	- -	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Dibromochloromethane	80	- -	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Dibromomethane	80	- -	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	1,700	- -	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Ethyl ether	10	- -	ug/L	<10	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10	<10	NA	NA	NA
Ethylbenzene	74	18	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Iodomethane	- -	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Isopropyl benzene	800	28	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Methylene chloride	5.0	1,500	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
Naphthalene	520	11	ug/L	<5	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5	<5	NA	NA	NA
N-Butylbenzene	80	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
N-Propylbenzene	80	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Styrene	100	80	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
tert-Butylbenzene	80	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Tetrachloroethene	5.0	60	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Tetrahydrofuran	95	11,000	ug/L	<90	<90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<90	<90	NA	NA	NA
Toluene	790	270	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
trans-1,3-Dichloropropene	- -	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
trans-1,4-Dichloro-2-butene	- -	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Trichloroethene	5.0	200	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
Vinyl chloride	2.0	13	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
o-Xylene	- -	- -	ug/L	<1	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	NA	NA	NA
m&p-Xylene	- -	- -	ug/L	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	NA	NA	NA
Xylenes (total)	280	49	ug/L	<2	<2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	TW-14-02 06/01/22 TW-14-02_060122	TW-14-02 11/03/22 TW-14-02_110322	TW-14-06 03/02/22 TW-14-06_030222	TW-14-06 06/06/22 TW-14-06_060622	TW-14-06 11/07/22 TW-14-06_110722	TW-15-11 03/02/22 TW-15-11_030222	TW-15-11 06/06/22 TW-15-11_060622	TW-15-11 11/05/22 TW-15-11_110522	TW-15-12 03/02/22 TW-15-12_030222	TW-15-12 06/01/22 TW-15-12_060122	TW-15-12 11/02/22 TW-15-12_110222	TWP-90-03 11/08/22 TWP-90-03_110822	TWP-90-04 11/08/22 TWP-90-04_110822	UNK-10 06/08/22 UNK-10_060822	UNK-11 06/08/22 UNK-11_060822	UNK-15 06/09/22 UNK-15_060922	UNK-15 08/29/22 UNK-15_082922	UNK-15 11/09/22 UNK-15_110922
Semi-Volatile Organics (via EPA Method 522)																					
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Diphenylhydrazine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	7.2	280	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.16 J [0.13 J]**	**0.31**	NA	NA	NA	NA	NA
2-Chloronaphthalene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	260	19	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate (DEHP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzylphthalate (BBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate (DBP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate (DnOP)	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	7.3	6.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	- -	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Metals (via EPA Method 6020)																					
Arsenic	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI (hexavalent)	0.1	0.011	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics-Filtered (via EPA Method 6020)																					
Arsenic (dissolved)	0.01	0.01	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium III (trivalent; dissolved)	0.1	0.16	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper (dissolved)	1.0	0.02	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	0.004	0.044	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel (dissolved)	0.1	0.12	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium (dissolved)	0.0045	0.027	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Location ID: Date Collected: Sample Name:	P201 Residential Drinking Water	P201 Groundwater Surface Water Interface	Units	TW-14-02 06/01/22 TW-14-02_060122	TW-14-02 11/03/22 TW-14-02_110322	TW-14-06 03/02/22 TW-14-06_030222	TW-14-06 06/06/22 TW-14-06_060622	TW-14-06 11/07/22 TW-14-06_110722	TW-15-11 03/02/22 TW-15-11_030222	TW-15-11 06/06/22 TW-15-11_060622	TW-15-11 11/05/22 TW-15-11_110522	TW-15-12 03/02/22 TW-15-12_030222	TW-15-12 06/01/22 TW-15-12_060122	TW-15-12 11/02/22 TW-15-12_110222	TWP-90-03 11/08/22 TWP-90-03_110822	TWP-90-04 11/08/22 TWP-90-04_110822	UNK-10 06/08/22 UNK-10_060822	UNK-11 06/08/22 UNK-11_060822	UNK-15 06/09/22 UNK-15_060922	UNK-15 08/29/22 UNK-15_082922	UNK-15 11/09/22 UNK-15_110922
General Chemistry																					
Nitrate (as N)	10	- -	mg/L	<0.5	NA	NA	<0.5	**2.5**	NA	NA	NA	NA	<0.5	<0.5	NA	NA	NA	NA	NA	NA	NA
Phosphorus	63	- -	mg/L	**0.11**	NA	NA	**1.5**	**0.6**	NA	NA	NA	NA	**2.5**	**3.0**	NA	NA	NA	NA	NA	NA	NA
Total kjeldahl nitrogen (TKN)	- -	- -	mg/L	**0.5**	NA	NA	**4.3**	**2.6**	NA	NA	NA	NA	**5.1**	**4.6**	NA	NA	NA	NA	NA	NA	NA
Per- and Polyfluoroalkyl Substances (PFAS) (via EPA Method 537 Modified)																					
11Cl-PF3OUdS (F-53B Minor)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<7.1	<7.4
4:2 FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<7.1	<7.4
6:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<7.1	<7.4
8:2FTS	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<7.1	<7.4
9Cl-PF3ONS (F-53B Major)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<7.1	<7.4
ADONA	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<7.1	<7.4
Hexafluoropropylene oxide dimer acid (HFPO-DA) (GenX)	370	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<7.1	<7.4
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<7.1	<7.4
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<6.8	<7.1	<7.4
Perfluorobutanesulfonic acid (PFBS)	420	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.0 J**	**2.2 J**	**1.1 J**
Perfluorobutanoic acid (PFBA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**14**	**13**	**15**
Perfluorodecanesulfonic acid (PFDS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.6	<3.7
Perfluorodecanoic acid (PFDA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.9 J**	**3.1 J**	**3.2 J**
Perfluorododecanoic acid (PFDoA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.6	<3.7
Perfluoroheptanesulfonic Acid (PFHpS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**12**	**12**	**13**
Perfluoroheptanoic acid (PFHpA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**8.2**	**8.3**	**6.3**
Perfluorohexanesulfonic acid (PFHxS)	51	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**15**	**16**	**14**
Perfluorohexanoic acid (PFHxA)	400,000	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**11**	**11**	**9.8**
Perfluorononanesulfonic acid (PFNS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.6	<3.7
Perfluorononanoic acid (PFNA)	6	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5.3**	**5.0**	**4.7**
Perfluorooctane Sulfonamide (PFOSA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.6	<3.7
Perfluorooctane sulfonic acid (PFOS)	16	12	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**1,100**	**1,100**	**1,200**
Perfluorooctanoic acid (PFOA)	8	12,000	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**32**	**32**	**27**
Perfluoropentanesulfonic acid (PFPeS)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.2 J**	**2.1 J**	**2.1 J**
Perfluoropentanoic acid (PFPeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**14**	**12**	**11**
Perfluorotetradecanoic acid (PFTeA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.6	<3.7
Perfluorotridecanoic Acid (PFTriA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.6	<3.7
Perfluoroundecanoic acid (PFUnA)	- -	- -	ng/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3.4	<3.6	<3.7

See notes on last page.

Table 2
Summary of Groundwater Analytical Results - January to December 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Data Flagging:

Bold font	represents data where detections were noted above the laboratory method detection limit.
Gray shading	represents result exceeding either or both the EGLE Part 201 Generic Cleanup Criteria and Screening Levels (dated January 10, 2018) or the EGLE GSI Criteria (Updated June 25, 2018)

Notes:

1. EGLE Part 201 Residential Drinking Water Criteria and Groundwater Surface Water Interface Criteria from the Generic Cleanup Criteria and Screening Levels (dated January 10, 2018) are used for comparison with all VOC and Inorganic data and revised criteria values (dated December 21, 2020) are used for comparison with all PFAS data.

2. 1,4-Dioxane is compared to a drinking water criteria of 7.2 µg/L per the *MDEQ Establishment of Cleanup Criteria for 1,4 -Dioxane: Emergency Rules* dated October 27, 2016.

Abbreviations:

- - = Not listed in the EGLE Criteria Tables.
* = Analyzed for low-level 1,4-Dioxane via EPA Method 522
Deg. C. = degrees Celsius
EGLE = Michigan Department of Environment, Great Lakes, and Energy
mg/L = milligrams per liter
NA = Not Analyzed
NR = Not Recorded
NTU = Nephelometric Turbidity Unit
s.u. = standard unit
ug/L = micrograms per liter
µS/cm = microSiemens per centimeter

Lab and Validation Data Qualifiers:

B = An estimated value between the instrument detection limit and the reporting limit.
E= Analyte exceeded calibration range. Serial dilution results not within 10%. Applicable only if analyte concentration is at least 50X the IDL in original sample.
F1 = Matrix spike and/or matrix spike duplicate recovery is outside acceptance limits.
J = The compound was positively identified, but the associated numerical value is an estimated concentration only.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
X = Elevated reporting limit due to matrix interference.
Y = Elevated reporting limit due to high target concentration.

Table 3
Summary of LNAPL Thickness - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Well ID	Date Collected	Reference Elevation (TOC)	Ground Surface Elevation (feet msl)	Total Well Depth (feet below TOC)	Depth to Water (feet below TOC)	Depth to LNAPL (feet below TOC)	Calculated Thickness NAPL (feet)	Groundwater Elevation (feet msl)	Corrected Groundwater Elevation (feet msl)
Plant 2									
LMW-12-01	6/10/22	864.91	862.14	NM	4.65	NP	NP	860.26	860.26
LMW-12-01	11/4/22	864.91	862.14	NM	4.9	NP	NP	860.01	860.01
LMW-12-02	6/10/22	865.25	862.17	NM	4.65	NP	NP	860.60	860.60
LMW-12-02	11/4/22	865.25	862.17	NM	5.15	NP	NP	860.10	860.10
LMW-12-03D	6/10/22	864.99	862.08	NM	16.15	3.69	12.46	848.84	860.05*
LMW-12-03D	11/4/22	864.99	862.08	NM	16.91	4.02	12.89	848.08	859.67*
LMW-12-03S	6/10/22	864.93	862.06	NM	3.96	3.94	0.02	860.97	860.99*
LMW-12-03S	11/4/22	864.93	862.06	NM	4.02	4.01	0.01	860.91	860.92*
LMW-12-04	6/10/22	864.94	862.12	NM	5.79	NP	NP	859.15	859.15
LMW-12-04	11/4/22	864.94	862.12	NM	5.7	NP	NP	859.24	859.24
LMW-12-05	6/10/22	865.03	862.17	NM	6.82	6.42	0.40	858.21	858.57*
LMW-12-05	11/4/22	865.03	862.17	NM	6.92	6.51	0.41	858.11	858.48*
LMW-12-06	6/10/22	865.02	862.15	NM	6.21	NP	NP	858.81	858.81
LMW-12-06	11/4/22	865.02	862.15	NM	6.84	NP	NP	858.18	858.18
LMW-12-07	6/10/22	864.13	861.50	NM	2.82	NP	NP	861.31	861.31
LMW-12-07	11/4/22	864.13	861.50	NM	2.98	NP	NP	861.15	861.15
LMW-12-08	6/10/22	864.40	861.56	NM	5.12	3.11	2.01	859.28	861.09*
LMW-12-08	11/4/22	864.40	861.56	NM	5.7	3.51	2.19	858.70	860.67*
LMW-14-12D	6/10/22	864.59	862.11	NM	25	3.7	21.30	839.59	858.75*
LMW-14-12D	11/4/22	864.59	862.11	NM	25	4.18	20.82	839.59	858.32*
LMW-14-13D	6/10/22	865.03	862.06	NM	4.89	NP	NP	860.14	860.14
LMW-14-13D	11/4/22	865.03	862.06	NM	4.98	NP	NP	860.05	860.05
LMW-14-14D	6/10/22	864.89	861.90	NM	7.43	NP	NP	857.46	857.46
LMW-14-14D	11/4/22	864.89	861.90	NM	7.11	NP	NP	857.78	857.78
LMW-14-15D	6/10/22	865.11	861.66	NM	21.9	4.24	17.66	843.21	859.10*
LMW-14-15D	11/4/22	865.11	861.66	NM	21.32	4.04	17.28	843.79	859.33*
LMW-15-16D	6/10/22	865.20	862.24	NM	22.2	4.81	17.39	843.00	858.64*
LMW-15-16D	11/4/22	865.20	862.24	NM	22.04	4.67	17.37	843.16	858.78*
LMW-15-17D	6/10/22	865.21	862.24	NM	5.98	NP	NP	859.23	859.23
LMW-15-17D	11/4/22	865.21	862.24	NM	5.93	NP	NP	859.28	859.28
MW-16-79	11/1/22	864.80	862.07	NM	65.65	65.64	0.01	799.15	799.15*
P2-SB-37	5/31/22	865.90	861.90	NM	7.04	4.41	2.63	858.86	861.23*
P2-SB-37	6/10/22	865.90	861.90	NM	7.04	4.41	2.63	858.86	861.23*
P2-SB-37	11/4/22	865.90	861.90	NM	6.91	4.23	2.68	858.99	861.40*
PMW-01	6/10/22	860.85	861.33	NM	0	0	0.00	860.85	860.85
PMW-01	11/4/22	860.85	861.33	NM	NM	NM	NM	NM	NM
PMW-02	6/10/22	860.94	861.33	NM	0	0	0.00	860.94	860.94
PMW-02	11/4/22	860.94	861.33	NM	NM	NM	NM	NM	NM
PMW-03	6/10/22	861.59	862.12	NM	0.25	NP	NP	861.34	861.34
PMW-03	11/4/22	861.59	862.12	NM	0.36	NP	NP	861.23	861.23
Plant 3									
LMW-12-09	6/10/22	863.22	860.40	NM	3.69	3.65	0.04	859.53	859.57*
LMW-12-09	11/4/22	863.22	860.40	NM	3.77	3.71	0.06	859.45	859.50*
LMW-12-10	6/10/22	866.82	863.60	NM	16.5	11.11	5.39	850.32	855.17*
LMW-12-10	11/4/22	866.82	863.60	NM	16.21	10.98	5.23	850.61	855.31*
LMW-12-11	6/10/22	866.53	863.53	NM	11.31	NP	NP	855.22	855.22
LMW-12-11	11/4/22	866.53	863.53	NM	11.35	NP	NP	855.18	855.18

Notes:
Where LNAPL was observed, groundwater elevations have been corrected using a measured LNAPL density of 0.8995 gram per milliliter.
UNK-14 previously reported was abandoned in November 2021
* - When gauging, LNAPL and water started coming out of the casing riser.

Abbreviations:
LNAPL = light nonaqueous phase liquid
msl = mean sea level
NAPL = nonaqueous phase liquid
NM = not measured
NP = no product
TOC = top of casing
RACER = Revitalizing Auto Communities Environmental Response

Table 4
Summary of Groundwater Elevations - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Well ID	Date Collected	Screened Interval Top (feet bgs)	Screened Interval Bottom (feet bgs)	Reference Elevation (TOC)	Ground Surface Elevation (feet msl)	Total Well Depth (feet below TOC)	Corrected Depth to Water (feet below TOC)	Corrected Groundwater Elevation (feet msl)
Plant 2								
LMW-12-01	6/10/2022	7.0	12.0	864.91	862.14	NM	4.65	860.26
LMW-12-01	11/4/2022	7.0	12.0	864.91	862.14	NM	4.90	860.01
LMW-12-02	6/10/2022	5.0	10.0	865.25	862.17	NM	4.65	860.60
LMW-12-02	11/4/2022	5.0	10.0	865.25	862.17	NM	5.15	860.10
LMW-12-03D	6/10/2022	17.3	22.3	864.99	862.08	NM	4.94	860.05*
LMW-12-03D	11/4/2022	17.3	22.3	864.99	862.08	NM	5.32	859.67*
LMW-12-03S	6/10/2022	4.0	9.0	864.93	862.06	NM	3.94	860.99*
LMW-12-03S	11/4/2022	4.0	9.0	864.93	862.06	NM	4.01	860.92*
LMW-12-04	6/10/2022	16.0	21.0	864.94	862.12	NM	5.79	859.15
LMW-12-04	11/4/2022	16.0	21.0	864.94	862.12	NM	5.70	859.24
LMW-12-05	6/10/2022	7.0	12.0	865.03	862.17	NM	6.46	858.57*
LMW-12-05	11/4/2022	7.0	12.0	865.03	862.17	NM	6.55	858.48*
LMW-12-06	6/10/2022	4.0	9.0	865.02	862.15	NM	6.21	858.81
LMW-12-06	11/4/2022	4.0	9.0	865.02	862.15	NM	6.84	858.18
LMW-12-07	6/10/2022	4.0	9.0	864.13	861.50	NM	2.82	861.31
LMW-12-07	11/4/2022	4.0	9.0	864.13	861.50	NM	2.98	861.15
LMW-12-08	6/10/2022	8.0	13.0	864.40	861.56	NM	3.31	861.09*
LMW-12-08	11/4/2022	8.0	13.0	864.40	861.56	NM	3.73	860.67*
LMW-14-12D	6/10/2022	18.0	23.0	864.59	862.11	NM	5.84	858.75*
LMW-14-12D	11/4/2022	18.0	23.0	864.59	862.11	NM	6.27	858.32*
LMW-14-13D	6/10/2022	17.5	22.5	865.03	862.06	NM	4.89	860.14
LMW-14-13D	11/4/2022	17.5	22.5	865.03	862.06	NM	4.98	860.05
LMW-14-14D	6/10/2022	18.0	23.0	864.89	861.90	NM	7.43	857.46
LMW-14-14D	11/4/2022	18.0	23.0	864.89	861.90	NM	7.11	857.78
LMW-14-15D	6/10/2022	18.0	23.0	865.11	861.66	NM	6.01	859.10*
LMW-14-15D	11/4/2022	18.0	23.0	865.11	861.66	NM	5.78	859.33*
LMW-15-16D	6/10/2022	19.5	24.5	865.20	862.24	NM	6.56	858.64*
LMW-15-16D	11/4/2022	19.5	24.5	865.20	862.24	NM	6.42	858.78*
LMW-15-17D	6/10/2022	20.0	25.0	865.21	862.24	NM	5.98	859.23
LMW-15-17D	11/4/2022	20.0	25.0	865.21	862.24	NM	5.93	859.28
MW-01(2)	5/31/2022	10.0	20.0	875.79	876.10	16.22	9.10	866.69
MW-12-01	2/28/2022	87.0	110.0	867.94	865.46	111.05	76.83	791.11
MW-12-01	5/31/2022	87.0	110.0	867.94	865.46	80.98	71.47	796.47
MW-12-02	2/28/2022	87.0	110.0	853.91	851.88	108.94	66.41	787.50
MW-12-02	5/31/2022	87.0	110.0	853.91	851.88	108.90	65.94	787.97
MW-12-05R	2/28/2022	100.0	112.0	861.80	862.30	112.30	75.45	786.35
MW-12-05R	5/31/2022	100.0	112.0	861.80	862.30	112.25	74.60	787.20
MW-12-06	2/28/2022	80.6	99.5	864.64	861.69	103.57	72.34	792.30
MW-12-06	5/31/2022	80.6	99.5	864.64	861.69	103.55	71.22	793.42
MW-12-07	5/31/2022	10.0	15.0	872.11	869.21	14.71	11.52	860.59
MW-12-08	5/31/2022	19.0	24.0	864.68	861.50	24.15	0.27	864.41
MW-12-09	5/31/2022	14.0	19.0	863.54	860.63	18.61	15.23	848.31
MW-12-09	10/31/2022	14.0	19.0	863.54	860.63	21.60	13.25	850.29
MW-12-18	5/31/2022	28.0	33.0	866.43	864.19	31.80	18.41	848.02
MW-12-18	10/31/2022	28.0	33.0	866.43	864.19	34.80	23.01	843.42
MW-13-43	2/28/2022	72.0	77.0	863.82	860.97	77.50	64.97	798.85
MW-13-43	5/31/2022	72.0	77.0	863.82	860.97	77.90	62.65	801.17
MW-13-43	10/31/2022	72.0	77.0	863.82	860.97	78.70	66.50	797.32

See Notes on last page.

Table 4
Summary of Groundwater Elevations - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Well ID	Date Collected	Screened Interval Top (feet bgs)	Screened Interval Bottom (feet bgs)	Reference Elevation (TOC)	Ground Surface Elevation (feet msl)	Total Well Depth (feet below TOC)	Corrected Depth to Water (feet below TOC)	Corrected Groundwater Elevation (feet msl)
Plant 2 ***(continued)***								
MW-13-44	2/28/2022	96.0	115.0	864.24	861.03	119.05	76.75	787.49
MW-13-44	5/31/2022	96.0	115.0	864.24	861.03	118.97	76.17	788.07
MW-13-45	2/28/2022	72.0	77.0	863.80	861.54	78.32	65.48	798.32
MW-13-45	5/31/2022	72.0	77.0	863.80	861.54	78.28	64.59	799.21
MW-13-45	10/31/2022	72.0	77.0	863.80	861.54	79.70	65.30	798.50
MW-13-51	5/31/2022	77.0	87.0	875.34	872.51	88.38	77.22	798.12
MW-14-54	5/31/2022	14.0	19.0	865.21	862.21	16.72	11.79	853.42
MW-14-55	5/31/2022	13.0	18.0	864.17	861.73	17.03	14.58	849.59
MW-14-56	5/31/2022	71.0	76.0	860.21	860.62	NM	NM	NM
MW-14-56	11/1/2022	71.0	76.0	860.21	860.62	75.75	65.73	794.48
MW-14-57	5/31/2022	15.0	20.0	863.97	861.10	21.35	6.51	857.46
MW-14-58R	5/31/2022	22.0	27.0	862.93	860.09	26.63	9.75	853.18
MW-14-58R	9/12/2022	22.0	27.0	862.93	860.09	29.60	13.30	849.63
MW-14-58R	10/14/2022	22.0	27.0	862.93	860.09	29.61	13.63	849.30
MW-14-59	5/31/2022	12.0	17.0	865.13	861.63	20.00	5.15	859.98
MW-14-59	10/31/2022	12.0	17.0	865.13	861.63	19.33	5.00	860.13
MW-14-60	5/31/2022	15.0	20.0	864.65	861.70	23.00	9.00	855.65
MW-14-60	11/1/2022	15.0	20.0	864.65	861.70	22.39	9.31	855.34
MW-14-61	5/31/2022	70.0	75.0	865.51	862.30	78.83	65.51	800.00
MW-14-61	11/1/2022	70.0	75.0	865.51	862.30	78.50	66.29	799.22
MW-14-62	5/31/2022	12.0	17.0	865.17	862.25	16.63	11.38	853.79
MW-14-62	8/29/2022	12.0	17.0	865.17	862.25	19.62	3.70	861.47
MW-14-62	11/1/2022	12.0	17.0	865.17	862.25	19.62	3.65	861.52
MW-14-62	11/2/2022	12.0	17.0	865.17	862.25	19.62	3.72	861.45
MW-14-63	2/28/2022	68.0	73.0	854.64	851.68	76.70	66.09	788.55
MW-14-63	5/31/2022	68.0	73.0	854.64	851.68	76.72	65.25	789.39
MW-15-72	2/28/2022	63.0	68.0	865.09	862.35	70.26	56.47	808.62
MW-15-72	5/31/2022	63.0	68.0	865.09	862.35	68.65	60.49	804.60
MW-15-72	11/1/2022	63.0	68.0	865.09	862.35	71.60	56.75	808.34
MW-15-73	5/31/2022	78.0	83.0	861.56	859.12	79.25	68.91	792.65
MW-16-74	5/31/2022	66.0	71.0	864.81	862.10	75.75	65.62	799.19
MW-16-74	10/31/2022	66.0	71.0	864.81	862.10	75.00	65.00	799.81
MW-16-75	5/31/2022	66.0	71.0	864.87	862.13	72.68	66.46	798.41
MW-16-75	10/31/2022	66.0	71.0	864.87	862.13	75.60	62.00	802.87
MW-16-76	5/31/2022	70.0	75.0	867.76	865.12	80.97	72.36	795.40
MW-16-77	5/31/2022	66.0	71.0	866.17	863.42	71.62	65.89	800.28
MW-16-77	10/31/2022	66.0	71.0	866.17	863.42	75.30	60.95	805.22
MW-16-78	5/31/2022	68.0	73.0	864.98	862.09	77.42	63.49	801.49
MW-16-78	10/31/2022	68.0	73.0	864.98	862.09	77.60	64.30	800.68
MW-16-79	5/31/2022	68.0	73.0	864.80	862.07	73.45	62.82	801.98
MW-16-79	11/1/2022	68.0	73.0	864.80	862.07	NM	65.64	799.15*
MW-16-80	5/31/2022	68.0	73.0	853.03	853.41	71.52	63.59	789.44
MW-16-80	11/1/2022	68.0	73.0	853.03	853.41	73.35	65.30	787.73
MW-16-81	5/31/2022	70.0	75.0	864.68	862.04	75.72	60.63	804.05
MW-16-81	10/31/2022	70.0	75.0	864.68	862.04	78.80	64.72	799.96
MW-16-82	5/31/2022	70.0	75.0	864.79	862.10	78.00	65.46	799.33
MW-16-82	11/1/2022	70.0	75.0	864.79	862.10	78.50	66.31	798.48
MW-16-83	2/28/2022	71.0	76.0	862.97	860.17	79.06	72.40	790.57

See Notes on last page.

Table 4
Summary of Groundwater Elevations - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Well ID	Date Collected	Screened Interval Top (feet bgs)	Screened Interval Bottom (feet bgs)	Reference Elevation (TOC)	Ground Surface Elevation (feet msl)	Total Well Depth (feet below TOC)	Corrected Depth to Water (feet below TOC)	Corrected Groundwater Elevation (feet msl)
Plant 2 ***(continued)***								
MW-16-83	5/31/2022	71.0	76.0	862.97	860.17	77.85	68.10	794.87
MW-16-84	5/31/2022	72.0	77.0	864.09	861.81	81.15	67.82	796.27
MW-16-84	11/1/2022	72.0	77.0	864.09	861.81	81.12	69.60	794.49
MW-16-85	5/31/2022	74.0	79.0	864.77	861.87	81.78	69.18	795.59
MW-16-85	11/1/2022	74.0	79.0	864.77	861.87	NM	70.95	793.82
MW-17-86	5/31/2022	73.0	78.0	864.55	861.92	81.44	64.81	799.74
MW-17-86	11/1/2022	73.0	78.0	864.55	861.92	81.43	65.92	798.63
MW-17-87	2/28/2022	100.0	112.0	862.82	860.44	113.78	74.25	788.57
MW-17-87	5/31/2022	100.0	112.0	862.82	860.44	113.75	73.42	789.40
MW-19-115	5/31/2022	72.5	77.5	865.04	862.19	78.72	69.88	795.16
MW-19-115	11/1/2022	72.5	77.5	865.04	862.19	81.85	58.83	806.21
MW-19-116	5/31/2022	65.0	70.0	865.12	862.17	73.20	55.91	809.21
MW-19-116	11/1/2022	65.0	70.0	865.12	862.17	74.50	56.46	808.66
MW-19-117	5/31/2022	54.0	59.0	865.10	862.15	62.80	58.48	806.62
MW-19-117	11/1/2022	54.0	59.0	865.10	862.15	63.80	59.10	806.00
MW-19-118D	2/28/2022	175.0	190.0	862.78	859.80	192.98	75.51	787.27
MW-19-118D	5/31/2022	175.0	190.0	862.78	859.80	192.80	75.13	787.65
MW-19-118S	2/28/2022	145.0	160.0	862.81	859.80	162.90	75.51	787.30
MW-19-118S	5/31/2022	145.0	160.0	862.81	859.80	162.89	75.09	787.72
MW-19-120	5/31/2022	66.0	71.0	864.73	862.13	75.08	64.72	800.01
MW-19-120	10/31/2022	66.0	71.0	864.73	862.13	74.00	65.27	799.46
MW-19-121	2/28/2022	66.0	71.0	864.55	862.19	73.60	63.96	800.59
MW-19-121	5/31/2022	66.0	71.0	864.55	862.19	71.74	63.12	801.43
MW-19-121	10/31/2022	66.0	71.0	864.55	862.19	73.40	64.80	799.75
MW-19-122	5/31/2022	59.0	64.0	865.02	862.15	64.76	59.59	805.43
MW-19-122	10/31/2022	59.0	64.0	865.02	862.15	67.90	65.30	799.72
MW-19-123	5/31/2022	66.0	71.0	864.45	862.04	72.20	60.13	804.32
MW-19-123	10/31/2022	66.0	71.0	864.45	862.04	74.60	62.49	801.96
MW-19-124	5/31/2022	65.0	70.0	864.53	862.22	69.92	60.77	803.76
MW-19-124	10/31/2022	65.0	70.0	864.53	862.22	73.40	65.20	799.33
MW-19-125	2/28/2022	100.0	115.0	865.11	862.11	109.10	76.62	788.49
MW-19-125	5/31/2022	100.0	115.0	865.11	862.11	102.25	75.24	789.87
MW-20-126	2/28/2022	69.0	74.0	861.89	859.50	75.45	62.80	799.09
MW-20-126	5/31/2022	69.0	74.0	861.89	859.50	74.43	68.47	793.42
MW-20-126	11/1/2022	69.0	74.0	861.89	859.50	76.65	66.50	795.39
MW-20-127	2/28/2022	72.0	77.0	862.58	861.30	78.65	64.90	797.68
MW-20-127	5/31/2022	72.0	77.0	862.58	861.30	78.67	64.27	798.31
MW-20-127	10/31/2022	72.0	77.0	862.58	861.30	79.50	65.93	796.65
MW-20-128	5/31/2022	65.0	70.0	863.73	861.40	70.15	67.70	796.03
MW-20-128	11/1/2022	65.0	70.0	863.73	861.40	71.50	68.33	795.40
MW-20-129	5/31/2022	64.0	69.0	864.91	862.20	69.14	61.38	803.53
MW-20-129	11/1/2022	64.0	69.0	864.91	862.20	72.10	60.35	804.56
MW-20-130	5/31/2022	63.0	68.0	863.98	862.20	71.13	65.83	798.15
MW-20-130	10/31/2022	63.0	68.0	863.98	862.20	69.75	67.05	796.93
MW-21-139	5/31/2022	7.0	12.0	865.00	862.17	15.37	3.10	861.90
MW-21-139	8/29/2022	7.0	12.0	865.00	862.17	15.36	3.14	861.86
MW-21-139	10/31/2022	7.0	12.0	865.00	862.17	15.36	2.94	862.06
MW-21-140	5/31/2022	67.0	72.0	866.06	862.76	77.34	67.29	798.77

See Notes on last page.

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RACER Trust Plants 2, 3, and 6
Lansing, Michigan

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Plant 2 ***(continued)***								
MW-21-140	8/29/2022	67.0	72.0	866.06	862.76	75.97	67.87	798.19
MW-21-140	11/1/2022	67.0	72.0	866.06	862.76	77.40	68.50	797.56
MW-21-142	5/31/2022	71.5	76.5	853.70	850.79	81.47	72.39	781.31
MW-21-142	8/29/2022	71.5	76.5	853.70	850.79	78.81	67.24	786.46
MW-21-142	11/2/2022	71.5	76.5	853.70	850.79	78.80	67.07	786.63
MW-22-153	5/31/2022	25.0	30.0	860.43	859.44	30.15	10.25	850.18
MW-22-153	8/29/2022	25.0	30.0	860.43	859.44	31.18	10.56	849.87
MW-22-153	9/12/2022	25.0	30.0	860.43	859.44	31.17	10.80	849.63
MW-22-153	10/14/2022	25.0	30.0	860.43	859.44	31.18	11.12	849.31
MW-22-153	11/2/2022	25.0	30.0	860.43	859.44	31.15	11.10	849.33
MW-22-155	9/12/2022	25.5	30.5	861.58	858.99	31.50	12.08	849.50
MW-22-155	10/14/2022	25.5	30.5	861.58	858.99	31.43	12.41	849.17
MW-22-156	9/12/2022	23.0	28.0	863.07	860.13	31.06	13.29	849.78
MW-22-156	10/14/2022	23.0	28.0	863.07	860.13	31.06	13.57	849.50
MW-22-157	9/12/2022	24.0	29.0	852.38	853.06	27.55	2.75	849.63
MW-22-157	10/14/2022	24.0	29.0	852.38	853.06	27.61	3.08	849.30
P2-MW-02	5/31/2022	31.0	41.0	872.24	872.70	40.85	34.37	837.87
P2-MW-03	5/31/2022	27.0	32.0	854.18	854.66	24.18	18.32	835.86
P2-MW-04	5/31/2022	26.0	36.0	866.12	862.75	36.62	30.05	836.07
P2-SB-03	5/31/2022	14.0	19.0	863.89	861.03	19.12	14.89	849.00
P2-SB-06	5/31/2022	24.0	29.0	866.06	862.09	33.59	15.39	850.67
P2-SB-20	5/31/2022	8.0	13.0	864.46	861.12	16.26	9.24	855.22
P2-SB-37	5/31/2022	5.0	10.0	865.90	861.90	NM	4.67	861.23*
P2-SB-37	6/10/2022	5.0	10.0	865.90	861.90	NM	4.67	861.23*
P2-SB-37	11/4/2022	5.0	10.0	865.90	861.90	NM	4.50	861.40*
PMW-01	6/10/2022	2.6	7.6	860.85	861.33	NM	0.00	860.85
PMW-01	11/4/2022	2.6	7.6	860.85	861.33	NM	NM	NM
PMW-02	6/10/2022	2.6	7.6	860.94	861.33	NM	0.00	860.94
PMW-02	11/4/2022	2.6	7.6	860.94	861.33	NM	NM	NM
PMW-03	6/10/2022	1.2	6.2	861.59	862.12	NM	0.25	861.34
PMW-03	11/4/2022	1.2	6.2	861.59	862.12	NM	0.36	861.23
PW-14-01	5/31/2022	71.6	76.8	864.97	862.38	86.90	78.63	786.34
PW-14-01	10/31/2022	71.6	76.8	864.97	862.38	89.40	64.95	800.02
PW-14-02	2/28/2022	75.0	80.0	863.87	860.93	71.74	64.68	799.19
PW-14-02	5/31/2022	75.0	80.0	863.87	860.93	85.17	63.22	800.65
PW-14-02	10/31/2022	75.0	80.0	863.87	860.93	94.00	65.67	798.20
TW-14-02	2/28/2022	67.0	72.0	865.01	862.13	71.74	54.83	810.18
TW-14-02	5/31/2022	67.0	72.0	865.01	862.13	70.51	68.94	796.07
TW-14-02	10/31/2022	67.0	72.0	865.01	862.13	72.60	61.30	803.71
TW-15-12	2/28/2022	73.0	78.0	860.88	861.23	76.70	62.71	798.17
TW-15-12	5/31/2022	73.0	78.0	860.88	861.23	76.80	59.68	801.20
TW-15-12	11/1/2022	73.0	78.0	860.88	861.23	76.80	60.10	800.78
Plant 3								
CH-14-RO	5/31/2022	7.0	12.0	866.50	863.74	NM	7.10	859.40
CH-14-RO	8/29/2022	7.0	12.0	866.50	863.74	NM	7.62	858.88
CH-14-RO	10/31/2022	7.0	12.0	866.50	863.74	NM	7.10	859.40
LMW-12-09	6/10/2022	3.0	8.0	863.22	860.40	NM	3.65	859.57*
LMW-12-09	11/4/2022	3.0	8.0	863.22	860.40	NM	3.72	859.50*

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Table 4
Summary of Groundwater Elevations - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Well ID	Date Collected	Screened Interval Top (feet bgs)	Screened Interval Bottom (feet bgs)	Reference Elevation (TOC)	Ground Surface Elevation (feet msl)	Total Well Depth (feet below TOC)	Corrected Depth to Water (feet below TOC)	Corrected Groundwater Elevation (feet msl)
Plant 3 ***(continued)***								
LMW-12-10	6/10/2022	14.0	19.0	866.82	863.60	NM	11.65	855.17*
LMW-12-10	11/4/2022	14.0	19.0	866.82	863.60	NM	11.51	855.31*
LMW-12-11	6/10/2022	15.0	20.0	866.53	863.53	NM	11.31	855.22
LMW-12-11	11/4/2022	15.0	20.0	866.53	863.53	NM	11.35	855.18
MW-02-01(3)	5/31/2022	59.0	69.0	865.54	863.35	72.13	50.82	814.72
MW-02-02(3)	5/31/2022	74.0	84.0	862.70	863.11	83.70	59.90	802.80
MW-02-03(3)	5/31/2022	79.0	89.0	859.63	859.90	89.10	58.80	800.83
MW-02-04(3)	5/31/2022	76.0	86.0	859.41	859.96	NM	59.16	800.25
MW-02-04(3)	10/31/2022	76.0	86.0	859.41	859.96	NM	60.35	799.06
MW-04-02(3)	2/28/2022	126.0	136.0	861.09	861.26	133.30	62.76	798.33
MW-04-02(3)	5/31/2022	126.0	136.0	861.09	861.26	133.30	62.10	798.99
MW-04-03(3)	2/28/2022	80.0	90.0	860.72	861.00	87.30	61.89	798.83
MW-04-03(3)	5/31/2022	80.0	90.0	860.72	861.00	87.30	60.89	799.83
MW-04-04(3)	2/28/2022	72.0	82.0	855.72	856.11	81.60	56.59	799.13
MW-04-04(3)	5/31/2022	72.0	82.0	855.72	856.11	81.60	55.50	800.22
MW-05(3)	5/31/2022	10.0	15.0	863.44	859.80	19.52	4.12	859.32
MW-12-04	2/28/2022	77.0	100.0	844.08	844.26	100.25	47.72	796.36
MW-12-04	5/31/2022	77.0	100.0	844.08	844.26	100.25	46.69	797.39
MW-12-20	5/31/2022	75.0	80.0	864.20	861.45	79.45	64.45	799.75
MW-12-21	5/31/2022	70.0	75.0	864.50	861.45	78.10	63.69	800.81
MW-12-21	10/31/2022	70.0	75.0	864.50	861.45	78.10	65.01	799.49
MW-13-22	2/28/2022	89.0	94.0	864.37	861.50	77.50	67.69	796.68
MW-13-22	5/31/2022	89.0	94.0	864.37	861.50	77.50	66.84	797.53
MW-13-22	8/29/2022	89.0	94.0	864.37	861.50	96.15	68.18	796.19
MW-13-22	10/31/2022	89.0	94.0	864.37	861.50	96.15	68.69	795.68
MW-13-23	5/31/2022	69.0	74.0	864.31	861.45	77.50	64.34	799.97
MW-13-24	5/31/2022	69.0	74.0	864.35	861.48	77.30	63.16	801.19
MW-13-25	5/31/2022	67.0	72.0	863.77	860.49	75.00	63.91	799.86
MW-13-25	10/31/2022	67.0	72.0	863.77	860.49	75.00	64.27	799.50
MW-13-26	5/31/2022	72.0	77.0	863.95	861.67	79.20	62.94	801.01
MW-13-27	5/31/2022	67.0	72.0	864.50	861.54	75.70	64.35	800.15
MW-13-28	2/28/2022	99.0	115.5	864.42	861.61	114.75	68.25	796.17
MW-13-28	5/31/2022	99.0	115.5	864.42	861.61	114.75	67.39	797.03
MW-13-28	10/31/2022	99.0	115.5	864.42	861.61	114.75	69.51	794.91
MW-13-29	5/31/2022	68.0	73.0	862.81	859.81	76.30	57.55	805.26
MW-13-29	10/31/2022	68.0	73.0	862.81	859.81	76.30	63.40	799.41
MW-13-30	5/31/2022	72.0	77.0	864.53	861.66	79.80	65.02	799.51
MW-13-31	5/31/2022	5.0	10.0	861.27	858.36	12.79	7.53	853.74
MW-13-32	5/31/2022	5.0	10.0	860.11	857.32	12.64	6.30	853.81
MW-13-34	2/28/2022	74.0	79.0	853.92	851.82	79.75	64.18	789.74
MW-13-34	5/31/2022	74.0	79.0	853.92	851.82	79.90	63.57	790.35
MW-13-34	11/1/2022	74.0	79.0	853.92	851.82	79.90	65.85	788.07
MW-13-37	2/28/2022	97.0	112.0	866.02	863.75	114.35	68.91	797.11
MW-13-37	5/31/2022	97.0	112.0	866.02	863.75	114.42	68.10	797.92
MW-13-38	2/28/2022	107.0	124.0	866.47	863.71	126.50	69.78	796.69
MW-13-38	5/31/2022	107.0	124.0	866.47	863.71	126.35	68.83	797.64
MW-13-39B	2/28/2022	97.0	112.0	860.20	857.33	105.50	63.22	796.98
MW-13-39B	5/31/2022	97.0	112.0	860.20	857.33	105.50	62.01	798.19

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Table 4
Summary of Groundwater Elevations - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Well ID	Date Collected	Screened Interval Top (feet bgs)	Screened Interval Bottom (feet bgs)	Reference Elevation (TOC)	Ground Surface Elevation (feet msl)	Total Well Depth (feet below TOC)	Corrected Depth to Water (feet below TOC)	Corrected Groundwater Elevation (feet msl)
Plant 3 ***(continued)***								
MW-13-40	5/31/2022	72.0	77.0	862.95	859.74	78.88	54.38	808.57
MW-13-41	2/28/2022	77.0	82.0	863.41	863.68	NM	NM	NM
MW-13-41	5/31/2022	77.0	82.0	863.41	863.68	81.54	54.11	809.30
MW-13-46	2/28/2022	68.0	73.0	854.54	852.12	74.60	61.30	793.24
MW-13-46	5/31/2022	68.0	73.0	854.54	852.12	74.65	61.63	792.91
MW-13-46	11/1/2022	68.0	73.0	854.54	852.12	74.65	63.18	791.36
MW-13-47	2/28/2022	99.0	119.0	853.74	851.89	113.70	63.58	790.16
MW-13-47	5/31/2022	99.0	119.0	853.74	851.89	113.65	63.01	790.73
MW-13-47	11/1/2022	99.0	119.0	853.74	851.89	113.65	65.24	788.50
MW-13-48	2/28/2022	65.0	70.0	854.83	852.17	73.00	55.12	799.71
MW-13-48	5/31/2022	65.0	70.0	854.83	852.17	73.25	55.12	799.71
MW-13-48	11/1/2022	65.0	70.0	854.83	852.17	73.25	55.55	799.28
MW-13-49	5/31/2022	73.0	78.0	853.01	850.55	81.65	63.39	789.62
MW-14-64	5/31/2022	98.6	103.6	864.56	861.77	106.30	67.44	797.12
MW-14-65	6/10/2022	5.0	10.0	866.34	863.71	13.23	6.72	859.62
MW-15-71	5/31/2022	110.0	115.0	864.07	861.71	119.10	64.62	799.45
MW-18-88	2/28/2022	6.0	11.0	863.70	860.93	NM	4.06	859.64
MW-18-88	5/31/2022	6.0	11.0	863.70	860.93	NM	4.95	858.75
MW-18-88	8/29/2022	6.0	11.0	863.70	860.93	NM	5.88	857.82
MW-18-88	10/31/2022	6.0	11.0	863.70	860.93	NM	5.07	858.63
MW-18-89	2/28/2022	7.0	12.0	866.53	863.51	15.60	5.46	861.07
MW-18-89	5/31/2022	7.0	12.0	866.53	863.51	NM	6.72	859.81
MW-18-89	8/29/2022	7.0	12.0	866.53	863.51	15.60	7.08	859.45
MW-18-89	10/31/2022	7.0	12.0	866.53	863.51	NM	8.45	858.08
MW-18-90	2/28/2022	15.0	20.0	866.32	863.25	23.15	8.45	857.87
MW-18-90	5/31/2022	15.0	20.0	866.32	863.25	NM	9.52	856.80
MW-18-90	8/29/2022	15.0	20.0	866.32	863.25	23.15	10.02	856.30
MW-18-90	10/31/2022	15.0	20.0	866.32	863.25	NM	10.72	855.60
MW-18-91	2/28/2022	7.0	12.0	865.94	863.43	NM	5.21	860.73
MW-18-91	5/31/2022	7.0	12.0	865.94	863.43	NM	6.05	859.89
MW-18-91	8/29/2022	7.0	12.0	865.94	863.43	NM	6.32	859.62
MW-18-91	10/31/2022	7.0	12.0	865.94	863.43	NM	7.22	858.72
MW-18-92	5/31/2022	23.0	28.0	870.43	869.08	31.00	14.30	856.13
MW-18-92	10/31/2022	23.0	28.0	870.43	869.08	NM	20.69	849.74
MW-18-93	5/31/2022	77.5	82.5	863.77	860.99	NM	47.66	816.11
MW-18-93	10/31/2022	77.5	82.5	863.77	860.99	NM	47.55	816.22
MW-18-94	10/31/2022	72.0	77.0	866.34	863.86	NM	52.62	813.72
MW-18-95	2/28/2022	4.5	9.5	864.66	861.76	NM	6.39	858.27
MW-18-95	5/31/2022	4.5	9.5	864.66	861.76	NM	6.75	857.91
MW-18-95	8/29/2022	4.5	9.5	864.66	861.76	NM	7.11	857.55
MW-18-95	10/31/2022	4.5	9.5	864.66	861.76	NM	6.95	857.71
MW-18-96	5/31/2022	7.0	12.0	864.60	861.64	14.85	DRY	DRY
MW-18-96	10/31/2022	7.0	12.0	864.60	861.64	14.85	DRY	DRY
MW-18-97	5/31/2022	85.0	90.0	860.91	859.13	NM	61.35	799.56
MW-18-97	10/31/2022	85.0	90.0	860.91	859.13	NM	62.37	798.54
MW-18-98	2/28/2022	7.0	12.0	862.16	859.10	NM	5.68	856.48
MW-18-98	5/31/2022	7.0	12.0	862.16	859.10	NM	5.36	856.80
MW-18-98	8/29/2022	7.0	12.0	862.16	859.10	NM	5.13	857.03

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Plant 3 ***(continued)***								
MW-18-98	10/31/2022	7.0	12.0	862.16	859.10	NM	4.11	858.05
MW-18-99	2/28/2022	9.0	14.0	862.47	859.95	NM	4.07	858.40
MW-18-99	5/31/2022	9.0	14.0	862.47	859.95	NM	3.25	859.22
MW-18-99	8/29/2022	9.0	14.0	862.47	859.95	NM	3.64	858.83
MW-18-99	10/31/2022	9.0	14.0	862.47	859.95	NM	3.02	859.45
MW-18-100	5/31/2022	8.0	13.0	863.94	861.49	15.85	10.17	853.77
MW-18-100	10/31/2022	8.0	13.0	863.94	861.49	NM	11.11	852.83
MW-18-101	5/31/2022	80.0	85.0	863.87	861.24	86.75	61.50	802.37
MW-18-101	10/31/2022	80.0	85.0	863.87	861.24	NM	62.37	801.50
MW-18-102	5/31/2022	10.0	15.0	863.13	863.44	NM	8.98	854.15
MW-18-102	11/1/2022	10.0	15.0	863.13	863.44	NM	12.92	850.21
MW-18-103	2/28/2022	5.0	10.0	859.13	859.74	10.73	0.70	858.43
MW-18-103	5/31/2022	5.0	10.0	859.13	859.74	NM	2.21	856.92
MW-18-103	8/29/2022	5.0	10.0	859.13	859.74	NM	4.93	854.20
MW-18-103	11/1/2022	5.0	10.0	859.13	859.74	NM	4.87	854.26
MW-18-104	5/31/2022	5.0	10.0	859.12	859.82	NM	0.79	858.33
MW-18-104	11/1/2022	5.0	10.0	859.12	859.82	NM	4.43	854.69
MW-18-105	2/28/2022	6.0	11.0	858.59	859.01	11.20	0.00	858.59
MW-18-105	5/31/2022	6.0	11.0	858.59	859.01	NM	0.51	858.08
MW-18-105	8/29/2022	6.0	11.0	858.59	859.01	NM	2.75	855.84
MW-18-105	11/1/2022	6.0	11.0	858.59	859.01	NM	2.84	855.75
MW-18-106	5/31/2022	5.0	10.0	866.15	866.51	NM	3.38	862.77
MW-18-106	11/1/2022	5.0	10.0	866.15	866.51	9.55	DRY	DRY
MW-19	5/31/2022	55.0	65.0	859.73	860.01	52.38	25.75	833.98
MW-19-107	5/31/2022	23.0	28.0	870.65	869.20	29.85	16.31	854.34
MW-19-107	10/31/2022	23.0	28.0	870.65	869.20	NM	23.62	847.03
MW-19-108	5/31/2022	23.0	28.0	872.60	870.22	30.10	14.44	858.16
MW-19-108	10/31/2022	23.0	28.0	872.60	870.22	NM	20.95	851.65
MW-19-110	5/31/2022	8.0	13.0	863.67	860.72	16.25	16.21	847.46
MW-19-110	10/31/2022	8.0	13.0	863.67	860.72	16.25	DRY	DRY
MW-19-111	5/31/2022	20.0	25.0	874.51	871.70	27.40	21.25	853.26
MW-19-111	10/31/2022	20.0	25.0	874.51	871.70	NM	25.45	849.06
MW-19-112	5/31/2022	9.0	14.0	861.63	858.53	NM	5.37	856.26
MW-19-112	10/31/2022	9.0	14.0	861.63	858.53	NM	7.11	854.52
MW-19-113	5/31/2022	16.0	21.0	860.67	857.73	NM	24.32	836.35
MW-19-113	10/31/2022	16.0	21.0	860.67	857.73	NM	24.48	836.19
MW-19-114	5/31/2022	6.0	11.0	861.25	861.79	NM	0.41	860.84
MW-19-114	11/1/2022	6.0	11.0	861.25	861.79	NM	3.33	857.92
MW-19-119D	2/28/2022	180.0	195.0	864.42	861.66	197.90	82.15	782.27
MW-19-119D	5/31/2022	180.0	195.0	864.42	861.66	197.90	82.65	781.77
MW-19-119S	2/28/2022	145.0	160.0	864.32	861.66	163.90	69.00	795.32
MW-19-119S	5/31/2022	145.0	160.0	864.32	861.66	163.90	68.42	795.90
MW-22	5/31/2022	52.5	62.5	859.69	860.08	63.45	44.96	814.73
MW-23	5/31/2022	52.0	62.0	863.71	859.82	65.62	48.17	815.54
MW-23	10/31/2022	52.0	62.0	863.71	859.82	NM	48.09	815.62
MW-88-1	2/28/2022	103.5	140.0	858.75	859.06	138.60	65.12	793.63
MW-88-1	5/31/2022	103.5	140.0	858.75	859.06	138.60	64.07	794.68
MW-91-2R	5/31/2022	75.0	80.0	866.84	863.63	NM	56.58	810.26

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RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Well ID	Date Collected	Screened Interval Top (feet bgs)	Screened Interval Bottom (feet bgs)	Reference Elevation (TOC)	Ground Surface Elevation (feet msl)	Total Well Depth (feet below TOC)	Corrected Depth to Water (feet below TOC)	Corrected Groundwater Elevation (feet msl)
Plant 3 ***(continued)***								
MW-91-2R	10/31/2022	75.0	80.0	866.84	863.63	NM	56.94	809.90
MW-91-3	2/28/2022	105.0	117.0	860.81	859.35	118.95	66.08	794.73
MW-91-3	5/31/2022	105.0	117.0	860.81	859.35	119.10	65.00	795.81
MW-91-4	2/28/2022	116.0	132.5	855.59	855.93	131.95	57.92	797.67
MW-91-4	5/31/2022	116.0	132.5	855.59	855.93	131.95	56.87	798.72
MW-91-5	2/28/2022	112.5	128.0	860.61	861.20	127.70	61.99	798.62
MW-91-5	5/31/2022	112.5	128.0	860.61	861.20	127.70	61.25	799.36
MW-91-5	10/31/2022	112.5	128.0	860.61	861.20	127.70	62.48	798.13
MW-91-6	2/28/2022	82.0	98.0	851.84	852.22	96.15	60.42	791.42
MW-91-6	5/31/2022	82.0	98.0	851.84	852.22	96.15	59.69	792.15
MW-91-6	11/1/2022	82.0	98.0	851.84	852.22	96.15	62.28	789.56
MW-93-1	5/31/2022	65.0	75.0	866.05	863.56	70.18	67.30	798.75
P3-SB-07	5/31/2022	11.0	16.0	866.84	863.63	19.65	7.42	859.42
P3-SB-28	5/31/2022	8.0	13.0	866.43	863.63	10.35	5.94	860.49
PW-14-03	2/28/2022	85.0	90.0	864.31	861.55	95.50	70.20	794.11
PW-14-03	5/31/2022	85.0	90.0	864.31	861.55	95.50	69.29	795.02
PW-14-03	10/31/2022	85.0	90.0	864.31	861.55	95.50	72.34	791.97
TW-14-06	2/28/2022	82.0	87.0	864.30	861.50	86.50	30.85	833.45
TW-14-06	5/31/2022	82.0	87.0	864.30	861.50	86.50	15.12	849.18
TW-14-06	10/31/2022	82.0	87.0	864.30	861.50	86.50	71.24	793.06
TW-14-07	5/31/2022	83.0	88.0	864.45	861.44	NM	NM	NM
TW-14-08	5/31/2022	84.0	89.0	864.30	861.42	NM	NM	NM
TW-14-09	5/31/2022	84.0	89.0	864.39	861.71	NM	NM	NM
TW-15-10	5/31/2022	85.0	90.0	864.81	861.45	NM	NM	NM
TW-15-11	2/28/2022	85.0	90.0	864.51	861.60	87.02	65.70	798.81
TW-15-11	5/31/2022	85.0	90.0	864.51	861.60	86.90	66.31	798.20
TW-15-11	10/31/2022	85.0	90.0	864.51	861.60	86.90	71.92	792.59
UNK-10	5/31/2022	11.0	16.0	859.34	860.05	15.32	0.00	859.34
UNK-11	5/31/2022	6.5	11.5	859.91	860.17	11.76	0.30	859.61
UNK-15	2/28/2022	11.0	16.0	859.56	859.94	NM	NM	NM
UNK-15	8/29/2022	11.0	16.0	859.56	859.94	NM	0.45	859.11
UNK-15	10/31/2022	11.0	16.0	859.56	859.94	NM	0.65	858.91
Plant 6								
MW-02-02(6)	5/31/2022	35.0	45.0	868.04	868.41	43.38	28.80	839.24
MW-03-05	5/31/2022	35.0	45.0	868.90	869.14	48.02	23.58	845.32
MW-03-06	5/31/2022	30.0	40.0	870.45	870.80	40.58	34.78	835.67
MW-03-08	5/31/2022	35.0	45.0	869.03	869.39	NM	NM	NM
MW-04-01(6)	2/28/2022	78.0	88.0	866.85	867.15	87.95	69.83	797.02
MW-04-01(6)	5/31/2022	78.0	88.0	866.85	867.15	87.95	69.22	797.63
MW-04-04R	2/28/2022	82.0	110.0	873.31	870.64	111.05	75.65	797.66
MW-04-04R	5/31/2022	82.0	110.0	873.31	870.64	111.05	74.98	798.33
MW-04-05(6)	5/31/2022	20.0	30.0	858.33	858.87	29.60	9.05	849.28
MW-04-06R	2/28/2022	74.0	99.5	861.56	858.59	77.80	65.20	796.36
MW-04-06R	5/31/2022	74.0	99.5	861.56	858.59	77.95	64.51	797.05
MW-12-03	2/28/2022	57.0	80.0	859.10	856.71	82.25	61.94	797.16
MW-12-03	5/31/2022	57.0	80.0	859.10	856.71	82.25	61.45	797.65
MW-12-10R	2/28/2022	10.0	15.0	862.29	858.92	17.96	10.71	851.58
MW-12-10R	5/31/2022	10.0	15.0	862.29	858.92	17.95	11.06	851.23

See Notes on last page.

Table 4
Summary of Groundwater Elevations - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Well ID	Date Collected	Screened Interval Top (feet bgs)	Screened Interval Bottom (feet bgs)	Reference Elevation (TOC)	Ground Surface Elevation (feet msl)	Total Well Depth (feet below TOC)	Corrected Depth to Water (feet below TOC)	Corrected Groundwater Elevation (feet msl)
Plant 6 ***(continued)***								
MW-12-10R	10/31/2022	10.0	15.0	862.29	858.92	17.95	12.24	850.05
MW-12-11	5/31/2022	13.0	18.0	857.26	857.68	16.80	4.00	853.26
MW-12-11	10/31/2022	13.0	18.0	857.26	857.68	16.80	7.80	849.46
MW-12-12	2/28/2022	13.0	18.0	874.34	874.61	17.20	5.37	868.97
MW-12-12	5/31/2022	13.0	18.0	874.34	874.61	17.20	5.30	869.04
MW-12-12	8/29/2022	13.0	18.0	874.34	874.61	17.20	8.02	866.32
MW-12-12	10/31/2022	13.0	18.0	874.34	874.61	17.20	9.06	865.28
MW-12-13	2/28/2022	18.5	23.5	882.60	880.51	25.43	9.32	873.28
MW-12-13	5/31/2022	18.5	23.5	882.60	880.51	25.45	10.25	872.35
MW-12-13	8/29/2022	18.5	23.5	882.60	880.51	25.45	11.75	870.85
MW-12-13	10/31/2022	18.5	23.5	882.60	880.51	25.45	12.17	870.43
MW-12-14	5/31/2022	25.0	30.0	872.56	869.28	32.05	24.04	848.52
MW-12-16	5/31/2022	28.0	33.0	864.24	864.73	32.20	22.39	841.85
MW-13-36R	2/28/2022	5.5	10.5	878.04	875.28	12.65	4.63	873.41
MW-13-36R	5/31/2022	5.5	10.5	878.04	875.28	12.70	6.05	871.99
MW-13-36R	8/29/2022	5.5	10.5	878.04	875.28	12.70	6.67	871.37
MW-13-36R	10/31/2022	5.5	10.5	878.04	875.28	12.70	7.39	870.65
MW-13-50	2/28/2022	85.0	107.0	872.85	869.93	109.80	80.78	792.07
MW-13-50	5/31/2022	85.0	107.0	872.85	869.93	109.80	80.02	792.83
MW-13-52	2/28/2022	70.0	80.0	872.50	869.84	81.41	69.11	803.39
MW-13-52	5/31/2022	70.0	80.0	872.50	869.84	81.40	68.48	804.02
MW-13-53	2/28/2022	73.0	83.0	875.56	873.10	85.40	73.79	801.77
MW-13-53	5/31/2022	73.0	83.0	875.56	873.10	85.40	73.25	802.31
MW-14-66	5/31/2022	14.0	19.0	877.85	874.73	22.21	4.79	873.06
MW-14-67	2/28/2022	13.0	18.0	877.76	875.07	20.83	4.49	873.27
MW-14-67	5/31/2022	13.0	18.0	877.76	875.07	20.83	5.58	872.18
MW-14-67	8/29/2022	13.0	18.0	877.76	875.07	20.83	5.96	871.80
MW-14-67	10/31/2022	13.0	18.0	877.76	875.07	20.83	6.42	871.34
MW-14-69	5/31/2022	41.0	46.0	883.62	880.72	49.00	DRY	DRY
MW-14-70	2/28/2022	16.0	21.0	882.79	880.08	23.10	9.43	873.36
MW-14-70	5/31/2022	16.0	21.0	882.79	880.08	23.09	10.44	872.35
MW-14-70	8/29/2022	16.0	21.0	882.79	880.08	23.09	12.37	870.42
MW-14-70	10/31/2022	16.0	21.0	882.79	880.08	23.09	13.11	869.68
MW-20-131	5/31/2022	5.0	10.0	858.21	858.66	NM	NM	NM
MW-20-131	10/31/2022	5.0	10.0	858.21	858.66	8.65	6.02	852.19
MW-20-132	5/31/2022	6.0	11.0	858.01	858.38	10.80	5.05	852.96
MW-20-132	10/31/2022	6.0	11.0	858.01	858.38	10.80	5.82	852.19
MW-21-133	5/31/2022	10.0	15.0	876.67	872.91	18.74	8.48	868.19
MW-21-133	10/31/2022	10.0	15.0	876.67	872.91	18.74	12.51	864.16
MW-21-134	5/31/2022	11.0	16.0	872.97	869.38	20.08	8.24	864.73
MW-21-134	10/31/2022	11.0	16.0	872.97	869.38	20.08	14.92	858.05
MW-21-135	5/31/2022	22.0	27.0	872.10	868.60	29.55	24.18	847.92
MW-21-135	10/31/2022	22.0	27.0	872.10	868.60	29.55	25.57	846.53
MW-21-136	5/31/2022	9.0	14.0	865.91	866.31	13.75	6.75	859.16
MW-21-136	10/31/2022	9.0	14.0	865.91	866.31	13.75	8.74	857.17
MW-21-137	5/31/2022	7.0	12.0	866.99	867.50	11.50	8.85	858.14
MW-21-137	10/31/2022	7.0	12.0	866.99	867.50	11.50	9.88	857.11
MW-21-138	5/31/2022	24.0	29.0	867.05	867.54	28.65	20.82	846.23

See Notes on last page.

Table 4
Summary of Groundwater Elevations - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Well ID	Date Collected	Screened Interval Top (feet bgs)	Screened Interval Bottom (feet bgs)	Reference Elevation (TOC)	Ground Surface Elevation (feet msl)	Total Well Depth (feet below TOC)	Corrected Depth to Water (feet below TOC)	Corrected Groundwater Elevation (feet msl)
Plant 6 ***(continued)***								
MW-21-138	10/31/2022	24.0	29.0	867.05	867.54	28.65	21.22	845.83
MW-21-141	5/31/2022	72.0	77.0	874.03	871.05	79.70	76.17	797.86
MW-21-141	10/31/2022	72.0	77.0	874.03	871.05	79.70	77.51	796.52
MW-22-143	5/31/2022	26.0	31.0	864.23	864.52	31.02	15.29	848.94
MW-22-143	8/29/2022	26.0	31.0	864.23	864.52	31.02	16.67	847.56
MW-22-143	10/31/2022	26.0	31.0	864.23	864.52	31.02	17.15	847.08
MW-22-144	5/31/2022	19.5	24.5	863.27	863.91	24.05	10.65	852.62
MW-22-144	8/29/2022	19.5	24.5	863.27	863.91	24.05	12.26	851.01
MW-22-144	10/31/2022	19.5	24.5	863.27	863.91	24.05	13.43	849.84
MW-22-145	5/31/2022	10.5	15.5	863.25	863.87	14.85	9.88	853.37
MW-22-145	8/29/2022	10.5	15.5	863.25	863.87	14.85	12.50	850.75
MW-22-145	10/31/2022	10.5	15.5	863.25	863.87	14.85	13.56	849.69
MW-22-146	5/31/2022	5.5	10.5	861.74	862.17	9.90	4.42	857.32
MW-22-146	8/29/2022	5.5	10.5	861.74	862.17	9.90	7.80	853.94
MW-22-146	10/31/2022	5.5	10.5	861.74	862.17	9.90	8.59	853.15
MW-22-147	5/31/2022	7.5	12.5	865.46	865.83	12.20	8.97	856.49
MW-22-147	8/29/2022	7.5	12.5	865.46	865.83	12.20	9.50	855.96
MW-22-147	10/31/2022	7.5	12.5	865.46	865.83	12.20	9.73	855.73
MW-22-148	5/31/2022	24.5	29.5	865.93	866.12	29.30	24.02	841.91
MW-22-148	8/29/2022	24.5	29.5	865.93	866.12	29.30	25.37	840.56
MW-22-148	10/31/2022	24.5	29.5	865.93	866.12	29.30	25.35	840.58
MW-22-149	5/31/2022	5.5	10.5	866.24	866.68	9.90	4.95	861.29
MW-22-149	8/29/2022	5.5	10.5	866.24	866.68	9.90	6.39	859.85
MW-22-149	10/31/2022	5.5	10.5	866.24	866.68	9.90	5.98	860.26
MW-22-150	5/31/2022	13.0	18.0	859.62	859.84	17.95	5.40	854.22
MW-22-150	8/29/2022	13.0	18.0	859.62	859.84	17.95	6.24	853.38
MW-22-150	10/31/2022	13.0	18.0	859.62	859.84	17.95	6.18	853.44
MW-22-151	5/31/2022	13.0	18.0	856.66	857.04	14.90	6.01	850.65
MW-22-151	8/29/2022	13.0	18.0	856.66	857.04	14.90	6.68	849.98
MW-22-151	10/31/2022	13.0	18.0	856.66	857.04	14.90	6.34	850.32
MW-22-152	5/31/2022	10.0	15.0	857.23	857.50	14.90	7.57	849.66
MW-22-152	8/29/2022	10.0	15.0	857.23	857.50	14.90	8.40	848.83
MW-22-152	10/31/2022	10.0	15.0	857.23	857.50	14.90	8.40	848.83
MWBP-10-UST5-6	5/31/2022	28.0	38.0	867.70	867.99	36.80	29.12	838.58
MWBP-11-UST1-4	5/31/2022	9.0	19.0	868.66	869.07	11.24	1.31	867.35
MWBP-12-UST1-4	5/31/2022	15.0	25.0	870.02	870.58	11.30	2.08	867.94
P6-MW-01	5/31/2022	23.0	28.0	870.10	866.87	31.21	28.38	841.72
P6-SB-07	2/28/2022	15.0	20.0	877.36	874.36	23.65	5.69	871.67
P6-SB-07	5/31/2022	15.0	20.0	877.36	874.36	23.63	6.03	871.33
P6-SB-07	8/29/2022	15.0	20.0	877.36	874.36	23.63	7.65	869.71
P6-SB-07	10/31/2022	15.0	20.0	877.36	874.36	13.94	7.98	869.38
P6-SB-18	5/31/2022	3.0	8.0	878.72	874.65	12.08	5.43	873.29
P6-SB-21	5/31/2022	3.0	8.0	874.20	870.92	11.11	2.74	871.46
P6-SB-37	5/31/2022	5.0	10.0	878.12	874.32	13.94	5.48	872.64

Notes:
* Groundwater elevations have been corrected for the presence of LNAPL using a measured LNAPL density of 0.8995 gram per milliliter.
bgs = below ground surface
DRY = well was dry and depth to water could not be gauged
LNAPL = light nonaqueous phase liquid
msl = mean sea level
NM = not measured
NS = not surveyed
RACER = Revitalizing Auto Communities Environmental Response
TOC = top of casing

Table 5
Summary of Bedrock Vertical Gradients - Second Quarter 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

		Screen (feet below grade)			Reference Elevation (feet amsl)	Groundwater Elevation 5/31/2022 (feet amsl)	Vertical Gradient (ft/ft)	Formation
		Top	Bottom	Mid-point				
Plant 2								
MW-14-63	W. Bedrock	68	73	70.5	854.64	789.39	0.05	Grand River Formation
MW-12-02	Bedrock	87	110	98.5	853.91	787.97		
MW-13-43	W. Bedrock	72	77	74.5	863.82	801.17	0.42	Saginaw Formation
MW-13-44	Bedrock	96	115	105.5	864.24	788.07		
MW-14-61	W. Bedrock	70	75	72.5	865.51	800.00	0.37	Saginaw Formation
MW-12-06	Bedrock	80.6	99.5	90.1	864.64	793.42		
MW-15-72	W. Bedrock	63	68	65.5	865.09	804.60	0.43	Saginaw Formation
MW-12-05R	Bedrock	100	112	106.0	864.79	787.20		
MW-16-76	W. Bedrock	70	75	72.5	867.76	795.40	-0.04	Saginaw Formation
MW-12-01	Bedrock	87	110	98.5	867.94	796.47		
Plant 3								
MW-13-22	W. Bedrock	89	94	91.5	864.37	797.53	0.03	Grand River Formation
MW-13-28	Bedrock	99	115.5	107.3	864.42	797.03		
MW-13-46	W. Bedrock	68	73	70.5	854.54	792.91	0.04	Grand River Formation
MW-91-6	Bedrock	82	98	90	851.84	792.15		
MW-04-03(3)	Deep Overburden	80	90	85	860.72	799.83	0.02	Grand River Formation
MW-04-02(3)	Bedrock	126	136	131	861.09	798.99		
MW-04-04(3)	Deep Overburden	72	82	77	855.72	800.22	0.03	Grand River Formation
MW-91-4	Bedrock	116	132.5	124.3	855.59	798.72		
MW-13-41	Deep Overburden	77	82	79.5	866.38	809.30	0.32	Saginaw Formation
MW-13-38	Bedrock	107	124	115.5	866.47	797.64		

Table 5
Summary of Bedrock Vertical Gradients - Second Quarter 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

		Screen (feet below grade)			Reference Elevation (feet amsl)	Groundwater Elevation 5/31/2022 (feet amsl)	Vertical Gradient (ft/ft)	Formation
		Top	Bottom	Mid-point				
Plant 6								
MW-13-52	W. Bedrock	70	80	75	872.50	804.02	0.53	Saginaw Formation
MW-13-50	Bedrock	85	107	96	872.85	792.83		

Notes:
ft/ft = foot per foot
GR Fm = Grand River Formation
amsl = above mean sea level
RACER = Revitalizing Auto Communities Environmental Response
Sag Fm = Saginaw Formation
W. Bedrock = weathered bedrock

Vertical Gradient Geometric Mean Sag Fm	0.41
Vertical Gradient Geometric Mean GR Fm	0.033

Table 6
Mann-Kendall Trend Test Results - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Monitoring Well	Well Type	Constituent	Start Date	End Date	Minimum Concentration	Maximum Concentration	Most Recent Concentration	n	% detections	CV	S-Statistic	p-value	Trend Determination
Plant 2													
MW-12-01	Bedrock	Arsenic	4/18/2012	5/12/2016	0.008	0.022	0.02	7	86	0.4	NA	NA	No Data Within Past 5 Years
MW-12-01	Bedrock	Copper	4/18/2012	5/12/2016	0.003	0.064	<0.005	7	57	1.4	NA	NA	Does Not Meet Screening Criteria
MW-12-01	Bedrock	Nickel	4/18/2012	5/12/2016	0.012	0.114	0.012	7	71	1.2	NA	NA	No Data Within Past 5 Years
MW-12-02	Bedrock	Arsenic	4/17/2012	2/13/2014	0.007	0.023	0.012	6	100	0.5	NA	NA	No Data Within Past 5 Years
MW-12-05R	Bedrock	1,4-Dioxane	4/26/2017	12/6/2021	0.16 J	3.0	<1	8	38	1.2	NA	NA	Does Not Meet Screening Criteria
MW-12-06	Bedrock	Copper	10/3/2012	5/12/2016	0.004	0.028	<0.005	8	50	0.9	NA	NA	Does Not Meet Screening Criteria
MW-12-08	Perched	Arsenic	12/20/2012	5/16/2016	0.019	0.031	0.019	6	50	0.2	NA	NA	Does Not Meet Screening Criteria
MW-12-09	Perched	PFOA	6/5/2018	11/1/2022	11.9	15.4	15	8	100	0.1	9	1.69E-01	No Significant Trend (Stable)
MW-12-18	Perched	Nickel	12/19/2012	5/9/2018	0.006	0.104	<0.005	6	83	1.1	-13	8.30E-03	Statistically Significant Decreasing
MW-13-42	Weathered Bedrock	1,4-Dioxane	12/17/2013	3/15/2016	6.0	20	20	6	100	0.4	NA	NA	No Data Within Past 5 Years
MW-13-43	Weathered Bedrock	1,4-Dioxane	12/13/2013	11/1/2022	2.0	360	2.0	25	96	0.5	-104	7.99E-03	Statistically Significant Decreasing
MW-13-43	Weathered Bedrock	Arsenic	12/13/2013	5/5/2016	0.003	0.006	0.003	4	100	0.4	NA	NA	Does Not Meet Screening Criteria
MW-13-45	Weathered Bedrock	1,4-Dioxane	12/13/2013	11/1/2022	24	58	26	25	96	0.2	22	3.12E-01	No Significant Trend (Stable)
MW-14-54	Perched	Benzene	9/19/2014	6/4/2022	2.0	820	820	11	100	0.8	25	3.09E-02	Statistically Significant Increasing
MW-14-54	Perched	Ethylbenzene	9/19/2014	6/4/2022	2.0	1710	1110	11	100	0.8	25	3.09E-02	Statistically Significant Increasing
MW-14-54	Perched	Isopropyl Benzene	9/19/2014	6/4/2022	2.0	70	50	11	73	0.5	29	1.29E-02	Statistically Significant Increasing
MW-14-54	Perched	Total Xylenes	9/19/2014	6/4/2022	121	1810	1810	11	91	0.6	35	4.06E-03	Statistically Significant Increasing
MW-14-55	Perched	Nickel	9/18/2014	5/9/2016	0.005	0.518	0.013	6	100	1.4	NA	NA	No Data Within Past 5 Years
MW-14-56	Weathered Bedrock	1,4-Dioxane	9/18/2014	12/1/2021	6.0	15	15	17	88	0.3	68	3.69E-04	Statistically Significant Increasing
MW-14-56	Weathered Bedrock	Chromium III	9/18/2014	5/8/2018	0.008	0.318	0.014	5	100	1.5	2	4.08E-01	No Significant Trend (Variable)
MW-14-56	Weathered Bedrock	Copper	9/18/2014	5/8/2018	0.008	0.025	<0.005	5	80	0.5	-2	4.08E-01	No Significant Trend (Stable)
MW-14-56	Weathered Bedrock	Nickel	9/18/2014	5/8/2018	0.021	0.683	0.021	5	80	1.2	-2	4.08E-01	No Significant Trend (Variable)
MW-14-58R	Perched	1,4-Dioxane	12/1/2021	10/14/2022	173	520	173	6	100	0.4	-13	8.30E-03	Statistically Significant Decreasing
MW-14-59	Perched	1,1-Dichloroethene	9/18/2014	6/7/2022	16	39	20	11	100	0.3	-24	3.62E-02	Statistically Significant Decreasing
MW-14-59	Perched	1,4-Dioxane	9/18/2014	6/7/2022	20	280	20	12	100	0.7	-59	3.35E-05	Statistically Significant Decreasing
MW-14-59	Perched	Arsenic	9/18/2014	6/4/2015	0.002	0.005	0.002	4	100	0.4	NA	NA	Does Not Meet Screening Criteria
MW-14-59	Perched	PFOA	6/6/2018	11/2/2022	6.7	10.1	<3.8	8	88	0.1	-5	3.17E-01	No Significant Trend (Stable)
MW-14-60	Perched	1,4-Dioxane	9/19/2014	6/7/2022	10	200	10	12	100	0.5	-60	2.61E-05	Statistically Significant Decreasing
MW-14-60	Perched	PFNA	5/9/2018	11/1/2022	2.7	7.0	4.4	8	63	0.4	NA	NA	Does Not Meet Screening Criteria
MW-14-60	Perched	PFOA	5/9/2018	11/1/2022	14.7 J	41	41	8	100	0.4	8	1.99E-01	No Significant Trend (Stable)
MW-14-60	Perched	PFOS	5/9/2018	11/1/2022	5.6	35.5	32	8	88	0.6	0	5.48E-01	No Significant Trend (Variable)
MW-14-60	Perched	Vinyl Chloride	9/19/2014	6/7/2022	2.0	12	4.0	11	100	0.6	20	6.37E-02	Statistically Significant Increasing
MW-14-61	Weathered Bedrock	1,4-Dioxane	9/19/2014	11/2/2022	5.0	152	21	21	86	1.1	27	2.15E-01	No Significant Trend (Variable)
MW-14-61	Weathered Bedrock	Arsenic	9/19/2014	6/9/2015	0.014	0.020	0.016	4	100	0.2	NA	NA	No Data Within Past 5 Years
MW-14-62	Perched	1,4-Dioxane	9/19/2014	6/7/2022	27	230	63	12	100	0.8	-18	1.22E-01	No Significant Trend (Variable)
MW-14-62	Perched	Arsenic	9/19/2014	6/9/2015	0.004	0.006	0.004	4	100	0.2	NA	NA	Does Not Meet Screening Criteria
MW-14-62	Perched	PFNA	5/9/2018	11/1/2022	5.1	11.9	7.7	8	100	0.3	-5	3.17E-01	No Significant Trend (Stable)
MW-14-62	Perched	PFOA	5/9/2018	11/1/2022	36.5	94.3	53	8	100	0.3	-10	1.38E-01	No Significant Trend (Stable)
MW-14-62	Perched	PFOS	5/9/2018	11/1/2022	47	86.8	47	8	100	0.2	-10	1.38E-01	No Significant Trend (Stable)
MW-15-72	Weathered Bedrock	1,4-Dioxane	3/16/2016	11/3/2022	11	310	11	23	100	0.5	-69	3.59E-02	Statistically Significant Decreasing
MW-15-73	Weathered Bedrock	1,4-Dioxane	3/16/2016	6/7/2022	4.0	11	9.0	12	83	0.3	42	2.27E-03	Statistically Significant Increasing
MW-16-80	Weathered Bedrock	1,4-Dioxane	6/28/2016	11/4/2022	7.0	46	19	15	93	0.3	-26	1.06E-01	No Significant Trend (Potentially Decreasing)
MW-16-81	Weathered Bedrock	1,4-Dioxane	6/28/2016	11/3/2022	70	3200	70	24	100	1.0	3	4.80E-01	No Significant Trend (Variable)
MW-16-84	Weathered Bedrock	1,4-Dioxane	9/23/2016	11/3/2022	15	81	29	23	100	0.3	33	1.99E-01	No Significant Trend (Variable)
MW-16-85	Weathered Bedrock	1,4-Dioxane	12/20/2016	11/4/2022	1.0	17	6.0	13	100	0.6	17	1.61E-01	No Significant Trend (Variable)
MW-17-86	Weathered Bedrock	1,4-Dioxane	4/25/2017	11/3/2022	11	106	19	16	100	0.5	-9	3.59E-01	No Significant Trend (Variable)
MW-19-115	Weathered Bedrock	1,4-Dioxane	3/4/2020	11/2/2022	2.0	13	7.0	10	100	0.5	-16	9.30E-02	Statistically Significant Decreasing
MW-19-116	Weathered Bedrock	1,4-Dioxane	3/4/2020	11/2/2022	54	82	65	10	100	0.1	3	4.31E-01	No Significant Trend (Stable)

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Monitoring Well	Well Type	Constituent	Start Date	End Date	Minimum Concentration	Maximum Concentration	Most Recent Concentration	n	% detections	CV	S-Statistic	p-value	Trend Determination
MW-19-120	Weathered Bedrock	1,4-Dioxane	12/4/2019	11/3/2022	7.0	198	13	11	100	0.9	-39	1.55E-03	Statistically Significant Decreasing
MW-19-121	Weathered Bedrock	1,4-Dioxane	12/4/2019	11/2/2022	4.0	119	<1	12	42	0.8	-41	1.02E-03	Statistically Significant Decreasing
MW-19-122	Weathered Bedrock	1,4-Dioxane	12/3/2019	11/1/2022	3.0	43	6.0	11	100	0.7	-41	9.23E-04	Statistically Significant Decreasing
MW-19-123	Weathered Bedrock	1,4-Dioxane	12/3/2019	11/2/2022	20	76	21	11	100	0.4	-37	2.53E-03	Statistically Significant Decreasing
MW-19-124	Weathered Bedrock	1,4-Dioxane	12/4/2019	11/1/2022	90	420	137	10	100	0.4	-13	1.46E-01	No Significant Trend (Stable)
MW-20-126	Weathered Bedrock	1,4-Dioxane	7/23/2020	11/1/2022	85	370	85	10	100	0.5	-41	1.50E-05	Statistically Significant Decreasing
MW-20-127	Weathered Bedrock	1,4-Dioxane	7/23/2020	11/2/2022	85	158	126	10	100	0.2	10	2.16E-01	No Significant Trend (Stable)
MW-20-128	Weathered Bedrock	1,4-Dioxane	7/23/2020	11/2/2022	4.0	270	<1	9	89	1.7	-26	2.90E-03	Statistically Significant Decreasing
MW-20-129	Weathered Bedrock	1,4-Dioxane	7/23/2020	11/1/2022	60	140	60	9	100	0.3	-28	1.20E-03	Statistically Significant Decreasing
MW-20-130	Weathered Bedrock	1,4-Dioxane	12/3/2020	11/3/2022	10	115	10	5	100	0.9	-8	4.20E-02	Statistically Significant Decreasing
MW-21-139	Perched	PFHxS	12/1/2021	11/2/2022	180	280	280	4	100	0.2	1	5.00E-01	No Significant Trend (Stable)
MW-21-139	Perched	PFNA	12/1/2021	11/2/2022	6.5	22	22	4	100	0.4	3	2.71E-01	No Significant Trend (Stable)
MW-21-139	Perched	PFOA	12/1/2021	11/2/2022	49	110	84	4	100	0.3	0	6.25E-01	No Significant Trend (Stable)
MW-21-139	Perched	PFOS	12/1/2021	11/2/2022	680	1900	1400	4	100	0.4	-2	3.75E-01	No Significant Trend (Stable)
MW-21-142	Weathered Bedrock	1,4-Dioxane	12/3/2021	11/2/2022	64	91	64	4	100	0.2	-6	4.20E-02	Statistically Significant Decreasing
MW-22-153	Perched	1,4-Dioxane	4/6/2022	11/14/2022	48	92	52	5	100	0.3	-6	1.17E-01	No Significant Trend (Stable)
MW-22-155	Perched	1,4-Dioxane	9/12/2022	10/14/2022	400	410	400	2	100	0.0	NA	NA	Does Not Meet Screening Criteria
MW-22-156	Perched	1,4-Dioxane	9/12/2022	10/14/2022	76	81	81	2	100	0.0	NA	NA	Does Not Meet Screening Criteria
MW-22-157	Perched	1,4-Dioxane	9/12/2022	10/14/2022	3.0	3.0	3.0	2	100	0.0	NA	NA	Does Not Meet Screening Criteria
P2-MW-01	Perched	Arsenic	12/18/2012	5/16/2016	0.003	0.158	0.003	8	83	0.6	NA	NA	No Data Within Past 5 Years
P2-MW-03	Perched	1,4-Dioxane	12/19/2012	5/3/2016	15	37	36	6	100	0.3	NA	NA	No Data Within Past 5 Years
P2-MW-03	Perched	Copper	12/19/2012	5/3/2016	0.005	0.022	<0.005	6	50	0.7	NA	NA	Does Not Meet Screening Criteria
P2-MW-03	Perched	Vanadium	12/19/2012	5/3/2016	0.002	0.017	<0.005	6	67	0.7	NA	NA	No Data Within Past 5 Years
P2-MW-04	Perched	1,4-Dioxane	5/30/2013	6/4/2022	11	59	25	12	92	0.4	-23	6.43E-02	Statistically Significant Decreasing
P2-SB-03	Perched	Arsenic	12/20/2012	5/10/2016	0.02	0.028	<0.002	5	83	0.1	NA	NA	No Data Within Past 5 Years
P2-SB-20	Perched	Arsenic	12/20/2012	2/13/2014	0.005	0.035	0.022	6	100	0.5	NA	NA	No Data Within Past 5 Years
P2-SB-20	Perched	Copper	12/20/2012	2/13/2014	0.006	0.029	0.009	5	100	0.7	NA	NA	No Data Within Past 5 Years
P2-SB-20	Perched	Vanadium	12/20/2012	2/13/2014	0.005	0.024	0.013	5	100	0.5	NA	NA	No Data Within Past 5 Years
PW-14-01	Weathered Bedrock	1,4-Dioxane	9/19/2014	11/3/2022	1.0	530	<1	24	92	0.8	-148	1.29E-04	Statistically Significant Decreasing
PW-14-02	Weathered Bedrock	1,4-Dioxane	9/18/2014	11/3/2022	9.0	580	9.0	23	100	0.8	-158	1.63E-05	Statistically Significant Decreasing
TW-14-02	Weathered Bedrock	1,4-Dioxane	6/11/2015	11/3/2022	3.0	3500	<1	29	79	1.0	-278	8.80E-08	Statistically Significant Decreasing
TW-15-12	Weathered Bedrock	1,4-Dioxane	6/10/2015	11/2/2022	2.0	220	2.0	13	100	1.3	-45	3.58E-03	Statistically Significant Decreasing

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Table 6
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RACER Trust Plants 2, 3, and 6
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Monitoring Well	Well Type	Constituent	Start Date	End Date	Minimum Concentration	Maximum Concentration	Most Recent Concentration	n	% detections	CV	S-Statistic	p-value	Trend Determination
Plant 3													
CH-14-RO	Perched	Chromium III	1/3/2013	6/9/2022	5.84	23.4	7.16	16	100	0.4	-101	3.29E-06	Statistically Significant Decreasing
CH-14-RO	Perched	Chromium VI	1/3/2013	6/9/2022	6.68	28.3	7.4	16	100	0.4	-98	6.29E-06	Statistically Significant Decreasing
CH-14-RO	Perched	PFHxS	12/16/2016	11/9/2022	1000	2520	1000	12	100	0.3	-40	3.74E-03	Statistically Significant Decreasing
CH-14-RO	Perched	PFOA	12/16/2016	11/9/2022	57.8	190	85	12	100	0.3	-11	2.46E-01	No Significant Trend (Stable)
CH-14-RO	Perched	PFOS	12/16/2016	11/9/2022	7100	13000	7100	12	100	0.2	-32	1.68E-02	Statistically Significant Decreasing
MW-01(3)	Perched	Arsenic	12/20/2012	2/11/2014	0.004	0.006	0.006	5	100	0.2	NA	NA	No Data Within Past 5 Years
MW-02 (UNK-12)	Perched	Arsenic	1/3/2013	2/13/2014	0.003	0.011	0.005	4	75	0.7	NA	NA	No Data Within Past 5 Years
MW-02-01(3)	Deep Overburden	Arsenic	5/23/2013	2/6/2014	0.006	0.011	0.008	4	100	0.3	NA	NA	No Data Within Past 5 Years
MW-02-03(3)	Deep Overburden	Arsenic	12/19/2012	5/11/2016	0.007	0.014	0.009	6	100	0.3	NA	NA	No Data Within Past 5 Years
MW-02-04(3)	Deep Overburden	Arsenic	12/19/2012	6/8/2022	0.013	0.071	0.051	10	100	0.6	25	1.40E-02	Statistically Significant Increasing
MW-02-04(3)	Deep Overburden	Nickel	12/19/2012	6/8/2022	0.01	0.110	0.022	10	100	0.9	-15	1.08E-01	No Significant Trend (Potentially Decreasing)
MW-04-02(3)	Bedrock	Arsenic	12/18/2012	2/11/2014	0.007	0.014	0.014	5	80	0.3	NA	NA	No Data Within Past 5 Years
MW-04-02(3)	Bedrock	Copper	12/18/2012	2/11/2014	0.006	0.073	0.006	5	60	1.3	NA	NA	Does Not Meet Screening Criteria
MW-04-02(3)	Bedrock	Vinyl Chloride	2/29/2012	5/14/2018	6.0	15	7.0	7	86	0.4	1	5.00E-01	No Significant Trend (Stable)
MW-04-03(3)	Deep Overburden	Arsenic	5/22/2013	5/11/2016	0.003	0.004	<0.002	5	60	0.2	NA	NA	Does Not Meet Screening Criteria
MW-04-03(3)	Deep Overburden	Vinyl Chloride	2/29/2012	5/10/2018	8.0	20	11	8	100	0.3	-3	4.06E-01	No Significant Trend (Stable)
MW-04-04(3)	Deep Overburden	Arsenic	3/1/2012	2/10/2014	0.011	0.013	0.012	6	100	0.1	NA	NA	No Data Within Past 5 Years
MW-04-04(3)	Deep Overburden	Vinyl Chloride	3/1/2012	5/11/2018	3.0	6.0	3.0	7	100	0.3	-9	1.19E-01	No Significant Trend (Stable)
MW-12-04	Bedrock	Arsenic	4/17/2012	11/5/2013	0.01	0.011	0.01	5	80	0.0	NA	NA	No Data Within Past 5 Years
MW-12-20	Deep Overburden	Copper	2/8/2013	5/5/2016	0.02	0.065	0.022	6	50	0.1	NA	NA	Does Not Meet Screening Criteria
MW-12-21	Deep Overburden	1,4-Dioxane	2/8/2013	11/4/2022	150	510	150	24	96	0.4	-149	1.19E-04	Statistically Significant Decreasing
MW-12-21	Deep Overburden	Copper	2/8/2013	5/8/2018	0.002	0.509	<0.005	7	71	1.5	-4	3.34E-01	No Significant Trend (Variable)
MW-13-22	Weathered Bedrock	1,4-Dioxane	3/28/2013	11/5/2022	45	270	84	31	100	0.4	-160	3.43E-03	Statistically Significant Decreasing
MW-13-22	Weathered Bedrock	Arsenic	3/28/2013	2/10/2014	0.005	0.013	0.005	5	100	0.5	NA	NA	No Data Within Past 5 Years
MW-13-23	Deep Overburden	Arsenic	3/29/2013	2/11/2014	0.002	0.047	<0.002	5	50	1.1	NA	NA	Does Not Meet Screening Criteria
MW-13-23	Deep Overburden	Nickel	3/29/2013	2/11/2014	0.038	0.207	0.041	6	100	0.9	NA	NA	No Data Within Past 5 Years
MW-13-24	Deep Overburden	Copper	4/1/2013	2/10/2014	0.005	0.092	0.092	6	67	1.0	NA	NA	No Data Within Past 5 Years
MW-13-24	Deep Overburden	Nickel	4/1/2013	2/10/2014	0.022	0.161	0.036	6	100	1.0	NA	NA	No Data Within Past 5 Years
MW-13-24	Deep Overburden	Vanadium	4/1/2013	2/10/2014	0.002	0.020	0.007	6	83	0.6	NA	NA	No Data Within Past 5 Years
MW-13-25	Deep Overburden	1,4-Dioxane	4/2/2013	11/7/2022	3.0	25	<1	23	87	0.6	-35	1.83E-01	No Significant Trend (Variable)
MW-13-25	Deep Overburden	Arsenic	4/2/2013	2/7/2014	0.006	0.023	0.022	6	100	0.3	NA	NA	No Data Within Past 5 Years
MW-13-25	Deep Overburden	Nickel	4/2/2013	2/7/2014	0.02	0.105	0.02	6	100	0.6	NA	NA	No Data Within Past 5 Years
MW-13-26	Deep Overburden	Arsenic	4/3/2013	5/5/2016	0.002	0.013	0.005	7	100	0.8	NA	NA	No Data Within Past 5 Years
MW-13-26	Deep Overburden	Nickel	4/3/2013	5/5/2016	0.007	0.148	0.007	7	100	1.3	NA	NA	No Data Within Past 5 Years
MW-13-27	Deep Overburden	Arsenic	4/15/2013	2/11/2014	0.004	0.064	0.004	6	100	1.6	NA	NA	No Data Within Past 5 Years
MW-13-27	Deep Overburden	Nickel	4/15/2013	2/11/2014	0.013	0.486	0.013	6	100	1.9	NA	NA	No Data Within Past 5 Years
MW-13-28	Bedrock	Arsenic	4/23/2013	5/6/2016	0.002	0.021	<0.002	6	83	0.8	NA	NA	No Data Within Past 5 Years
MW-13-29	Deep Overburden	1,4-Dioxane	4/23/2013	11/7/2022	8.0	130	12	20	100	0.9	-95	1.09E-03	Statistically Significant Decreasing
MW-13-29	Deep Overburden	Arsenic	4/23/2013	2/7/2014	0.005	0.007	0.005	6	100	0.1	NA	NA	Does Not Meet Screening Criteria
MW-13-29	Deep Overburden	Copper	4/23/2013	2/7/2014	0.002	0.024	<0.005	6	67	0.9	NA	NA	No Data Within Past 5 Years
MW-13-30	Deep Overburden	Arsenic	4/24/2013	2/10/2014	0.002	0.037	0.002	6	83	1.7	NA	NA	No Data Within Past 5 Years
MW-13-30	Deep Overburden	Nickel	4/24/2013	2/10/2014	0.021	0.405	0.405	6	100	1.3	NA	NA	No Data Within Past 5 Years
MW-13-31	Perched	Chromium III	8/22/2013	6/11/2019	0.005	1.38	<0.005	19	58	1.4	NA	NA	Does Not Meet Screening Criteria
MW-13-31	Perched	Copper	8/22/2013	6/11/2019	0.006	0.266	<0.005	19	84	1.7	-43	6.92E-02	Statistically Significant Decreasing
MW-13-31	Perched	Nickel	8/22/2013	6/11/2019	0.013	20.7	0.018	19	100	3.4	5	4.44E-01	No Significant Trend (Variable)
MW-13-32	Perched	Chromium III	8/27/2013	6/10/2022	0.006	1.43	0.009	21	76	1.7	-64	2.76E-02	Statistically Significant Decreasing
MW-13-32	Perched	Copper	8/27/2013	6/10/2022	0.005	0.067	0.005	21	81	0.9	-125	8.34E-05	Statistically Significant Decreasing
MW-13-32	Perched	Nickel	8/27/2013	6/10/2022	0.043	4.66	0.363	21	100	1.0	-56	4.84E-02	Statistically Significant Decreasing

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MW-13-34	Weathered Bedrock	1,4-Dioxane	8/20/2013	11/8/2022	17	127	81	28	100	0.3	191	8.57E-05	Statistically Significant Increasing
MW-13-40	Deep Overburden	Arsenic	12/17/2013	5/12/2016	0.015	0.032	0.026	9	100	0.2	NA	NA	No Data Within Past 5 Years
MW-13-41	Deep Overburden	1,4-Dioxane	12/17/2013	6/10/2019	11	23	23	12	100	0.3	17	1.29E-01	No Significant Trend (Stable)
MW-13-41	Deep Overburden	Arsenic	12/17/2013	5/11/2018	0.011	0.024	0.011	10	100	0.2	-4	3.98E-01	No Significant Trend (Stable)
MW-13-48	Deep Overburden	1,4-Dioxane	12/19/2013	11/8/2022	24	380	24	24	100	0.6	-44	1.43E-01	No Significant Trend (Variable)
MW-14-64	Weathered Bedrock	Arsenic	9/17/2014	6/2/2015	0.008	0.017	0.014	4	100	0.4	NA	NA	No Data Within Past 5 Years
MW-14-65	Perched	Copper	9/17/2014	5/11/2016	0.006	0.041	<0.005	6	83	0.8	NA	NA	No Data Within Past 5 Years
MW-18-88	Perched	PFOA	12/5/2018	11/8/2022	3.1 J	17	7.1	16	100	0.5	54	8.51E-03	Statistically Significant Increasing
MW-18-88	Perched	PFOS	12/5/2018	11/8/2022	46.1	860	220	16	100	1.0	52	1.08E-02	Statistically Significant Increasing
MW-18-89	Perched	PFOA	12/5/2018	11/8/2022	10	21.4	12	16	100	0.2	-34	6.83E-02	Statistically Significant Decreasing
MW-18-89	Perched	PFOS	12/5/2018	11/8/2022	74	289	130	16	100	0.3	-29	1.03E-01	No Significant Trend (Potentially Decreasing)
MW-18-90	Perched	PFOA	12/6/2018	11/9/2022	8.1	21.3	15	16	100	0.2	-40	3.93E-02	Statistically Significant Decreasing
MW-18-90	Perched	PFOS	12/6/2018	11/9/2022	230	1100	920	16	100	0.2	-10	3.42E-01	No Significant Trend (Stable)
MW-18-91	Perched	PFOA	12/6/2018	11/8/2022	7.1	15	7.9	16	100	0.2	-45	2.34E-02	Statistically Significant Decreasing
MW-18-91	Perched	PFOS	12/6/2018	11/8/2022	41	89	50	16	100	0.2	-52	1.08E-02	Statistically Significant Decreasing
MW-18-95	Perched	PFOA	3/5/2019	11/9/2022	2.3 J	16.6	11	16	100	0.6	-39	4.34E-02	Statistically Significant Decreasing
MW-18-95	Perched	PFOS	3/5/2019	11/9/2022	27	115	46	16	100	0.5	-55	7.47E-03	Statistically Significant Decreasing
MW-18-98	Perched	PFOA	3/5/2019	11/8/2022	5.3	42	5.3	17	100	0.5	-48	2.64E-02	Statistically Significant Decreasing
MW-18-98	Perched	PFOS	3/5/2019	11/8/2022	33	440	440	17	100	0.8	0	5.16E-01	No Significant Trend (Variable)
MW-18-99	Perched	PFOA	3/5/2019	11/7/2022	3.9	9.8	4.6	17	100	0.2	-24	1.72E-01	No Significant Trend (Stable)
MW-18-99	Perched	PFOS	3/5/2019	11/7/2022	46.7	170	70	17	100	0.4	26	1.52E-01	No Significant Trend (Variable)
MW-18-103	Perched	PFHxS	3/4/2019	11/9/2022	16.8	84	84	16	100	0.5	65	1.96E-03	Statistically Significant Increasing
MW-18-104	Perched	PFOS	3/4/2019	11/9/2022	2.5 J	13.8	3.2 J	10	100	0.5	-15	1.08E-01	No Significant Trend (Potentially Decreasing)
MW-18-105	Perched	PFOS	3/4/2019	11/9/2022	2.7 J	23.8	2.7 J	17	100	0.6	-24	1.72E-01	No Significant Trend (Variable)
MW-18-106	Perched	PFOA	3/4/2019	6/9/2022	0.84 J	10.7	0.84 J	9	44	0.9	-14	9.00E-02	Statistically Significant Decreasing
MW-18-106	Perched	PFOS	3/4/2019	6/9/2022	1.8 J	51.6	4.3	9	100	1.4	-16	6.00E-02	Statistically Significant Decreasing
MW-19	Perched	1,4-Dioxane	10/19/2011	12/7/2021	2.0	8.0	2.0	15	20	0.6	NA	NA	Does Not Meet Screening Criteria
MW-19	Perched	Chromium III	12/20/2012	2/11/2014	0.007	0.128	0.007	5	80	1.5	NA	NA	No Data Within Past 5 Years
MW-19	Perched	Copper	12/20/2012	2/11/2014	0.004	0.053	0.005	5	100	0.9	NA	NA	No Data Within Past 5 Years
MW-22	Deep Overburden	Arsenic	12/19/2012	6/6/2019	0.002	0.049	0.003	12	67	1.8	15	1.58E-01	No Significant Trend (Variable)
MW-23	Deep Overburden	Arsenic	12/20/2012	6/12/2019	0.007	0.012	0.011	8	100	0.2	11	1.14E-01	No Significant Trend (Stable)
MW-88-1	Bedrock	Copper	3/27/2012	2/6/2014	0.01	0.041	0.018	6	67	0.7	NA	NA	No Data Within Past 5 Years
MW-91-2	Deep Overburden	Arsenic	2/29/2012	12/4/2018	0.004	0.032	0.007	11	91	0.8	-19	7.76E-02	Statistically Significant Decreasing
MW-91-2	Deep Overburden	Chromium III	2/29/2012	12/4/2018	0.005	0.35	0.005	11	91	1.4	-27	2.15E-02	Statistically Significant Decreasing
MW-91-2	Deep Overburden	Copper	2/29/2012	12/4/2018	0.008	0.026	<0.005	11	45	0.5	NA	NA	Does Not Meet Screening Criteria
MW-91-2	Deep Overburden	PFOS	12/15/2016	6/12/2019	2.5	203	203	5	100	1.6	6	1.17E-01	No Significant Trend (Variable)
MW-91-4	Bedrock	Arsenic	4/17/2012	2/10/2014	0.005	0.014	0.005	5	100	0.3	NA	NA	No Data Within Past 5 Years
MW-91-4	Bedrock	Vinyl Chloride	4/17/2012	5/11/2018	8.0	18	9.0	7	100	0.3	-15	1.50E-02	Statistically Significant Decreasing
MW-91-5	Bedrock	Arsenic	12/19/2012	5/6/2016	0.01	0.011	0.011	6	83	0.1	NA	NA	No Data Within Past 5 Years
MW-91-6	Bedrock	Arsenic	4/4/2013	2/7/2014	0.008	0.011	0.0009	4	100	0.1	NA	NA	No Data Within Past 5 Years
PW-14-03	Weathered Bedrock	1,4-Dioxane	9/18/2014	11/5/2022	3.0	530	8.0	25	100	0.9	-190	5.02E-06	Statistically Significant Decreasing
TW-14-06	Weathered Bedrock	1,4-Dioxane	6/9/2015	11/7/2022	2.0	790	10	17	81	1.5	-67	1.43E-03	Statistically Significant Decreasing
TW-15-11	Weathered Bedrock	1,4-Dioxane	6/9/2015	11/5/2022	5.0	250	22	15	100	0.9	-87	9.93E-06	Statistically Significant Decreasing
UNK-10	Perched	Arsenic	1/3/2013	5/6/2016	0.003	0.012	0.012	10	90	0.6	NA	NA	No Data Within Past 5 Years
UNK-11	Perched	Arsenic	1/2/2013	5/15/2018	0.01	0.015	0.01	6	83	0.1	-2	4.30E-01	No Significant Trend (Stable)
UNK-15	Perched	PFNA	6/10/2019	11/9/2022	3.3 J	6.94	4.7	14	100	0.2	-15	2.21E-01	No Significant Trend (Stable)
UNK-15	Perched	PFOA	6/10/2019	11/9/2022	14	26.6	27	14	100	0.2	-39	1.85E-02	Statistically Significant Decreasing
UNK-15	Perched	PFOS	6/10/2019	11/9/2022	810	1530	1200	14	100	0.2	-17	1.89E-01	No Significant Trend (Stable)

See Notes on Last Page

Table 6
Mann-Kendall Trend Test Results - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Monitoring Well	Well Type	Constituent	Start Date	End Date	Minimum Concentration	Maximum Concentration	Most Recent Concentration	n	% detections	CV	S-Statistic	p-value	Trend Determination
Plant 6													
MW-02-02(6)	Perched	1,4-Dioxane	12/21/2012	6/6/2022	11	23	11	7	100	0.2	-3	3.86E-01	No Significant Trend (Stable)
MW-02-02(6)	Perched	Arsenic	12/21/2012	2/19/2014	0.029	0.051	0.041	5	100	0.2	NA	NA	No Data Within Past 5 Years
MW-03-01	Perched	Arsenic	12/20/2012	12/7/2015	0.014	0.047	0.035	11	100	0.4	NA	NA	No Data Within Past 5 Years
MW-03-02	Perched	Arsenic	12/19/2012	5/16/2018	0.01	0.025	0.15	6	100	0.3	2	4.30E-01	No Significant Trend (Stable)
MW-03-04	Perched	1,4-Dioxane	12/20/2012	6/10/2019	6.0	48	6.0	13	100	0.1	-55	4.82E-04	Statistically Significant Decreasing
MW-03-04	Perched	Arsenic	12/20/2012	2/18/2014	0.017	0.0224	0.022	5	100	0.1	NA	NA	No Data Within Past 5 Years
MW-03-06	Perched	1,4-Dioxane	1/3/2013	6/6/2022	5.0	10	5.0	16	100	0.2	26	6.78E-02	Statistically Significant Increasing
MW-03-06	Perched	Arsenic	1/3/2013	5/15/2018	0.008	0.033	0.008	11	100	0.5	4	4.07E-01	No Significant Trend (Stable)
MW-03-06	Perched	Vinyl Chloride	1/3/2013	6/6/2022	5.0	12	11	15	87	0.2	-7	3.79E-01	No Significant Trend (Stable)
MW-03-07	Perched	1,4-Dioxane	12/20/2012	2/19/2014	27	29	29	5	100	0.0	NA	NA	No Data Within Past 5 Years
MW-03-07	Perched	Arsenic	12/20/2012	2/19/2014	0.013	0.049	0.02	5	100	0.6	NA	NA	No Data Within Past 5 Years
MW-04-01(6)	Bedrock	Arsenic	1/3/2013	5/4/2016	0.004	0.013	0.013	5	100	0.5	NA	NA	No Data Within Past 5 Years
MW-04-04R	Bedrock	Arsenic	8/23/2013	5/12/2016	0.019	0.060	0.06	9	100	0.5	NA	NA	No Data Within Past 5 Years
MW-04-05(6)	Perched	Arsenic	12/18/2012	5/11/2018	0.006	0.024	<0.002	11	55	0.5	NA	NA	Does Not Meet Screening Criteria
MW-04-06R	Bedrock	Arsenic	8/23/2013	5/3/2016	0.009	0.030	0.013	8	100	0.3	NA	NA	No Data Within Past 5 Years
MW-12-11	Perched	Arsenic	12/18/2012	6/12/2019	0.004	0.062	0.006	16	94	1.2	14	2.77E-01	No Significant Trend (Variable)
MW-12-11	Perched	Chromium III	12/18/2012	6/12/2019	0.005	0.102	<0.005	16	75	1.1	6	4.10E-01	No Significant Trend (Variable)
MW-12-11	Perched	Nickel	12/18/2012	6/12/2019	0.005	0.493	0.006	16	94	1.8	-20	1.96E-01	No Significant Trend (Variable)
MW-12-12	Perched	Chromium III	12/18/2012	6/12/2019	0.006	0.378	0.011	17	59	1.3	NA	NA	Does Not Meet Screening Criteria
MW-12-12	Perched	Nickel	12/18/2012	6/12/2019	0.007	1.15	0.007	17	100	1.7	-29	1.24E-01	No Significant Trend (Variable)
MW-12-12	Perched	PFNA	6/12/2019	11/9/2022	5.1	12.6	7.8	15	100	0.2	-56	3.21E-03	Statistically Significant Decreasing
MW-12-12	Perched	PFOA	6/5/2018	11/9/2022	52	130	99	16	100	0.2	-2	4.82E-01	No Significant Trend (Stable)
MW-12-12	Perched	PFOS	6/5/2018	11/9/2022	33	67.5	43	16	100	0.2	-37	5.24E-02	Statistically Significant Decreasing
MW-12-15	Perched	Vanadium	12/18/2012	11/6/2013	0.004	0.005	0.004	4	75	0.1	NA	NA	No Data Within Past 5 Years
MW-12-16	Perched	Arsenic	12/18/2012	6/10/2019	0.005	0.051	0.005	15	100	0.6	2	4.80E-01	No Significant Trend (Variable)
MW-13-35	Perched	Arsenic	9/20/2013	6/10/2019	0.002	0.012	<0.002	15	60	0.6	NA	NA	Does Not Meet Screening Criteria
MW-13-36R	Perched	Copper	12/18/2013	6/6/2022	0.005	0.028	<0.005	19	68	0.6	-52	3.41E-02	Statistically Significant Decreasing
MW-13-36R	Perched	PFNA	6/12/2019	11/9/2022	11	16.5	13	15	100	0.1	17	2.12E-01	No Significant Trend (Stable)
MW-13-36R	Perched	PFOA	6/12/2019	11/9/2022	57.1	81.1	65	15	100	0.1	28	8.98E-02	Statistically Significant Increasing
MW-13-36R	Perched	PFOS	6/12/2019	11/9/2022	39	56.7	42	15	100	0.1	-48	9.94E-03	Statistically Significant Decreasing
MW-13-36R	Perched	Vanadium	12/18/2013	6/6/2022	0.005	0.027	<0.005	19	89	0.5	-28	1.70E-01	No Significant Trend (Variable)
MW-14-67	Perched	Copper	9/18/2014	6/4/2020	0.005	0.026	<0.005	8	75	0.8	-16	3.10E-02	Statistically Significant Decreasing
MW-14-67	Perched	PFOA	6/6/2019	11/9/2022	10.3	27.1	15	15	100	0.4	17	2.14E-01	No Significant Trend (Stable)
MW-14-70	Perched	Copper	9/18/2014	5/16/2016	0.005	0.037	0.005	6	67	0.8	NA	NA	No Data Within Past 5 Years
MW-14-70	Perched	PFOA	5/10/2018	11/9/2022	6.6	51.9	18	16	100	0.5	-23	2.02E-01	No Significant Trend (Variable)
MW-20-131	Perched	PFNA	2/26/2021	11/10/2022	1.4 J	4.0	2.1 J	6	100	0.4	NA	NA	Does Not Meet Screening Criteria
MW-20-131	Perched	PFOA	2/26/2021	11/10/2022	27	41	38	6	100	0.1	-2	4.30E-01	No Significant Trend (Stable)
MW-20-131	Perched	Vinyl Chloride	12/3/2020	11/30/2021	2.0	5.0	2.0	5	100	0.3	1	5.00E-01	No Significant Trend (Stable)
MW-20-132	Perched	PFNA	2/26/2021	11/9/2022	4.5	8.1	5.0	6	100	0.2	-7	1.36E-01	No Significant Trend (Stable)
MW-20-132	Perched	PFOA	2/26/2021	11/9/2022	29	45.2	33	6	100	0.2	-11	2.80E-02	Statistically Significant Decreasing
MW-20-132	Perched	PFOS	2/26/2021	11/9/2022	12	20.2	13	6	100	0.2	-13	8.30E-03	Statistically Significant Decreasing
MW-20-132	Perched	Vinyl Chloride	12/3/2020	11/30/2022	1.0	3.0	2.0	5	100	0.4	1	5.00E-01	No Significant Trend (Stable)
MW-21-133	Perched	PFOA	3/22/2021	11/9/2022	31	110	110	6	100	0.5	3	3.60E-01	No Significant Trend (Stable)
MW-21-134	Perched	PFOA	3/19/2021	11/9/2022	22.6	55	55	6	100	0.4	5	2.35E-01	No Significant Trend (Stable)
MW-21-135	Perched	PFOA	3/19/2021	11/9/2022	38	48.3	41	6	100	0.1	-11	2.80E-02	Statistically Significant Decreasing
MW-22-143	Perched	PFOA	4/5/2022	11/10/2022	1.5 J	6.0	6.0	4	100	0.5	NA	NA	Does Not Meet Screening Criteria
MW-22-144	Perched	PFOA	4/4/2022	11/10/2022	5.3	9.0	5.9	4	100	0.2	2	3.75E-01	No Significant Trend (Stable)
MW-22-145	Perched	PFOA	4/4/2022	11/10/2022	14	23	17	4	100	0.2	2	3.75E-01	No Significant Trend (Stable)

Table 6
Mann-Kendall Trend Test Results - 2022
RACER Trust Plants 2, 3, and 6
Lansing, Michigan

Monitoring Well	Well Type	Constituent	Start Date	End Date	Minimum Concentration	Maximum Concentration	Most Recent Concentration	n	% detections	CV	S-Statistic	p-value	Trend Determination
MW-22-146	Perched	PFOA	4/5/2022	11/10/2022	1.4 J	6.5	1.4 J	4	100	0.6	NA	NA	Does Not Meet Screening Criteria
MW-22-147	Perched	PFOA	4/4/2022	11/10/2022	2.8	4.6	4.6	4	100	0.2	NA	NA	Does Not Meet Screening Criteria
MW-22-148	Perched	PFOA	4/4/2022	11/10/2022	1.1	1.1	<3.6	2	25	NA	NA	NA	Does Not Meet Screening Criteria
MW-22-149	Perched	PFOA	4/5/2022	11/10/2022	0.72 J	1.8 J	0.93 J	4	100	0.4	NA	NA	Does Not Meet Screening Criteria
MW-22-151	Perched	PFOA	4/5/2022	11/10/2022	7.7	9.4	7.8	4	100	0.1	-2	3.75E-01	No Significant Trend (Stable)
MW-22-152	Perched	PFOS	4/5/2022	11/10/2022	2.4 J	5.5	5.5	4	100	0.4	NA	NA	Does Not Meet Screening Criteria
MW-22-154	Perched	Vinyl Chloride	9/12/2022	10/14/2022	1.0	2.0	1.0	2	100	0.5	NA	NA	Does Not Meet Screening Criteria
MWBP-10-UST5-6	Perched	Arsenic	12/21/2012	6/3/2022	0.003	0.051	0.01	17	89	1.0	82	2.17E-03	Statistically Significant Increasing
MWBP-11-UST1-4	Perched	Arsenic	12/21/2012	6/3/2022	0.006	0.029	0.006	13	100	0.4	-43	4.99E-03	Statistically Significant Decreasing
MWBP-11-UST1-4	Perched	Copper	12/21/2012	6/3/2022	0.005	0.023	<0.005	13	85	0.5	-51	1.04E-03	Statistically Significant Decreasing
MWBP-12-UST1-4	Perched	Arsenic	12/21/2012	6/3/2022	0.003	0.018	0.003	13	100	0.4	-5	4.03E-01	No Significant Trend (Stable)
MWBP-12-UST1-4	Perched	Benzene	12/21/2012	6/3/2022	2.0	284	<1	14	71	1.1	22	1.22E-01	No Significant Trend (Variable)
MWBP-12-UST1-4	Perched	Vanadium	12/21/2012	6/3/2022	0.006	0.011	<0.005	13	85	0.2	-6	3.77E-01	No Significant Trend (Stable)
P6-MW-01	Perched	Arsenic	12/21/2012	2/20/2014	0.009	0.017	0.009	5	100	0.3	NA	NA	No Data Within Past 5 Years
P6-SB-07	Perched	PFNA	6/6/2019	11/9/2022	74.6	208	170	15	100	0.3	5	4.22E-01	No Significant Trend (Stable)
P6-SB-07	Perched	PFOA	6/7/2019	11/9/2022	640	1930	1500	16	100	0.3	-14	2.79E-01	No Significant Trend (Stable)
P6-SB-07	Perched	PFOS	6/7/2019	11/9/2022	38	126	91	16	100	0.4	-17	2.35E-01	No Significant Trend (Stable)
P6-SB-18	Perched	Copper	12/19/2012	5/12/2016	0.018	0.060	0.023	9	100	0.4	NA	NA	No Data Within Past 5 Years
P6-SB-18	Perched	Vanadium	12/19/2012	5/12/2016	0.015	0.038	0.015	9	100	0.3	NA	NA	No Data Within Past 5 Years
P6-SB-32	Perched	Arsenic	12/19/2012	6/9/2015	0.008	0.020	0.012	10	100	0.3	NA	NA	No Data Within Past 5 Years
P6-SB-32	Perched	Ethylbenzene	12/19/2012	12/1/2015	100	1090	580	11	91	0.7	NA	NA	No Data Within Past 5 Years
P6-SB-32	Perched	Isopropyl Benzene	12/19/2012	12/1/2015	60	330	150	11	73	0.7	NA	NA	No Data Within Past 5 Years
P6-SB-32	Perched	Total Xylenes	12/19/2012	12/1/2015	2160	8580	6640	11	100	0.5	NA	NA	No Data Within Past 5 Years
P6-SB-35	Perched	Arsenic	12/19/2012	5/16/2016	0.004	0.015	0.007	9	100	0.3	NA	NA	No Data Within Past 5 Years
P6-SB-35	Perched	Vanadium	12/19/2012	5/16/2016	0.008	0.029	0.019	9	100	0.3	NA	NA	No Data Within Past 5 Years
P6-SB-37	Perched	Copper	12/19/2012	5/16/2016	0.002	0.058	0.008	10	80	1.4	NA	NA	No Data Within Past 5 Years
P6-SB-37	Perched	Vanadium	12/19/2012	5/16/2016	0.006	0.028	0.011	10	60	0.5	NA	NA	Does Not Meet Screening Criteria

Notes:
*Well is not actively sampled, per the current approved Interim Groundwater Monitoring Plan (IGMP)
< = less than the posted reporting limit
% = percent
CV = coefficient of variation; low values indicate stable concentrations. Values near or greater than 1 suggest variability and/or a temporal trend.
DCE = dichloroethene
n = number of samples included in analysis
NA = not applicable due to elevated proportion of non-detect concentrations
p-value: values less than 0.1 indicate a statistically significant trend at 90% confidence.
S-Statistic: positive values suggest increasing trend, negative values suggest decreasing trend, values near zero indicate stability or variability.
TCE = trichloroethene
VC = vinyl chloride
1. All concentrations are micrograms per liter
2. Total DCE = sum of cis-1,2-DCE, trans-1,2-DCE, and 1,1-DCE. Non-detect concentrations taken as zero.

Table 7
Summary of Plant 2 Storm Sewer Sampling Analytical Results
RACER Trust - Plant 2 Industrial Land, Lansing, Michigan

Location ID: / Date Collected:	Units	MI Rule 57 SW (EGLE 2017)	P2-MH-2 3/1/2022	P2-MH-2 05/12/22	P2-MH-2 08/02/22	P2-MH-2 11/03/22	P2-MH-30 01/28/22	P2-MH-30 03/01/22	P2-MH-30 05/12/22	P2-MH-30 08/02/22	P2-MH-30 11/03/22	P2-MH-30_E 1/28/2022	P2-MH-30_S 1/28/2022
Results													
Perfluorooctanesulfonic acid (PFOS)	ng/L	12	12	8.4	14	10	12	14	7.9	17	12	3.5 J	5.4 [7.7]
Perfluorooctanoic acid (PFOA)	ng/L	170	12.6	13.0	14	15	12	14	13	14	17	1.9 J	15 [13]
Perfluorobutanesulfonic acid (PFBS)	ng/L	670,000	1.4 J	2.0 J	6.9	3.7 J	12	1.1 J	1.5 J	11	3.8 J	<0.93	1.0 J [1.3 J]
Other PFAS	ng/L	NC	37.3	31.0	41.4	37.9	34.3	40.5	31.9	39.4	36.4	0	37.6 [37.4]

Location ID: / Date Collected:	Units	MI Rule 57 SW (EGLE 2017)	P2-MH-30_W 1/28/2022	P2-MH-30_W 11/3/2022	P2-MH-W 3/1/2022	P2-MH-W 5/12/2022	P2-MH-W 08/12/22	P2-MH-W 11/03/22
Results								
Perfluorooctanesulfonic acid (PFOS)	ng/L	12	22	1.4 J	<0.93	0.97 J	2.8 J	<4.0
Perfluorooctanoic acid (PFOA)	ng/L	170	3.1 J	3.8 J	1.8 J	2.7 J	2.8 J	1.8 J
Perfluorobutanesulfonic acid (PFBS)	ng/L	670,000	3.9 J	9.3	1.5 J	1.5 J	1.1 J	1.1 J
Other PFAS	ng/L	NC	17.1	4.3	10.1	12.8	6.3	3.7

Notes:

Shaded	Exceeds Rule 57 Human Non-Cancer Screening Value for Surface Water from a Non-Drinking Water Source for PFOS or PFOA

NC = No criteria
ng/L = Nanograms per liter
PFAS = Per- and polyfluoroalkyl substances
J = Indicates an estimated value below laboratory reporting limit
< = The compound was analyzed for but not detected.
All samples analyzed using USEPA Method 537M, Michigan List of 28

Table 8
Summary of Plant 3 Storm Sewer Sampling Analytical Results
RACER Trust - Plant 3 Industrial Land, Lansing, Michigan

Location ID: Date Collected:	Units	MI Rule 57 SW (EGLE 2017)	P3-MH-284 03/01/22	P3-MH-284 05/12/22	P3-MH-284 08/02/22	P3-MH-284 11/03/22
Results						
Perfluorooctanesulfonic acid (PFOS)	ng/L	12	4.7	5.3	16	5.1
Perfluorooctanoic acid (PFOA)	ng/L	170	3.7 J	1.7 J	1.8 J	<4.0
Perfluorobutanesolfonic acid (PFBS)	ng/L	670,000	3.3 J	1.8 J	<4.1	<4.0
Other PFAS	ng/L	NC	38.0	8.3	9.1	1.3

Notes:

Shaded	Exceeds Rule 57 Human Non-Cancer Screening Value for Surface Water from a Non-Drinking Water Source for PFOS or PFOA

NC = No criteria

ng/L = Nanograms per liter

PFAS = Per- and polyfluoroalkyl substances

J = Indicates an estimated value below laboratory reporting limit

< = The compound was analyzed for but not detected.

All samples analyzed using USEPA Method 537M, Michigan List of 28

Table 9
Summary of Plant 6 Storm Sewer Sampling Analytical Results
RACER Trust - Plant 6 Industrial Land, Lansing, Michigan

Location ID: / Date Collected:	Units	MI Rule 57 SW (EGLE 2017)	MichAve-MH-3 03/01/22	MichAve-MH-3 05/12/22	MichAve-MH-3 08/02/22	MichAve-MH-3 11/03/22	MichAve-MH-4 03/01/22	MichAve-MH-4 05/12/22	MichAve-MH-4 08/02/22	MichAve-MH-4 11/03/22	Osborn-CB-2 03/01/22	Osborn-CB-2 05/12/22
Results												
Perfluorooctanesulfonic acid (PFOS)	ng/L	12	2.1 J	2.6 J	2.7 J	2.6 J	7.9	9.4	15	7.2	7.7	15
Perfluorooctanoic acid (PFOA)	ng/L	170	4.1	4.8	3.2 J	4.2 B	10	29	16	8.3 B	21	39
Perfluorobutanesulfonic acid (PFBS)	ng/L	670,000	3.4 J	3.1 J	2.8 J	2.2 J	2.3 J	3.2 J	2.4 J	1.9 J	<3.8	<3.7
Other PFAS	ng/L	NC	22.2	22.7	16.8	15.5	35.2	61.2	42.4	27.3	47.1	62.5

Location ID: / Date Collected:	Units	MI Rule 57 SW (EGLE 2017)	Osborn-CB-2 08/02/22	Osborn-CB-2 11/03/22	Osborn-CB-2_Drain 03/01/22	Osborn-CB-2_Drain 05/12/22	Osborn-CB-2_Drain 08/02/22	Osborn-MH-1 03/01/22	Osborn-MH-1 05/12/22	Osborn-MH-1 08/02/22	Osborn-MH-1 11/03/22	Stanley-MH-2 11/03/22
Results												
Perfluorooctanesulfonic acid (PFOS)	ng/L	12	25	12	11	15	25	24	25	9.6	14	17
Perfluorooctanoic acid (PFOA)	ng/L	170	27	15	30	41	25	30	45	29	26	26
Perfluorobutanesulfonic acid (PFBS)	ng/L	670,000	0.95 J	<4.2	0.98 J	0.95 J	1.1 J	<3.7	1.3 J	1.3 J	1.4 J	1.5 J
Other PFAS	ng/L	NC	57.3	30.2	65.6	62.5	52.5	73.1	90.6	48.9	62.3	54.0

Location ID: / Date Collected:	Units	MI Rule 57 SW (EGLE 2017)	Stanley-MH-3 11/03/22	Verlinden-MH-1 03/01/22	Verlinden-MH-1 05/12/22	Verlinden-MH-2 03/01/22	Verlinden-MH-2 05/12/22	Verlinden-MH-2 08/02/22	Verlinden-MH-2 11/03/22	Verlinden-MH-3 03/01/22	Verlinden-MH-3 05/12/22	Verlinden-MH-3 08/02/22
Results												
Perfluorooctanesulfonic acid (PFOS)	ng/L	12	14	4.7	13	21	5.6	15	11	7.5 [6.9]	7.0 [4.8]	10 [12]
Perfluorooctanoic acid (PFOA)	ng/L	170	21	19	30	43	23	24	21	29 [29]	29 [21]	26 [25]
Perfluorobutanesulfonic acid (PFBS)	ng/L	670,000	1.8 J	4.7	2.4 J	2.4 J	4.2	2.5 J	2.1 J	4.0 [3.9]	6.5 [4.3]	4.4 [4.5]
Other PFAS	ng/L	NC	54.9	50.2	77.8	113.2	57.8	138.7	112.9	116.7 [113.6]	96.5 [57.0]	174.8 [184.0]

Location ID: / Date Collected:	Units	MI Rule 57 SW (EGLE 2017)	Verlinden-MH-3 11/03/22	Verlinden-MH-4 03/01/22	Verlinden-MH-4 05/12/22	Verlinden-MH-4 08/02/22	Verlinden-MH-4 11/03/22	Verlinden-MH-5 03/01/22	Verlinden-MH-5 05/12/22	Verlinden-MH-5 08/02/22	Verlinden-MH-5 11/03/22
Results											
Perfluorooctanesulfonic acid (PFOS)	ng/L	12	7.7 [7.1]	6.4	6.6	12	11	5.8	6.8	6.3	8.0
Perfluorooctanoic acid (PFOA)	ng/L	170	18 [19]	29	28	23	17	27	21	22	23
Perfluorobutanesulfonic acid (PFBS)	ng/L	670,000	6.6 [6.9]	4.5	6.4	6.8	5.1	3.9	3.8	2.7 J	2.4 J
Other PFAS	ng/L	NC	108.9 [112.0]	119.0	95.3	189.8	116.8	88.0	102.7	176.7	80.2

Notes:

Shaded — Exceeds Rule 57 Human Non-Cancer Screening Value for Surface Water from a Non-Drinking Water Source for PFOS or PFOA

NC = No criteria
ng/L = Nanograms per liter
PFAS = Per- and polyfluoroalkyl substances
[ ] Indicates duplicate sample
J = Indicates an estimated value below laboratory reporting limit
B = Detected in method blank
< = The compound was analyzed for but not detected.
All samples analyzed using USEPA Method 537M, Michigan List of 28

Figures

MW-21-142
MW-14-63
MW-12-02
P2-MW-01
P2-MW-03
MW-16-80
MW-20-126
TW-15-12
MW-13-42
MW-13-44
MW-13-43
MW-13-45
P2-SB-20
P2-SB-03
PW-14-02
MW-15-73
MW-20-127
MW-22-155
MW-19-118S/D
MW-14-59
MW-16-85
LMW-12-03S/D
MW-19-125
LMW-14-14D
LMW-14-15D
MW-22-153
MW-14-58R
MW-16-82
MW-22-157
MW-20-128
MW-16-84
LMW-12-02
MW-16-83
MW-17-87
MW-14-60
MW-19-116
LMW-12-08
MW-22-156
MW-19-117
MW-17-86
PMW-02
MW-12-05R
PMW-01
P2-MW-04
MW-19-115
LMW-14-13D
LMW-12-07
MW-14-61
MW-15-72
P2-SB-37
MW-19-120
LMW-12-06
LMW-12-01
MW-12-09
PMW-03
MW-19-124
MW-12-06
MW-14-56
MW-14-57
LMW-12-05
LMW-12-04
P2-SB-06
LMW-15-17D
MW-16-81
MW-14-62
LMW-14-12D
MW-21-139
LMW-15-16D
MW-20-130
MW-20-129
MW-19-121
MW-16-79
MW-19-122
MW-14-55
MW-12-18
MW-16-74
TW-14-02
MW-16-78
MW-14-54
PW-14-01
MW-16-76
MW-12-01
MW-21-140
MW-19-123
MW-16-77
MW-16-75
MW-12-07
MW-12-08
P2-MW-02
MW-13-51
MW-13-52
MW-13-50
MW-13-53
MW-01(2)
MWBP-12-UST5-6
MWBP-10-UST5-6

0 200 400
SCALE IN FEET

Legend

- LNAPL MONITORING WELL
- PERCHED ZONE MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTE:

APC = ADAMS PLATING CO.

AERIAL IMAGERY: 30-SEPT-2021

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF PLANT 2 MONITORING WELL LOCATIONS

ARCADIS

FIGURE
1A

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 1A - P2 Monitoring Wells.mxd PLOTTED: 6/1/2023 11:47:37 AM BY: JNHolt

MW-12-03
MW-22-151
MW-22-152
MW-22-150
MW-12-10R
MW-22-154
MW-04-06R
MW-20-132
MW-20-131
MW-12-11
MW-04-05
MW-03-02
MW-12-12
MW-14-70
MW-03-04
MW-03-05
MW-02-01(6)
P6-SB-18
MW-12-13
MW-03-07
MW-14-66
MW-14-69
MW-04-01(6)
MW-02-02(6)
MW-03-06
P6-SB-37
MW-14-67
MW-03-08
MW-04-04R
MW-21-141
MW-22-149
P6-SB-35
MW-13-36R
P6-SB-21
MW-22-148
MW-22-147
P6-SB-07
MW-21-133
MW-22-146
MW-21-134
MW-21-135
MW-22-160
MWBP-11-UST1-4
MWBP-12-UST1-4
MW-12-14
MW-22-143
MW-22-144
UNK-03
MW-22-145
P6-MW-01
MW-22-158
MW-12-16
MW-12-15
MW-21-137
MW-21-138
MW-13-35
MW-21-136
MW-22-159

0 225 450
SCALE IN FEET

Legend

- LNAPL MONITORING WELL
- PERCHED ZONE MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTE:

AERIAL IMAGERY: 30-SEPT-2021

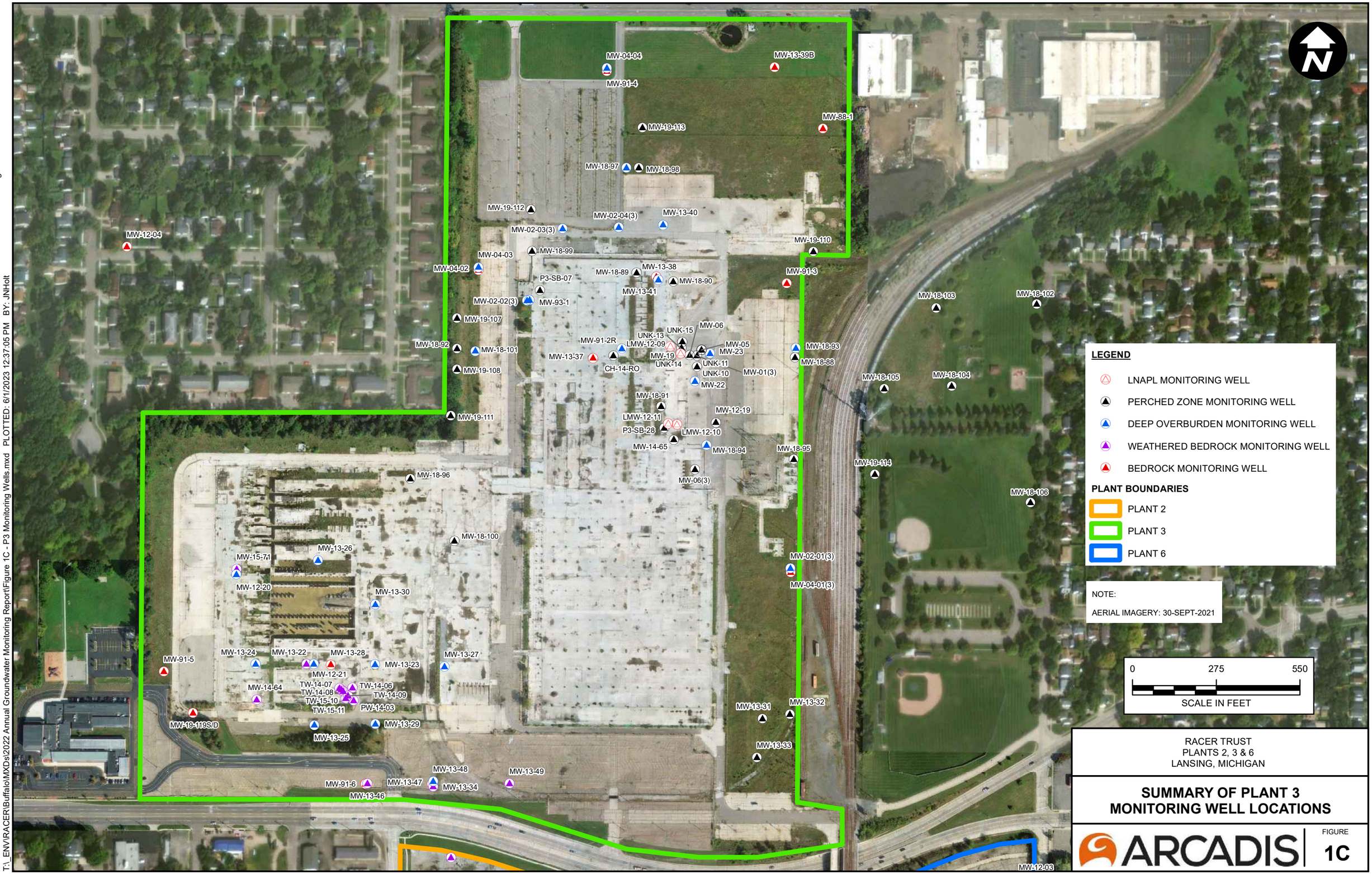
RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF PLANT 6 MONITORING WELL LOCATIONS

ARCADIS

FIGURE
1B

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 1B - P6 Monitoring Wells.mxd PLOTTED: 5/1/2023 1:51:53 PM BY: JNHolt



RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF PLANT 3 MONITORING WELL LOCATIONS

ARCADIS

FIGURE
1C

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: J. Barrett PM: T. Linder TM: A. Villhauer TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 1C - P3 Monitoring Wells.mxd PLOTTED: 6/1/2023 12:37:05 PM BY: JNHolt

Former Adams Plating Company (APC)

MW-22-155
9/12/2022: 410
10/14/2022: 400

MW-22-153
4/6/2022: 92
6/4/2022: 91
8/30/2022: 48
9/12/2022: 55
10/14/2022: 52

MW-22-157

MW-14-58R
2/10/2022: 520
4/6/2022: 410
6/7/2022: 310
9/12/2022: 187
10/14/2022: 173

MW-22-156
9/12/2022: 76
10/14/2022: 81

MW-12-09

MW-14-57

MW-14-59
6/7/2022: 20

MW-14-60
6/7/2022: 10

MW-14-62
6/7/2022: 63

P2-MW-04
6/4/2022: 25

MW-02-02(6)
6/6/2022: 11

MW-21-139

MW-03-05

MW-03-06

N

0 400 800
SCALE IN FEET

Legend

- PERCHED ZONE MONITORING WELL
- WELLS SAMPLED AND 1,4-DIOXANE DOES NOT EXCEED DW CRITERIA
- WELLS SAMPLED AND 1,4-DIOXANE EXCEEDS DW CRITERIA (7.2 ug/L)
- APPROXIMATE APC SUPERFUND SITE IMPACTED AREA
- PERCHED 1,4-DIOXANE IMPACTS > DW CRITERIA

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:

PERCHED 1,4-DIOXANE PLUME IS BASED ON THE ANALYTICAL DATA FROM THE MOST RECENT SAMPLING EVENT.

ANALYTICAL DATA FROM THE FIRST QUARTER THROUGH FOURTH QUARTER 2022 ARE POSTED.

SAMPLES ANALYZED VIA EPA METHOD 8260B SIM.

ALL ANALYTICAL DATA IS IN ug/L.

DW: EGLE Part 201 RESIDENTIAL DRINKING WATER CRITERIA.

EGLE: MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

EPA: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ug/L: MICROGRAMS PER LITER.

AERIAL IMAGERY: 30-SEPT-2021

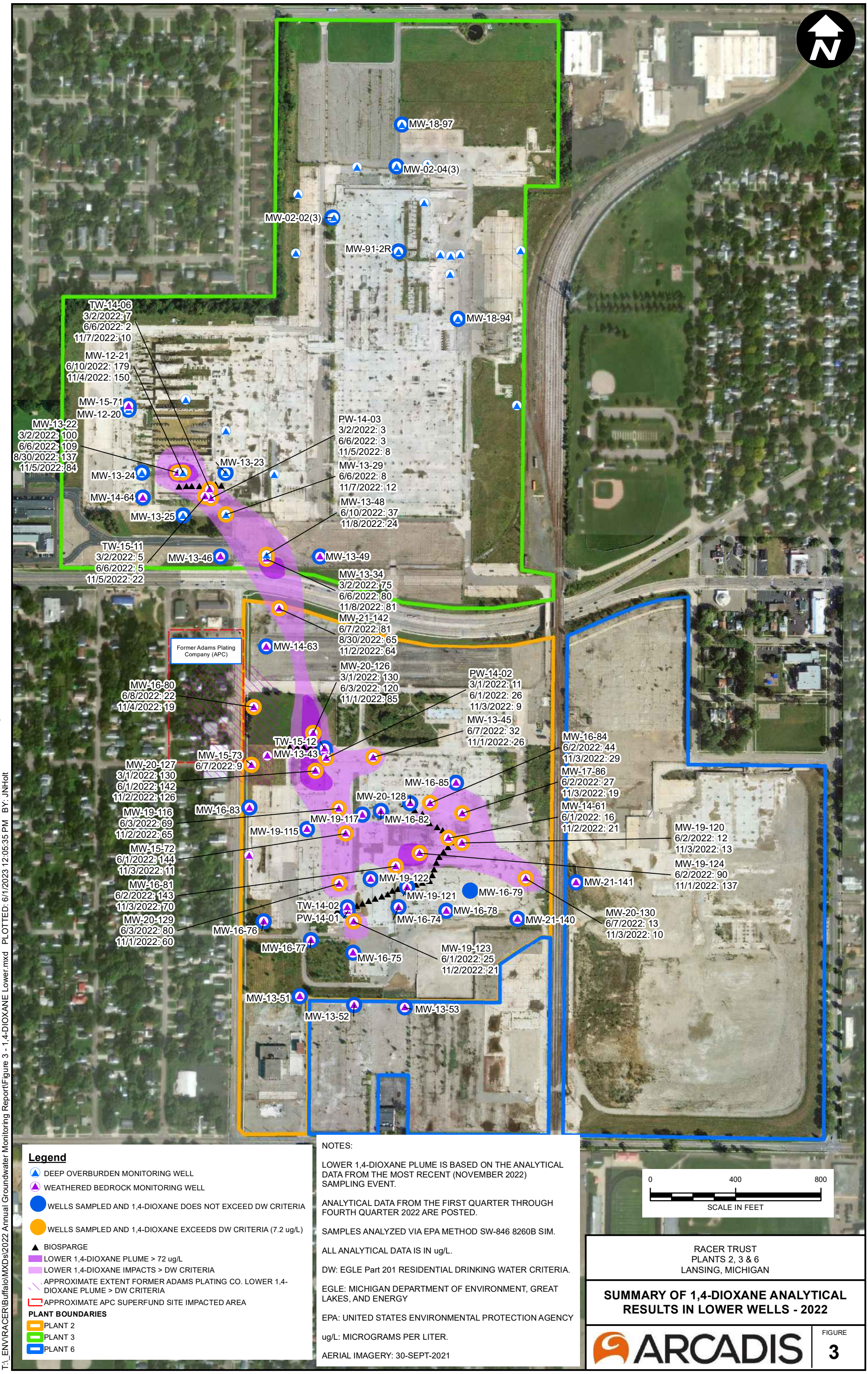
RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF 1,4-DIOXANE ANALYTICAL RESULTS PERCHED WELLS - 2022

ARCADIS

FIGURE
2

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 2 - 1,4-DIOXANE Perched.mxd PLOTTED: 6/1/2023 12:03:01 PM BY: JNHolt



Legend

- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- WELLS SAMPLED AND 1,4-DIOXANE DOES NOT EXCEED DW CRITERIA
- WELLS SAMPLED AND 1,4-DIOXANE EXCEEDS DW CRITERIA (7.2 ug/L)
- BIOSPARGE
- LOWER 1,4-DIOXANE PLUME > 72 ug/L
- LOWER 1,4-DIOXANE IMPACTS > DW CRITERIA
- APPROXIMATE EXTENT FORMER ADAMS PLATING CO. LOWER 1,4-DIOXANE PLUME > DW CRITERIA
- APPROXIMATE APC SUPERFUND SITE IMPACTED AREA

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:

LOWER 1,4-DIOXANE PLUME IS BASED ON THE ANALYTICAL DATA FROM THE MOST RECENT (NOVEMBER 2022) SAMPLING EVENT.

ANALYTICAL DATA FROM THE FIRST QUARTER THROUGH FOURTH QUARTER 2022 ARE POSTED.

SAMPLES ANALYZED VIA EPA METHOD SW-846 8260B SIM.

ALL ANALYTICAL DATA IS IN ug/L.

DW: EGLE Part 201 RESIDENTIAL DRINKING WATER CRITERIA.

EGLE: MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

EPA: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

ug/L: MICROGRAMS PER LITER.

AERIAL IMAGERY: 30-SEPT-2021

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF 1,4-DIOXANE ANALYTICAL RESULTS IN LOWER WELLS - 2022

ARCADIS

FIGURE
3

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 3 - 1,4-DIOXANE Lower.mxd PLOTTED: 6/1/2023 12:05:35 PM BY: JNHolt

MW-13-41
MW-05(3)
MW-18-88
UNK-10
UNK-11
6/8/2022: Benzene = 7.0
MW-13-22
MW-12-21
MW-13-48
Former Adams Plating Company (APC)
MW-14-59
6/7/2022: 1,1-DCE = 20
PW-14-02
MW-22-153
MW-14-58R
MW-16-85
MW-14-60
6/7/2022: VC = 4
MW-16-84
MW-17-86
MW-14-61
MW-19-120
MW-15-72
MW-12-09
MW-16-81
MW-14-62
MW-16-79
MW-14-55
MW-12-18
TW-14-02
MW-14-54
6/4/2022: 1,2,4-TMB = 540
6/4/2022: Benzene = 820
6/4/2022: Ethylbenzene = 1,110
6/4/2022: Isopropyl Benzene = 50
6/4/2022: Napthalene = 150
6/4/2022: n-Propylbenzene = 150
6/4/2022: Xylenes = 1,810
MW-01(2)
MW-22-154
SVMP-20-01
MW-04-06R
MW-20-131
MW-20-132
MW-04-01(6)
MW-03-05
MW-03-06
6/6/2022: VC = 11
MW-02-02(6)
MW-04-04R
MWBP-11-UST1-4
MWBP-12-UST1-4
MWBP-10-UST5-6

Legend

- SOIL VAPOR MONITORING POINT
- PERCHED ZONE MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- WELLS SAMPLED AND VOC'S EXCEED DW AND/OR GSI
- WELLS SAMPLED AND VOC'S DO NOT EXCEED DW CRITERIA
- APPROXIMATE EXTENT LNAPL
- EXTENT VOCs IN PERCHED ZONE> DW CRITERIA
- APPROXIMATE APC SUPERFUND SITE IMPACTED AREA

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:

APPROXIMATE EXTENT OF LNAPL IMPACTS SHOWN ARE BASED ON SEVERAL INVESTIGATIONS PREVIOUSLY COMPLETED AT THE SITE.

PERCHED VOC'S PLUME IS BASED ON THE ANALYTICAL DATA FROM THE MOST RECENT (JUNE 2022) SAMPLING EVENT.

ANALYTICAL DATA FROM THE FIRST QUARTER THROUGH FOURTH QUARTER 2022 ARE POSTED.

SAMPLES ANALYZED VIA EPA METHOD SW5030C/8260C.

ALL ANALYTICAL DATA IS IN ug/L.

DW: EGLE Part 201 RESIDENTIAL DRINKING WATER CRITERIA.
GSI: EGLE Part 201 GROUNDWATER SURFACE WATER INTERFACE CRITERIA.
EGLE: MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
EPA: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ug/L: MICROGRAMS PER LITER.
VC: VINYL CHLORIDE
VOC: VOLATILE ORGANIC COMPOUND
1,1-DCE: 1,1-DICHLOROETHENE
1,2,4-TMB: 1,2,4-TRIMETHYLBENZENE

AERIAL IMAGERY: 30-SEPT-2021

0 400 800
SCALE IN FEET

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF VOC ANALYTICAL RESULTS - 2022

ARCADIS

FIGURE 4

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 4 - VOCs.mxd PLOTTED: 6/2/2023 8:33:59 AM BY: JNHolt

MW-02-04(3)
6/8/2022: Arsenic=0.051
6/8/2022: Nickel=0.022

MW-91-2R

MW-18-88

CH-14-RO
6/9/2022: Chromium III=7.16
6/9/2022: Chromium VI=7.4
6/9/2022: Nickel=0.011

MW-13-32
6/10/2022: Chromium III=0.009
6/10/2022: Nickel=0.363

Former Adams Plating Company (APC)

MW-12-13

MW-14-66

MW-14-67

MW-13-36R

MWBP-11-UST1-4

MWBP-12-UST1-4

MWBP-10-UST5-6

N

0 400 800
SCALE IN FEET

Legend

- PERCHED ZONE MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- WELLS SAMPLED AND METALS EXCEED DW AND/OR GSI CRITERIA
- WELLS SAMPLED AND METALS DO NOT EXCEED DW CRITERIA
- APPROXIMATE APC SUPERFUND SITE IMPACTED AREA

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:

ANALYTICAL DATA FROM THE FIRST QUARTER THROUGH FOURTH QUARTER 2022 ARE POSTED.

SAMPLES ANALYZED VIA EPA METHOD 200.8 OR EPA METHOD SM3500-Cr B.

ALL ANALYTICAL DATA IS IN mg/L.

DW: EGLE Part 201 RESIDENTIAL DRINKING WATER CRITERIA.
GSI: EGLE Part 201 GROUNDWATER SURFACE WATER INTERFACE CRITERIA.
EGLE: MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
EPA: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
mg/L: MILLIGRAMS PER LITER.

AERIAL IMAGERY: 30-SEPT-2021

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF METALS ANALYTICAL RESULTS - 2022

ARCADIS

FIGURE
5

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30171056
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 5 - METALS.mxd PLOTTED: 6/1/2023 12:09:34 PM BY: JNHolt

NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl

MW-19-113
6/9/2022: NS, DRY
11/7/2022: NS, DRY

MW-18-98
3/1/2022: 33
6/9/2022: 97
8/30/2022: 430
11/8/2022: 440

MW-18-89
3/2/2022: 110
6/8/2022: 74
8/30/2022: 120
11/8/2022: 130

MW-19-112

MW-18-97

MW-18-99
3/1/2022: 93
6/8/2022: 78
8/30/2022: 84
11/7/2022: 70

MW-18-90
3/2/2022: 1,000
6/8/2022: 960
8/30/2022: 980
11/9/2022: 920

MW-02-04(3)

MW-19-110
6/9/2022: NS, DRY
11/7/2022: NS, DRY

UNK-15
6/9/2022: 1,100
8/29/2022: 1,100
11/9/2022: 1,200

MW-18-102

MW-18-103

MW-19-107

MW-91-2R

MW-18-92

MW-18-101

MW-18-93

MW-18-88
3/2/2022: 120
6/9/2022: 200
8/31/2022: 310
11/8/2022: 220

MW-19-108

CH-14-RO
6/9/2022: 10,000
11/9/2022: 7,100

MW-23

MW-18-104

MW-19-111

MW-18-94

MW-18-105
3/1/2022: 13
6/9/2022: 9.5
8/31/2022: 2.9 J
11/9/2022: 2.7 J

MW-18-96
6/9/2022: NS, DRY
8/31/2022: NS,DRY

MW-18-91
3/1/2022: 44
6/8/2022: 41
8/31/2022: 48
11/8/2022: 50

MW-19-114

MW-18-106

MW-18-100

MW-18-95
3/2/2022: 27
6/9/2022: 28
8/31/2022: 41
11/9/2022: 46

MW-22-151

MW-20-132
6/2/2022: 12
11/9/2022: 13

MW-22-152

MW-22-150

Former Adams Plating Company (APC)

MW-12-10R

MW-12-12
3/1/2022: 35
6/2/2022: 33
8/31/2022: 41
11/9/2022: 43

MW-04-06R

MW-20-131

MW-12-11

MW-04-05(6)

MW-14-60
6/7/2022: 33
11/1/2022: 32

MW-14-59

MW-14-58R

MW-14-70

MW-12-13

MW-15-72

MW-14-61

MW-12-09

MW-16-81

MW-14-67

MW-14-56

MW-04-04R

MW-20-130

MW-13-36R
3/1/2022: 41
6/2/2022: 44
8/31/2022: 39
11/9/2022: 42

MW-22-149

MW-12-18

MW-14-62
6/7/2022: 52
11/1/2022: 47

P6-SB-07
3/2/2022: 38
6/3/2022: 42
8/29/2022: 48
11/9/2022: 91

MW-22-148

MW-22-147

MW-21-133

MW-22-146

MW-21-139
6/7/2022: 680
8/29/2022: 1,700
11/2/2022: 1,400

MW-21-134

MW-21-135

MW-22-160

MW-21-137

MW-22-144

MW-22-145

MW-22-143

MW-22-158

MW-21-136

MW-21-138

MW-22-159
12/15/2022: NS, DRY

Legend

- PERCHED ZONE MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- WELLS SAMPLED AND PFOS EXCEEDS GSI CRITERIA ONLY (12 ng/L)
- WELLS SAMPLED AND PFOS EXCEEDS GSI CRITERIA (12 ng/L) AND DW CRITERIA (16 ng/L)
- WELLS SAMPLED AND PFOS DOES NOT EXCEED GSI OR DW CRITERIA
- APPROXIMATE APC SUPERFUND SITE IMPACTED
- PFOS IN PERCHED GROUNDWATER (>12 ng/L)

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:

APPROXIMATE EXTENT OF IMPACTS/PLUMES SHOWN ARE BASED ON SEVERAL INVESTIATIONS PREVIOUSLY COMPLETED AT THE SITE.

ANALYTICAL DATA FROM THE FIRST QUARTER THROUGH FOURTH QUARTER 2022 ARE POSTED.

SAMPLES ANALYZED VIA EPA METHOD 537 MODIFIED.

ALL ANALYTICAL DATA IS IN ng/L.

DW: EGLE Part 201 RESIDENTIAL DRINKING WATER CRITERIA.
GSI: EGLE PART 201 GROUNDWATER SURFACE WATER INTERFACE CRITERION.
EGLE: MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
EPA: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
PFOS: PERFLUOROOCTANE SULFONIC ACID
ng/L: NANOGRAM PER LITER.

AERIAL IMAGERY: 30-SEPT-2021

0 500 1,000
SCALE IN FEET

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF PFOS ANALYTICAL RESULTS - 2022

ARCADIS

FIGURE
6

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 6 - PFOS.mxd PLOTTED: 6/1/2023 12:11:45 PM BY: JNHolt

MW-19-113
6/9/2022: NS, DRY
11/7/2022: NS, DRY

MW-18-89
3/2/2022: 12
6/8/2022: 10
8/30/2022: 13
11/8/2022: 12

MW-18-98
3/1/2022: 9.5
6/9/2022: 24
8/30/2022: 14
11/8/2022: 5.3

MW-18-90
3/2/2022: 17
6/8/2022: 17
8/30/2022: 16
11/9/2022: 15

MW-18-97

MW-19-112

MW-02-04(3)

MW-19-110
6/9/2022: NS, DRY
11/7/2022: NS, DRY

MW-18-99

MW-19-107

MW-18-102

MW-18-103

MW-91-2R

MW-18-93

MW-18-92

MW-18-101

MW-23

MW-18-88
3/2/2022: 5.6
6/9/2022: 7.8
8/31/2022: 9.2
11/8/2022: 7.1

MW-19-108

CH-14-RO
6/9/2022: 130
11/9/2022: 85

MW-18-105

MW-18-104

MW-19-111

MW-18-91

MW-18-94

MW-18-96
6/9/2022: NS, DRY
8/31/2022: NS, DRY

UNK-15
6/9/2022: 32
8/29/2022: 32
11/9/2022: 27

MW-19-114

MW-18-95
3/2/2022: 2.3
6/9/2022: 2.7
8/31/2022: 5.2
11/9/2022: 11

MW-18-106

MW-18-100

Former Adams Plating Company (APC)

MW-22-151
4/5/2022: 9.4
6/1/2022: 7.7
8/31/2022: 8.1
11/10/2022: 7.8

MW-20-132
6/2/2022: 29
11/9/2022: 33

MW-12-10R
3/2/2022: 6.7
6/2/2022: 8.9
11/10/2022: NS, DRY

MW-22-152

MW-22-150

MW-14-59
6/7/2022: 9.0
11/2/2022: ND (<3.8)

MW-04-06R

MW-20-131
6/2/2022: 27
11/10/2022: 38

MW-12-11

MW-12-12
3/1/2022: 52
6/2/2022: 90
8/31/2022: 88
11/9/2022: 99

MW-14-58R
6/7/2022: 15
11/2/2022: 12

MW-14-60
6/7/2022: 39
11/1/2022: 41

MW-04-05(6)
6/2/2022: 32

MW-12-13

MW-14-70
3/1/2022: 36
6/2/2022: 34
8/31/2022: 11
11/9/2022: 18

MW-12-09
6/4/2022: 15
11/1/2022: 15

MW-15-72

MW-14-61

MW-04-04R

MW-14-56

MW-16-81

MW-20-130

MW-13-36R
3/1/2022: 81
6/2/2022: 74
8/31/2022: 65
11/9/2022: 65

MW-22-149

MW-12-18

MW-14-67
3/1/2022: 13
6/3/2022: 16
8/29/2022: 12
11/9/2022: 15

MW-21-139
6/7/2022: 49
8/29/2022: 83
11/2/2022: 84

MW-14-62
6/7/2022: 52
11/1/2022: 53

P6-SB-07
3/2/2022: 640
6/3/2022: 720
8/29/2022: 1,200
11/9/2022: 1,500

MW-22-144
4/4/2022: 5.3
6/1/2022: 7.5
8/30/2022: 9.0
11/10/2022: 5.9

MW-21-133
6/2/2022: 43
11/9/2022: 110

MW-22-148
MW-22-147

MW-21-134
6/2/2022: 23
11/9/2022: 55

MW-22-146

MW-22-145
4/4/2022: 16
6/1/2022: 14
8/30/2022: 23
11/10/2022: 17

MW-21-135
6/2/2022: 38
11/9/2022: 41

MW-22-160

MW-21-137

MW-22-143

MW-21-136

MW-21-138

MW-22-158

MW-22-159
12/15/2022: NS, DRY

Legend

- PERCHED ZONE MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- WELLS SAMPLED AND PFOA EXCEEDS DW CRITERIA (8 ng/L)
- WELLS SAMPLED AND PFOA DOES NOT EXCEED DW CRITERIA
- PFOA IN PERCHED GROUNDWATER (> 8 ng/L)
- APPROXIMATE APC SUPERFUND SITE IMPACTED AREA

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:

APPROXIMATE EXTENT OF IMPACTS/PLUMES SHOWN ARE BASED ON SEVERAL INVESTIGATIONS PREVIOUSLY COMPLETED AT THE SITE.

ANALYTICAL DATA FROM THE FIRST QUARTER THROUGH FOURTH QUARTER 2022 ARE POSTED.

SAMPLES ANALYZED VIA EPA METHOD 537 MODIFIED.

ALL ANALYTICAL DATA IS IN ng/L.

DW: EGLE Part 201 RESIDENTIAL DRINKING WATER CRITERIA.
EGLE: MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
EPA: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
PFOA: PERFLUOROOCTANOIC ACID
ng/L: NANOGRAM PER LITER.

AERIAL IMAGERY: 30-SEPT-2021

0 500 1,000
SCALE IN FEET

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF PFOA ANALYTICAL RESULTS - 2022

ARCADIS

FIGURE
7

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 7 - PFOA.mxd PLOTTED: 6/1/2023 12:13:54 PM BY: JNHolt

MW-19-113
6/9/2022: NS, DRY
11/7/2022: NS, DRY
MW-18-98
3/1/2022: 1.4
6/9/2022: 3.1
8/30/2022: 13
11/8/2022: 9.5
MW-18-97
MW-19-112
MW-18-99
MW-02-04(3)
MW-18-89
MW-18-90
MW-19-110
6/9/2022: NS, DRY
11/7/2022: NS, DRY
MW-18-103
MW-18-102
MW-19-107
MW-18-92
MW-19-108
MW-91-2R
MW-18-101
CH-14-RO
UNK-15
MW-23
MW-18-93
MW-18-88
MW-18-105
MW-18-104
MW-19-111
MW-18-91
MW-18-96
6/9/2022: NS, DRY
8/31/2022: NS, DRY
MW-18-94
MW-18-95
MW-19-114
MW-18-106
MW-18-100
MW-22-151
MW-22-152
MW-22-150
MW-12-10R
MW-04-06R
MW-20-131
MW-20-132
MW-12-11
MW-04-05(6)
MW-12-12
3/1/2022: 6.0
6/2/2022: 5.1
8/31/2022: 7.0
11/9/2022: 7.8
Former Adams Plating Company (APC)
MW-14-58R
MW-14-59
MW-14-60
MW-15-72
MW-14-61
MW-14-70
MW-12-13
MW-12-09
MW-14-56
MW-16-81
MW-14-67
MW-04-04R
MW-13-36R
3/1/2022: 15
6/2/2022: 15
8/31/2022: 12
11/9/2022: 13
MW-22-149
MW-12-18
MW-20-130
MW-14-62
6/7/2022: 7.7
11/1/2022: 7.7
MW-21-139
6/7/2022: 6.5
8/29/2022: 18
11/2/2022: 22
P6-SB-07
3/2/2022: 78
6/3/2022: 82
8/29/2022: 120
11/9/2022: 170
MW-21-133
MW-22-148
MW-22-147
MW-22-146
MW-21-134
MW-21-135
MW-22-160
MW-22-144
MW-22-145
MW-21-137
MW-22-143
MW-22-158
MW-21-136
MW-21-138
MW-22-159
12/15/2022: NS, DRY

Legend

- PERCHED ZONE MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- WELLS SAMPLED AND PFNA EXCEEDS DW CRITERIA (6 ng/L)
- WELLS SAMPLED AND PFNA DOES NOT EXCEED DW CRITERIA
- APPROXIMATE APC SUPERFUND SITE IMPACTED AREA

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:

ANALYTICAL DATA FROM THE FIRST QUARTER THROUGH FOURTH QUARTER 2022 ARE POSTED.

SAMPLES ANALYZED VIA EPA METHOD 537 MODIFIED.

ALL ANALYTICAL DATA IS IN ng/L.

DW: EGLE Part 201 RESIDENTIAL DRINKING WATER CRITERIA.
EGLE: MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
EPA: UNITES STATES ENVIRONMENTAL PROTECTION AGENCY
PFNA: PERFLUORONONANOIC ACID
ng/L: NANOGRAM PER LITER.

AERIAL IMAGERY: 30-SEPT-2021

0 500 1,000
SCALE IN FEET

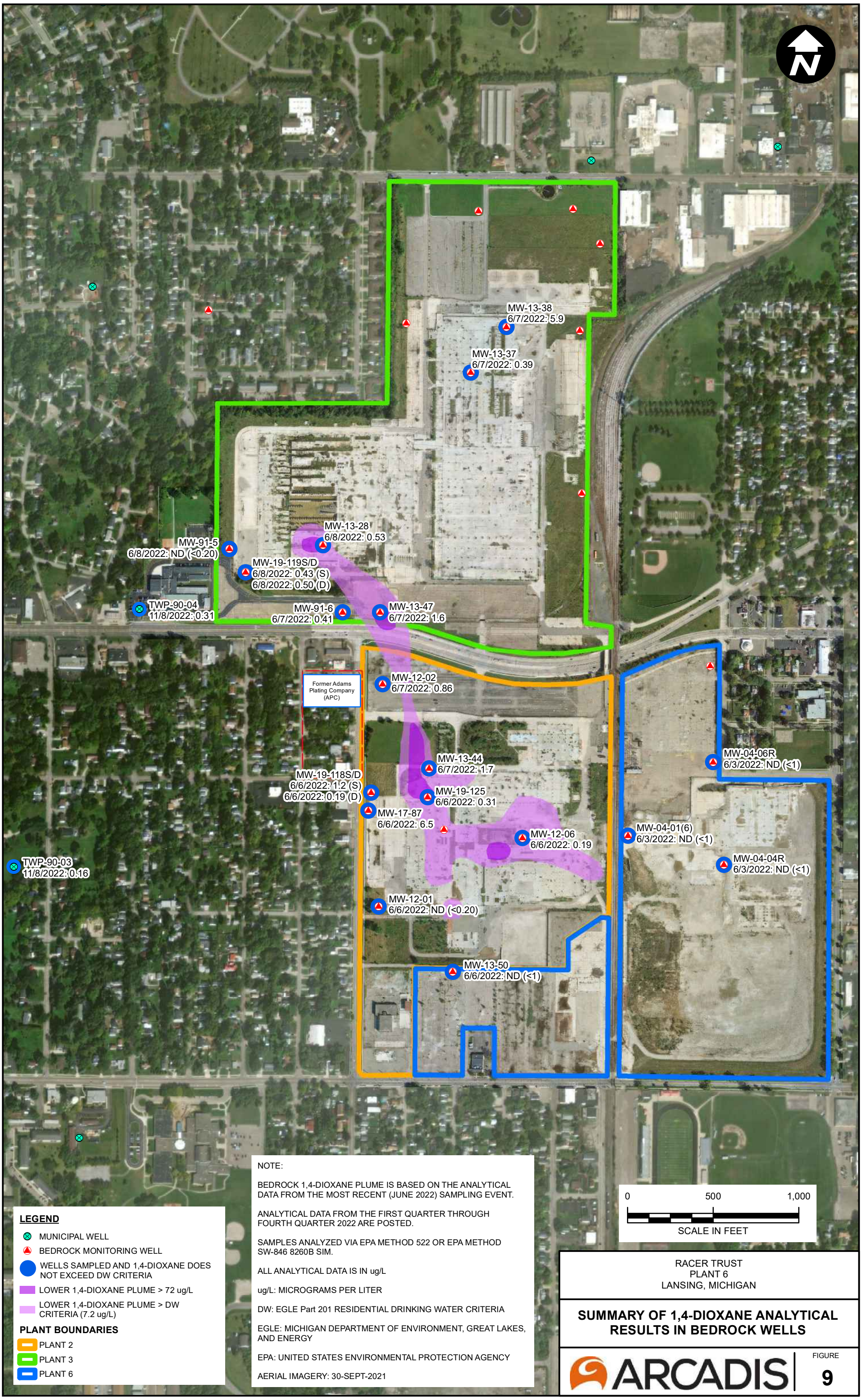
RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF PFNA ANALYTICAL RESULTS - 2022

ARCADIS

FIGURE 8

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 8 - PFNA.mxd PLOTTED: 6/1/2023 12:16:31 PM BY: JNHolt



CITY: Novi DIV: ENV DB: TRY PIC: J.Barrett PM: T.Linder TM: A.Villhauer TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 9 - BEDROCK_1,4-DIOXANE.mxd PLOTTED: 5/1/2023 3:51:50 PM BY: JNHolt

Former Adams Plating Company (APC)

P2-MW-03** 27-32 835.86
MW-22-153** 25-30 850.18
MW-14-58R 22-27 853.18
MW-12-09 14-19 848.31
MW-14-57 15-20 857.46
MW-12-18 28-33 848.02
MW-14-55 13-18 849.59
MW-14-54 14-19 853.42
MW-12-07 10-15 860.59
MW-01(2) 10-20 866.69
LMW-14-14D 18-23 857.46
LMW-12-03D* 17.3-22.3 860.05
LMW-12-03S* 4-9 860.99
LMW-12-02 5-10 860.60
LMW-14-13D 17.5-22.5 860.14
LMW-12-01 7-12 860.26
LMW-12-06 4-9 858.81
LMW-12-05* 7-12 858.57
LMW-15-17D 20-25 859.23
LMW-15-16D* 19.5-24.5 858.64
LMW-14-12D* 18-23 858.75
P2-SB-20 8-13 855.22
MW-14-59 12-17 859.98
LMW-14-15D* 18-23 859.10
LMW-12-08* 8-13 861.09
PMW-02 2.59-7.59 860.94
PMW-01 2.59-7.59 860.85
MW-14-60 15-20 855.65
LMW-12-07 4-9 861.31
P2-SB-37* 5-10 861.23
PMW-03 1.2-6.2 861.34
MW-14-62 12-17 853.79
LMW-12-04 16-21 859.15
P2-SB-06 24-29 850.67
MW-21-139 7-12 861.90
MW-12-08 19-24 864.41
P2-MW-02** 31-41 837.87
MWBP-11-UST1-4 9-19 867.35
MWBP-12-UST1-4 15-25 867.94
MWBP-10-UST5-6** 28-38 838.58
P6-MW-01** 23-28 841.72
MW-12-16** 28-33 841.85
MW-13-35** 25-30 NM
MW-12-15 18-23 NM
MW-21-136 9-14 859.16
MW-21-137 7-12 858.14
MW-21-138** 24-29 846.23
P2-SB-03 14-19 849.00
MW-03-02** 30-40 NM
MW-03-04** 33-43 NM
P2-MW-04** 26-36 836.07
MW-03-07 30-40 NM
MW-02-03(6)** 35-45 NM
MW-02-02(6)** 35-45 839.24
MW-03-08** 35-45 NM
MW-04-05(6)** 20-30 849.28
MW-20-131 5-10 NM
MW-12-10R 10-15 851.23
MW-20-132 6-11 852.96
MW-12-11 13-18 853.26
MW-03-05** 35-45 845.32
MW-03-06** 30-40 835.67
P6-SB-07 15-20 871.33
P6-SB-21 3-8 871.46
MW-22-151 13-18 850.65
MW-22-152 10-15 849.66
MW-22-150 13-18 854.22
MW-12-12 13-18 869.04
MW-14-70 16-21 872.35
MW-12-13 18.5-23.5 872.35
MW-14-66 14-19 873.06
P6-SB-18 3-8 873.29
MW-14-69** 41-46 DRY
MW-14-68** 36-41 NM
P6-SB-37 5-10 872.64
MW-14-67 13-18 872.18
P6-SB-35 3-8 NM
MW-13-36R 5.5-10.5 871.99
MW-21-133 10-15 868.19
MW-21-134 11-16 864.73
MW-21-135 22-27 847.92
MW-12-14** 25-30 848.52

850 855 860 865 870

LEGEND

- LNAPL MONITORING WELL
- PERCHED ZONE MONITORING WELL; MW ABND
- GROUNDWATER ELEVATION CONTOUR (FT AMSL)
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:
1. DEPTH TO WATER MEASUREMENTS WERE TAKEN MARCH 31 THROUGH JUNE 10, 2022 AND WERE COLLECTED FROM THE TOP OF THE WELL CASING

2. WELL LABELING:
WELL NAME
WELL SCREEN (FT BGS)
GROUNDWATER ELEVATION (FT AMSL)

3. NM = NOT MEASURED

4. * = LNAPL MONITORING WELLS CORRECTED FOR PRESENCE OF LNAPL

5. **MONITORING WELL NOT UTILIZED IN CONTOURING CALCULATIONS. GROUNDWATER CONTOURS ONLY CONSIDER MONITORING WELLS INSTALLED ≤ 27 FEET BELOW GRADE

BGS: BELOW GROUND SURFACE
FT: FEET
AERIAL IMAGERY: 30-SEPT-2021

0 250 500
SCALE IN FEET

RACER TRUST
LANSING, MICHIGAN
PLANTS 2, 3 & 6

PERCHED POTENTIOMETRIC SURFACE CONTOUR MAP - PLANTS 2 & 6 SECOND QUARTER 2022

ARCADIS

FIGURE 10

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: J. Barrett PM: T.Linder TM: A. Villhauer TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 10 - 2022 GWEC Perched GW Plants 2&6.mxd PLOTTED: 6/1/2023 12:21:44 PM BY: JNHolt

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: J. Barrett PM: T. Linder TM: A. Vilhauer TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 11 - 2022 GWEC Perched GW Plants 3.mxd PLOTTED: 6/1/2023 12:25:15 PM BY: JNHolt

MW-19-113
16-21
836.35

MW-18-98
7-12
856.80

MW-19-112
9-14
856.26

MW-18-99
9-14
859.22

MW-19-110
8-13
847.46

MW-18-89
7-12
859.81

MW-18-90
15-20
856.80

P3-SB-07
11-16
859.42

UNK-15
11-16
NM

UNK-13
11-16
NM

MW-05(3)
10-15
859.32

MW-19-107
23-28
854.34

LMW-12-09*
3-8
859.57

MW-18-92
23-28
856.13

CH-14-RO
7-12
859.40

UNK-11
6.5-11.5
859.61

UNK-14
10.4-15.4
NM

UNK-10
11-16
859.34

MW-19-108
23-28
858.16

MW-18-88
6-11
858.75

MW-18-91
7-12
859.89

LMW-12-11**
15-20
855.22

MW-19-111
20-25
853.26

LMW-12-10**
14-19
855.17

MW-12-19
5-10
NM

P3-SB-28
8-13
860.49

MW-14-65
5-10
859.62

MW-18-95
4.5-9.5
857.91

MW-06(3)
6.5-11.5
NM

MW-18-96
7-12
DRY

MW-18-100
8-13
853.77

MW-18-103
5-10
856.92

MW-18-102
10-15
854.15

MW-18-105
6-11
858.08

MW-18-104
5-10
858.33

MW-19-114
6-11
860.84

MW-18-106
5-10
862.77

MW-13-31
5-10
853.74

MW-13-32
5-10
853.81

854 855 856 857 858 859 860 861 862

LEGEND

- LNAPL MONITORING WELL
- PERCHED ZONE MONITORING WELL
- GROUNDWATER ELEVATION CONTOUR (FT AMSL)
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- MUNICIPAL SANITARY
- SANITARY LINE

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:
1. DEPTH TO WATER MEASUREMENTS WERE TAKEN MAY 31 THROUGH JUNE 10, 2022 AND WERE COLLECTED FROM THE TOP OF THE WELL CASING

2. WELL LABELING:
WELL NAME
WELL SCREEN (FT BGS)
GROUNDWATER ELEVATION (FT AMSL)

3. * = LNAPL MONITORING WELLS CORRECTED FOR PRESENCE OF LNAPL

4. **MONITORING WELL NOT UTILIZED IN CONTOURING CALCULATIONS. GROUNDWATER CONTOURS ONLY CONSIDER MONITORING WELLS INSTALLED ≤ 28 FEET BELOW GRADE

BGS: BELOW GROUND SURFACE
FT: FEET
NS: NOT SURVEYED
LNAPL: LIGHT NON-AQUEOUS PHASE LIQUID
AMSL: ABOVE MEAN SEA LEVEL

AERIAL IMAGERY: 30-SEPT-2021

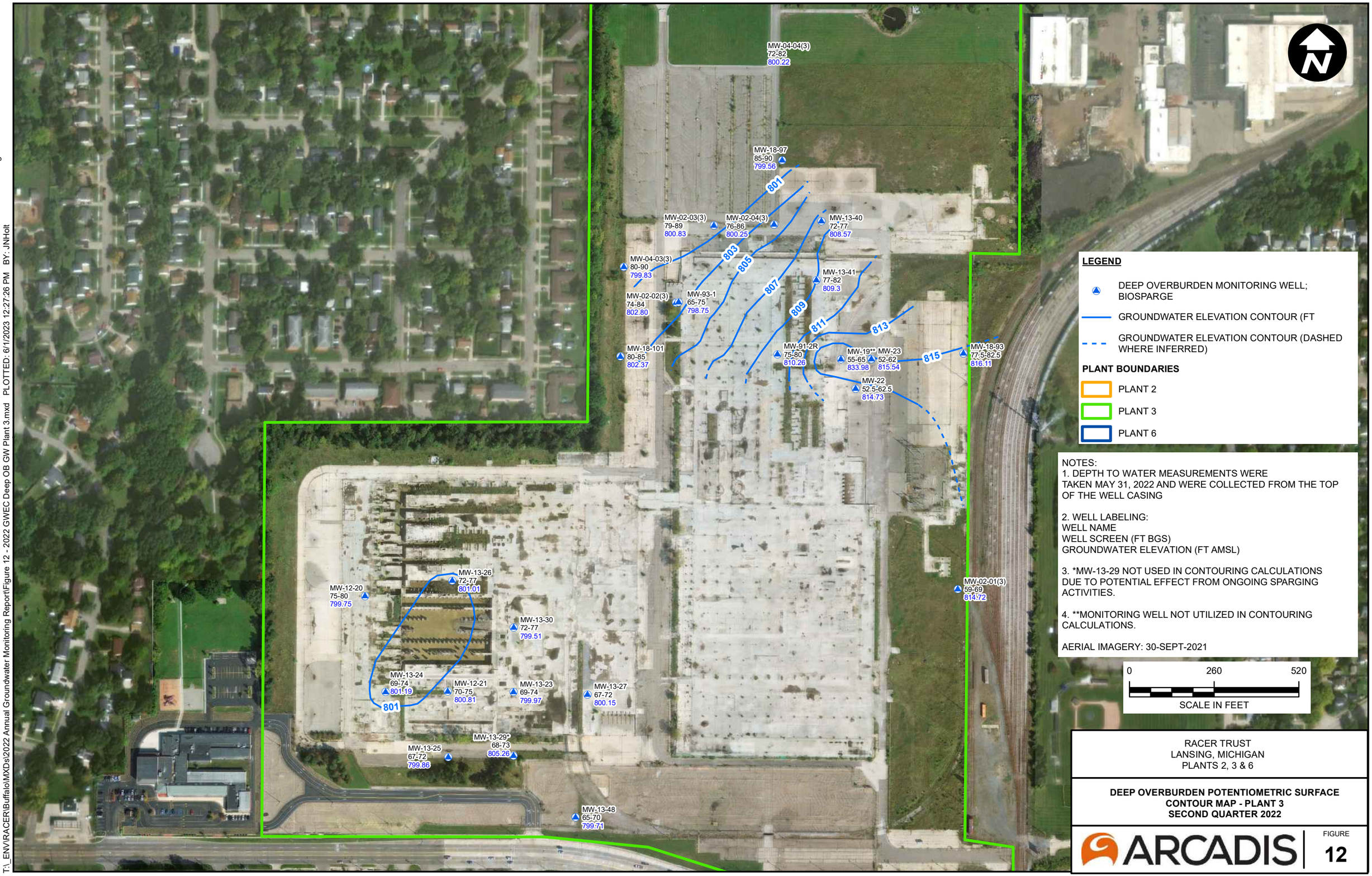
0 240 480
SCALE IN FEET

RACER TRUST
LANSING, MICHIGAN
PLANTS 2, 3 & 6

PERCHED POTENTIOMETRIC SURFACE CONTOUR MAP - PLANT 3 SECOND QUARTER 2022

ARCADIS

FIGURE
11



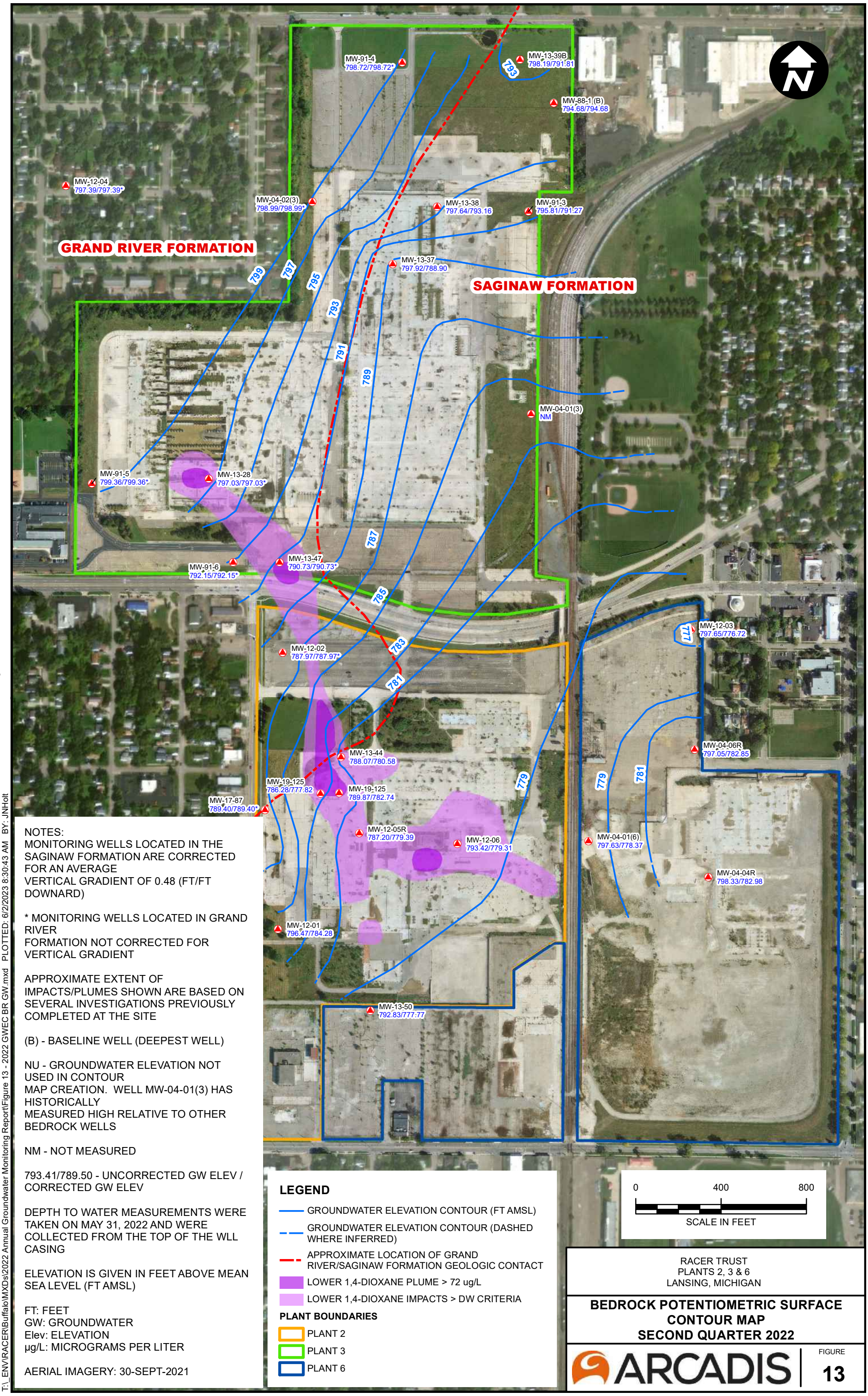
RACER TRUST
LANSING, MICHIGAN
PLANTS 2, 3 & 6

DEEP OVERBURDEN POTENTIOMETRIC SURFACE CONTOUR MAP - PLANT 3 SECOND QUARTER 2022

ARCADIS

FIGURE
12

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: J. Barrett PM: T. Linder TM: A. Villhauer TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 12 - 2022 GWEC Deep OB GW Plant 3.mxd PLOTTED: 6/1/2023 12:27:26 PM BY: JNHolt



NOTES:
MONITORING WELLS LOCATED IN THE SAGINAW FORMATION ARE CORRECTED FOR AN AVERAGE
VERTICAL GRADIENT OF 0.48 (FT/FT DOWNARD)

* MONITORING WELLS LOCATED IN GRAND RIVER
FORMATION NOT CORRECTED FOR VERTICAL GRADIENT

APPROXIMATE EXTENT OF IMPACTS/PLUMES SHOWN ARE BASED ON SEVERAL INVESTIGATIONS PREVIOUSLY COMPLETED AT THE SITE

(B) - BASELINE WELL (DEEPEST WELL)

NU - GROUNDWATER ELEVATION NOT USED IN CONTOUR
MAP CREATION. WELL MW-04-01(3) HAS HISTORICALLY
MEASURED HIGH RELATIVE TO OTHER BEDROCK WELLS

NM - NOT MEASURED

793.41/789.50 - UNCORRECTED GW ELEV / CORRECTED GW ELEV

DEPTH TO WATER MEASUREMENTS WERE TAKEN ON MAY 31, 2022 AND WERE COLLECTED FROM THE TOP OF THE WLL CASING

ELEVATION IS GIVEN IN FEET ABOVE MEAN SEA LEVEL (FT AMSL)

FT: FEET
GW: GROUNDWATER
Elev: ELEVATION
µg/L: MICROGRAMS PER LITER

AERIAL IMAGERY: 30-SEPT-2021

LEGEND

- GROUNDWATER ELEVATION CONTOUR (FT AMSL)
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- APPROXIMATE LOCATION OF GRAND RIVER/SAGINAW FORMATION GEOLOGIC CONTACT
- LOWER 1,4-DIOXANE PLUME > 72 ug/L
- LOWER 1,4-DIOXANE IMPACTS > DW CRITERIA

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

0 400 800
SCALE IN FEET

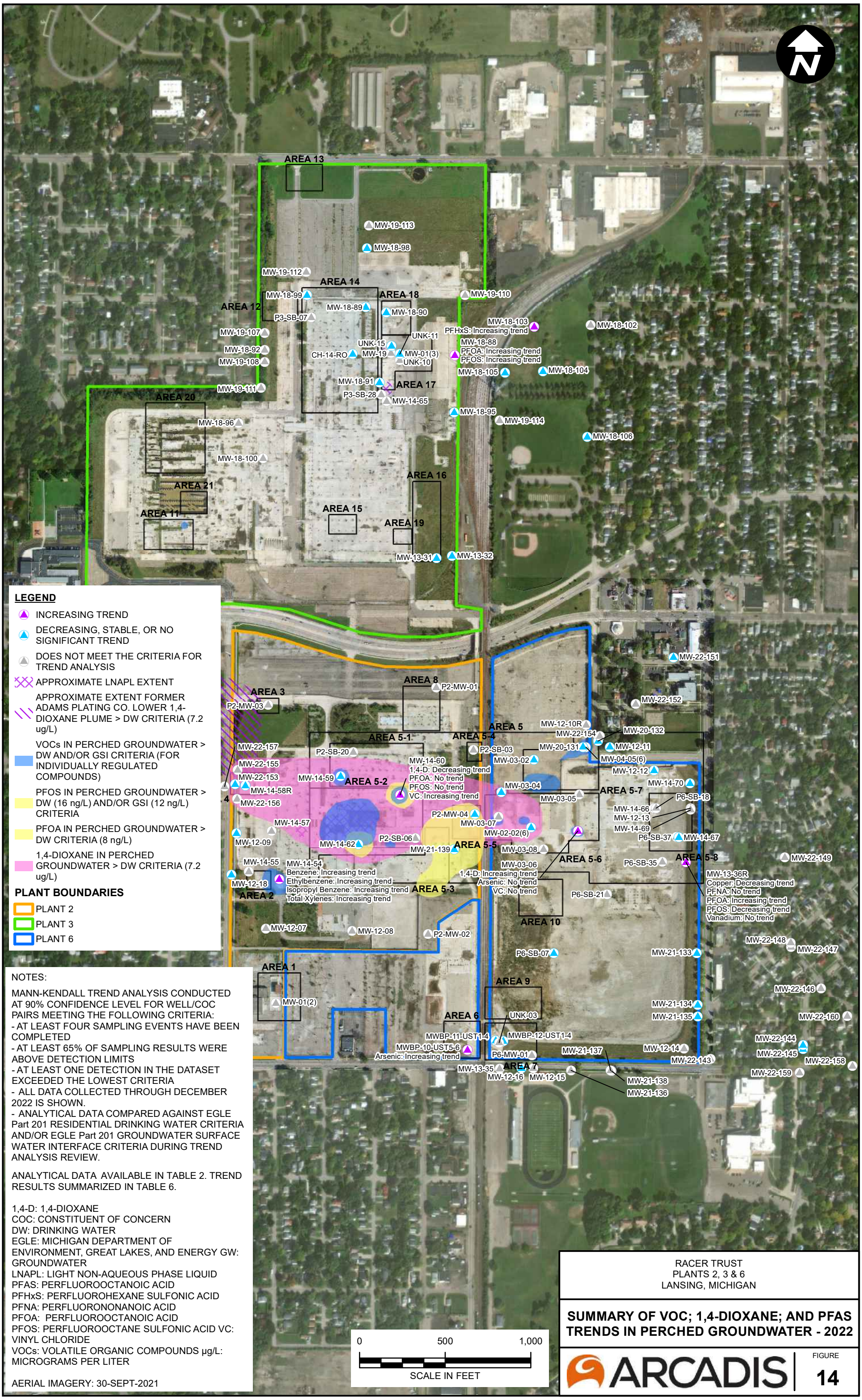
RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

BEDROCK POTENTIOMETRIC SURFACE CONTOUR MAP SECOND QUARTER 2022

ARCADIS

FIGURE
13

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: J. Barrett PM: T. Linder TM: A. Villhauer TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 13 - 2022 GWEC BR GW.mxd PLOTTED: 6/2/2023 8:30:43 AM BY: JNHolt



CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: J. Barrett PM: T. Linder TM: A. Villhauer TR: PROJECT NUMBER: 30171056 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 14 - 2022 MK Perched Trends.mxd PLOTTED: 6/1/2023 12:32:49 PM BY: JNHolt

MW-04-04(3)
MW-18-97
MW-02-04(3)
MW-02-03(3)
MW-13-40
MW-04-03(3)
MW-13-41
MW-02-02(3)
MW-93-1
MW-18-101
MW-91-2R
MW-23
MW-18-93
MW-22
MW-18-94
MW-15-71
MW-13-26
MW-12-20
MW-02-01(3)
MW-13-30
MW-12-21
MW-13-22
MW-13-23
MW-13-24
MW-13-27
TW-14-06
MW-14-64
TW-15-11
PW-14-03R
MW-13-25
MW-13-29
MW-13-48
MW-13-46
MW-13-49
MW-13-34
MW-21-142
MW-14-63
MW-16-80
TW-14-03
MW-20-126
TW-15-12
MW-13-43
MW-13-42
PW-14-02
MW-20-128
MW-13-45
MW-15-73
MW-20-127
MW-16-85
MW-19-116
MW-16-84
MW-16-83
MW-16-82
MW-17-86
MW-19-117
MW-19-115
MW-14-61
MW-15-72
MW-19-120
MW-14-56
MW-19-124
MW-16-81
MW-20-130
MW-19-122
MW-21-141
MW-20-129
MW-19-121
TW-14-02
MW-16-74
MW-16-78
PW-14-01
MW-21-140
MW-16-76
MW-19-123
MW-16-77
MW-16-75
MW-13-51
MW-13-53
MW-13-52

LEGEND

- DOES NOT MEET CRITERIA FOR TREND ANALYSIS*
- DECREASING, STABLE, OR NO SIGNIFICANT TREND OBSERVED
- INCREASING TREND OBSERVED
- 1,4-DIOXANE IN LOWER GROUNDWATER > DW CRITERIA (7.2 ug/L)

PLANT BOUNDARIES

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:

MANN-KENDALL TREND ANALYSIS CONDUCTED AT 90% CONFIDENCE LEVEL FOR WELL/COC PAIRS MEETING THE FOLLOWING CRITERIA:
- AT LEAST FOUR SAMPLING EVENTS HAVE BEEN COMPLETED
- AT LEAST 65% OF SAMPLING RESULTS WERE ABOVE DETECTION LIMITS
- AT LEAST ONE DETECTION IN THE DATASET EXCEEDED THE LOWEST CRITERIA

ALL DATA COLLECTED THROUGH DECEMBER 2022 IS SHOWN.

ANALYTICAL DATA COMPARED AGAINST EGLE Part 201 RESIDENTIAL DRINKING WATER CRITERIA DURING TREND ANALYSIS REVIEW.

ANALYTICAL DATA AVAILABLE IN TABLE 2.
TREND RESULTS SUMMARIZED IN TABLE 6.

1,4-D: 1,4-DIOXANE
COC: CONSTITUENT OF CONCERN
DW: DRINKING WATER
EGLE: MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
µg/L: MICROGRAMS PER LITER

AERIAL IMAGERY: 30-SEPT-2021

0 400 800
SCALE IN FEET

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

SUMMARY OF 1,4-DIOXANE TRENDS IN DEEP OVERBURDEN AND WEATHERED BEDROCK - 2022

ARCADIS

FIGURE
15

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: J. Barrett PM: T. Linder TM: A. Villhauer TR: PROJECT NUMBER: 30171056
T:_ENV\RACER\Buffalo\MXDs\2022 Annual Groundwater Monitoring Report\Figure 15 - 2022 MK Deep OB Weathered BR Trends.mxd PLOTTED: 6/1/2023 12:35:07 PM BY: JNHolt

P2-MH-2		
Date:	8/2/2022	11/3/2022
PFOS:	**14**	10
PFOA:	14	15
PFBS:	6.9	3.7 J

P2-MH-30_W	
11/3/2022	
PFOS:	1.4 J
PFOA:	3.8 J
PFBS:	9.3

P2-MH-30		
Date:	8/2/2022	11/3/2022
PFOS:	**17**	12
PFOA:	14	17
PFBS:	11	3.8 J

P2-MH-W		
Date:	8/12/2022	11/3/2022
PFOS:	2.8 J	<4.0
PFOA:	2.8 J	1.8 J
PFBS:	1.1 J	1.1 J

NOTES:
-UTILITY LOCATIONS ARE APPROXIMATE
-ARROWS DENOTE FLOW DIRECTION
-INVERT FLOWS WERE OBSERVED IN MANHOLES ASSOCIATED WITH STORM SEWER SAMPLING
-AERIAL IMAGERY FROM ESRI ARCGIS ONLINE AND AN OCTOBER 2013 SITE FLYOVER CONDUCTED BY ENG, INC
-PFAS CONCENTRATIONS SHOWN IN ng/L

-BOLD/HIGHLIGHT = MANHOLE EXCEEDS SURFACE WATER CRITERIA

PFOS SURFACE WATER CRITERIA: 12 ng/L
PFOA SURFACE WATER CRITERIA: 170 ng/L
PFBS SURFACE WATER CRITERIA: 670,000 ng/L

PFAS: PERFLUOROOCTANOIC ACID
PFOS: PERFLUOROOCTANE SULFONIC ACID
PFOA: PERFLUOROOCTANOIC ACID
PFBS PERFLUOROBUTANE SULFONIC ACID
ng/L: NANOGRAMS PER LITER
J: CONSTITUENT IDENTIFIED BELOW SAMPLE

ADJUSTMENT TYPE
- FILLED STRUCTURE
- CAPPED STRUCTURE
- COULD NOT LOCATE STRUCTURE
- CATCH BASIN REMAINING OPEN

STRUCTURES & SAMPLE POINTS
- MANHOLE
- DRY MANHOLE

PLANT 2 DRAINAGE NETWORKS
- NORTHEAST (ABANDONED)
- CENTRAL (PARTIALLY ABANDONED)
- SOUTHWEST (ABANDONED)

OBSERVED FLOW (NOVEMBER 2022)
- NO FLOW
- TRICKLE (~1 GPM OR LESS)
- LITTLE (~1-3 GPM)
- MODERATE (~3 GPM OR GREATER)

PLANT BOUNDARIES
- PLANT 2
- PLANT 3
- PLANT 6

0 150 300
SCALE IN FEET

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

PLANT 2 PFAS STORM SEWER SAMPLING ANALYTICAL RESULTS

ARCADIS

FIGURE
16

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. LORENZ TR: J. SALING PROJECT NUMBER: 30112892 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 P2 P3 P6 Storm Sewer Modifications Completion Report\Figure 1 - Plant 2 PFAS Sampling Results_KP_Nov2022.mxd PLOTTED: 1/30/2023 11:41:34 AM BY: VDavis

P3-MH-284		
Date:	8/2/2022	11/3/2022
PFOS:	**16**	5.1
PFOA:	1.8 J	<4.0
PFBS:	<4.1	<4.0

NOTES:
-UTILITY LOCATIONS ARE APPROXIMATE
-ARROWS DENOTE FLOW DIRECTION
-INVERT FLOWS WERE OBSERVED IN MANHOLES ASSOCIATED WITH STORM SEWER SAMPLING
-AERIAL IMAGERY FROM ESRI ARCGIS ONLINE AND AN OCTOBER 2013 SITE FLYOVER CONDUCTED BY ENG, INC
-PFAS CONCENTRATIONS SHOWN IN ng/L

-BOLD/HIGHLIGHT = MANHOLE EXCEEDS SURFACE WATER CRITERIA

PFOS SURFACE WATER CRITERIA: 12 ng/L
PFOA SURFACE WATER CRITERIA: 170 ng/L
PFBS SURFACE WATER CRITERIA: 670,000 ng/L

PFAS: PERFLUOROOCTANOIC ACID
PFOS: PERFLUOROOCTANE SULFONIC ACID
PFOA: PERFLUOROOCTANOIC ACID
PFBS PERFLUOROBUTANE SULFONIC ACID
ng/L: NANOGRAMS PER LITER
J: CONSTITUENT IDENTIFIED BELOW SAMPLE

P3-MH-284
P3-MH-290
Willow Street
P3-MH-NE
Western CLSM Monolith
Eastern CLSM Monolith
P3-MH-308
P3-MH-1-1
P3-MH-2-1N
P3-MH-2-1
P3-MH-2-2
P3-MH-1-7
P3-MH-1-10
P3-MH-1-9
P3-MH-2-5
Saginaw Street

- FILLED STRUCTURE
- CAPPED STRUCTURE
- CLSM MONOLITH
- BULKHEAD
- DISCHARGE OPEN WITH CUSTOM POUR

STRUCTURES & SAMPLE POINTS
- MANHOLE
- MANHOLE COULD NOT BE LOCATED
- CATCH BASIN REMAINING OPEN
- CATCH BASIN COULD NOT BE LOCATED

PLANT 3 DRAINAGE NETWORKS
- COUNTY MAIN (ACTIVE)
- EAST MAIN (ABANDONED)
- WEST MAIN (ABANDONED)
- OTHER (ACTIVE)

OBSERVED FLOW (NOVEMBER 2022)
- NO FLOW
- TRICKLE (~1 GPM OR LESS)
- LITTLE (~1-3 GPM)
- MODERATE (~3 GPM OR GREATER)

PLANT BOUNDARIES
- PLANT 2
- PLANT 3

0 200 400
SCALE IN FEET

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

PLANT 3 PFAS STORM SEWER SAMPLING ANALYTICAL RESULTS

ARCADIS

FIGURE
17

CITY: NOVI DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. LORENZ TR: J. SALING PROJECT NUMBER: 30112892 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 P2 P3 P6 Storm Sewer Modifications Completion Report\Figure 2 - Plant 3 PFAS Sampling Results_KP_Nov2022.mxd PLOTTED: 1/30/2023 11:47:05 AM BY: VDavis

NOTES:
-UTILITY LOCATIONS ARE APPROXIMATE
-ARROWS DENOTE FLOW DIRECTION
-INVERT FLOWS WERE OBSERVED IN MANHOLES ASSOCIATED WITH STORM SEWER SAMPLING
-AERIAL IMAGERY FROM ESRI ARCGIS ONLINE AND AN OCTOBER 2013 SITE FLYOVER CONDUCTED BY ENG, INC
-PFAS CONCENTRATIONS SHOWN IN ng/L

-BOLD/HIGHLIGHT = MANHOLE EXCEEDS SURFACE WATER CRITERIA

PFOS SURFACE WATER CRITERIA: 12 ng/L
PFOA SURFACE WATER CRITERIA: 170 ng/L
PFBS SURFACE WATER CRITERIA: 670,000 ng/L

PFAS: PERFLUOROOCTANOIC ACID
PFOS: PERFLUOROOCTANE SULFONIC ACID
PFOA: PERFLUOROOCTANOIC ACID
PFBS PERFLUOROBUTANE SULFONIC ACID
ng/L: NANOGRAMS PER LITER
J: CONSTITUENT IDENTIFIED BELOW SAMPLE

Osborn-MH-1		
Date:	8/2/2022	11/3/2022
PFOS:	9.6	**14**
PFOA:	29	26
PFBS:	1.3 J	1.4 J

Osborn-CB-2		
Date:	8/2/2022	11/3/2022
PFOS:	**25**	12
PFOA:	27	15
PFBS:	0.95 J	<4.2

Verlinden-MH-2		
Date:	8/2/2022	11/3/2022
PFOS:	**15**	11
PFOA:	24	21
PFBS:	2.5 J	2.1 J

Verlinden-MH-3		
Date:	8/2/2022	11/3/2022
PFOS:	10 [12]	7.7 [7.1]
PFOA:	26 [25]	18 [19]
PFBS:	4.4 [4.5]	6.6 [6.9]

Verlinden-MH-4		
Date:	8/2/2022	11/3/2022
PFOS:	12	11
PFOA:	23	17
PFBS:	6.8	5.1

MichAve-MH-3		
Date:	8/2/2022	11/3/2022
PFOS:	2.7 J	2.6 J
PFOA:	3.2 J	4.2 B
PFBS:	2.8 J	2.2 J

MichAve-MH-4		
Date:	8/2/2022	11/3/2022
PFOS:	**15**	7.2
PFOA:	16	8.3 B
PFBS:	2.4 J	1.9 J

Verlinden-MH-5		
Date:	8/2/2022	11/3/2022
PFOS:	6.3	8
PFOA:	22	23
PFBS:	2.7 J	2.4 J

OSBORN ROAD
W MICHIGAN AVENUE
N VERLINDEN AVENUE
Osborn-MH-1
Osborn-CB-1
P6-MH-11
Unnamed MH
Osborn-CB-2
Outfall-013
P6-MH-16
P6-MH-17
Verlinden-MH-2
P6-MH-14
P6-MH-13
Verlinden-MH-1
Verlinden-MH-3
Verlinden-MH-4
Verlinden-MH-5
P6-MH-18
P6-MH-19
ESC-2
MichAve-MH-3
MichAve-MH-4

BULKHEAD
FILLED STRUCTURE
CAPPED STRUCTURE

STRUCTURES & SAMPLE POINTS
MANHOLE
MANHOLE COULD NOT BE LOCATED
CATCH BASIN REMAINING OPEN
DRY MANHOLE

PLANT BOUNDARIES
PLANT 2
PLANT 6

PLANT 6 DRAINAGE NETWORKS
STORM LINE
SANITARY LINE

OBSERVED FLOW (NOVEMBER
NO FLOW
TRICKLE (~1 GPM OR LESS)
LITTLE (~1-3 GPM)
MODERATE (~3 GPM OR GREATER)
SEWER LINE CUT AND CAPPED AT PROPERTY LINE DURING 2014 DEMOLITION

0 150 300
SCALE IN FEET

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

PLANT 6 PFAS STORM SEWER SAMPLING ANALYTICAL RESULTS

ARCADIS

FIGURE
18

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. LORENZ TR: J. SALING PROJECT NUMBER: 30112892 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2022 P2 P3 P6 Storm Sewer Sampling Analytical Results Nov2022.mxd PLOTTED: 1/30/2023 12:00:42 PM BY: VDavis
Plant 6 PFAS Storm Sewer Modifications Completion Report\Figure 3 - Plant 6 P

Appendix A

Lansing Township Municipal Well Sampling Laboratory Analytical Reports

ANALYTICAL REPORT

PREPARED FOR

Attn: Tiffany Linder
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Generated 11/29/2022 9:46:51 AM

JOB DESCRIPTION

Racer Lansing

JOB NUMBER

240-176104-1

Eurofins Canton
180 S. Van Buren Avenue
Barberton OH 44203

See page two for job notes and contact information.

my EOL

Job Notes

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of Eurofins Environment Testing North Central, LLC and its client. All questions regarding this report should be directed to the Eurofins Environment Testing North Central, LLC Project Manager who has signed this report.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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11/29/2022 9:46:51 AM

Authorized for release by
Michael DelMonico, Project Manager I
Michael.DelMonico@et.eurofinsus.com
(330)497-9396

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-176104-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-176104-1

Receipt
The samples were received on 11/9/2022 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.9°C

GC/MS Semi VOA
Method 522: The reference method requires samples to be preserved to a pH of <2The following sample was received with insufficient preservation at a pH of 6: TWP-90-03_110822 (240-176104-2). The sample was preserved to the appropriate pH in the laboratory.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Method	Method Description	Protocol	Laboratory
522	1,4 Dioxane (GC/MS SIM)	EPA	EET BUR
522	Solid-Phase Extraction (SPE)	EPA	EET BUR

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EET BUR = Eurofins Burlington, 530 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-176104-1	TWP-90-04_110822	Water	11/08/22 08:30	11/09/22 09:45
240-176104-2	TWP-90-03_110822	Water	11/08/22 08:45	11/09/22 09:45
240-176104-3	FB-01_110822	Water	11/08/22 08:50	11/09/22 09:45
240-176104-4	DUP-11_110822	Water	11/08/22 00:00	11/09/22 09:45

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Client Sample ID: TWP-90-04_110822 — Lab Sample ID: 240-176104-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.31		0.20	0.087	ug/L	1		522	Total/NA

Client Sample ID: TWP-90-03_110822 — Lab Sample ID: 240-176104-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.16	J	0.20	0.087	ug/L	1		522	Total/NA

Client Sample ID: FB-01_110822 — Lab Sample ID: 240-176104-3

No Detections.

Client Sample ID: DUP-11_110822 — Lab Sample ID: 240-176104-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.13	J	0.20	0.087	ug/L	1		522	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Client Sample ID: TWP-90-04_110822
Date Collected: 11/08/22 08:30
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176104-1
Matrix: Water

Method: EPA 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.31		0.20	0.087	ug/L		11/18/22 13:00	11/23/22 17:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*96*		*46 - 130*	*11/18/22 13:00*	*11/23/22 17:28*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Client Sample ID: TWP-90-03_110822
Date Collected: 11/08/22 08:45
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176104-2
Matrix: Water

Method: EPA 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.16	J	0.20	0.087	ug/L		11/18/22 13:00	11/23/22 17:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*98*		*46 - 130*	*11/18/22 13:00*	*11/23/22 17:41*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Client Sample ID: FB-01_110822
Date Collected: 11/08/22 08:50
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176104-3
Matrix: Water

Method: EPA 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.20	U	0.20	0.087	ug/L		11/18/22 13:00	11/23/22 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*105*		*46 - 130*	*11/18/22 13:00*	*11/23/22 17:55*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Client Sample ID: DUP-11_110822
Date Collected: 11/08/22 00:00
Date Received: 11/09/22 09:45

Lab Sample ID: 240-176104-4
Matrix: Water

Method: EPA 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.13	J	0.20	0.087	ug/L		11/18/22 13:00	11/23/22 18:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*96*		*46 - 130*	*11/18/22 13:00*	*11/23/22 18:08*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DXE
Lab Sample ID	Client Sample ID	(46-130)
240-176104-1	TWP-90-04_110822	96
240-176104-2	TWP-90-03_110822	98
240-176104-3	FB-01_110822	105
240-176104-4	DUP-11_110822	96
LCS 200-185950/2-A	Lab Control Sample	92
MB 200-185950/1-A	Method Blank	89

Surrogate Legend

DXE = 1,4-Dioxane-d8 (Surr)

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Lab Sample ID: MB 200-185950/1-A
Matrix: Water
Analysis Batch: 186087

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 185950

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.20	U	0.20	0.087	ug/L		11/18/22 13:00	11/23/22 17:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*89*		*46 - 130*	*11/18/22 13:00*	*11/23/22 17:14*	*1*

Lab Sample ID: LCS 200-185950/2-A
Matrix: Water
Analysis Batch: 186087

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 185950

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			2.00	1.93		ug/L		97	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8 (Surr)	*92*		*46 - 130*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

GC/MS Semi VOA

Prep Batch: 185950

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176104-1	TWP-90-04_110822	Total/NA	Water	522	
240-176104-2	TWP-90-03_110822	Total/NA	Water	522	
240-176104-3	FB-01_110822	Total/NA	Water	522	
240-176104-4	DUP-11_110822	Total/NA	Water	522	
MB 200-185950/1-A	Method Blank	Total/NA	Water	522	
LCS 200-185950/2-A	Lab Control Sample	Total/NA	Water	522	

Analysis Batch: 186087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-176104-1	TWP-90-04_110822	Total/NA	Water	522	185950
240-176104-2	TWP-90-03_110822	Total/NA	Water	522	185950
240-176104-3	FB-01_110822	Total/NA	Water	522	185950
240-176104-4	DUP-11_110822	Total/NA	Water	522	185950
MB 200-185950/1-A	Method Blank	Total/NA	Water	522	185950
LCS 200-185950/2-A	Lab Control Sample	Total/NA	Water	522	185950

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Client Sample ID: TWP-90-04_110822

Lab Sample ID: 240-176104-1

Date Collected: 11/08/22 08:30

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	522			185950	MJW	EET BUR	11/18/22 13:00
Total/NA	Analysis	522		1	186087	K1P	EET BUR	11/23/22 17:28

Client Sample ID: TWP-90-03_110822

Lab Sample ID: 240-176104-2

Date Collected: 11/08/22 08:45

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	522			185950	MJW	EET BUR	11/18/22 13:00
Total/NA	Analysis	522		1	186087	K1P	EET BUR	11/23/22 17:41

Client Sample ID: FB-01_110822

Lab Sample ID: 240-176104-3

Date Collected: 11/08/22 08:50

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	522			185950	MJW	EET BUR	11/18/22 13:00
Total/NA	Analysis	522		1	186087	K1P	EET BUR	11/23/22 17:55

Client Sample ID: DUP-11_110822

Lab Sample ID: 240-176104-4

Date Collected: 11/08/22 00:00

Matrix: Water

Date Received: 11/09/22 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	522			185950	MJW	EET BUR	11/18/22 13:00
Total/NA	Analysis	522		1	186087	K1P	EET BUR	11/23/22 18:08

Laboratory References:

EET BUR = Eurofins Burlington, 530 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-176104-1

Laboratory: Eurofins Burlington

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2336	02-25-23
Connecticut	State	PH-0751	09-30-23
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	05-17-23
Florida	NELAP	E87467	06-30-23
Minnesota	NELAP	050-999-436	12-31-22
New Hampshire	NELAP	2006	12-18-22
New Jersey	NELAP	VT972	06-30-23
New York	NELAP	10391	04-01-23
Pennsylvania	NELAP	68-00489	04-30-23
Rhode Island	State	LAO00298	12-30-22
US Fish & Wildlife	US Federal Programs	058448	07-31-23
USDA	US Federal Programs	P330-17-00272	10-30-23
Vermont	State	VT4000	02-10-23
Virginia	NELAP	460209	12-14-22
Wisconsin	State	399133350	08-31-23

2.9/2.9

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: Bill Cobenn	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-100773-30848.1
Client Contact: Alex Villhauer	Phone: 810-588-3642	E-Mail: Michael.DelMonico@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: ARCADIS U.S., Inc.	PWSID:			Job #:
Address: 300 South Washington Square Suite 315	Due Date Requested:			
City: Lansing	TAT Requested (days):			
State, Zip: MI, 48933	Compliance Project: ∧ Yes ∧ No			
Phone: 810-225-1928(Tel)	PO #: Purchase Order not required			
Email: alex.villhauer@arcadis.com	WO #: Project #: B0064607.2016.00001			
Project Name: Racer Lansing method 522	Project #: 24017406			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	522 - 522-1,4-Dioxane	522 - Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	A		
TWP-90-04_110822	11/8/22	8:30	G	Water	N	N	X			
TWP-90-03_110822	11/8/22	8:45	G	Water	N	N	X			
FB-01_110822	11/8/22	8:50	G	Water	N	N	X			
~~Dup-01_110822~~	~~11/8/22~~	—	G	~~Water~~	N	N	X			NO SAMPLE
Dup-11_110822	11/8/22	—	G	Water	N	N	X			
				Water						

240-176104 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	11/8/22 14:45	ARCADIS		11-9-22 9:45	EUA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∧ Yes ∧ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Eurofins - Canton Sample Receipt Form/Narrative Login # :_____
Barberton Facility

Client ACadis Site Name_____ Cooler unpacked by: Chaowek

Cooler Received on 11-9-22 Opened on 11-9-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other_____

Receipt After-hours: Drop-off Date/Time **Storage Location**

Eurofins Cooler # 1A Foam Box Client Cooler Box Other_____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other_____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp._____ °C Corrected Cooler Temp._____ °C
   IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 2.9 °C Corrected Cooler Temp. 2.9 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity_____	(Yes) No	
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No	NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)	
-Were tamper/custody seals intact and uncompromised?	(Yes) No	NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No	
4. Did custody papers accompany the sample(s)?	(Yes) No	
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No	
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No	
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No	
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No	
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No	
11. Sufficient quantity received to perform indicated analyses?	(Yes) No	
12. Are these work share samples and all listed on the COC?	Yes (No)	
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No (NA)	pH Strip Lot# HC286797
14. Were VOAs on the COC?	Yes (No)	
15. Were air bubbles >6 mm in any VOA vials? ● ⇐ Larger than this.	Yes (No)	NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes (No)	
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)	

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s):_____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

rofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM. DelMonico, Michael		60376.1
Client Contact: Shipping/Receiving	Phone.	E-Mail: Michael.DelMonico@et.eurofinsus.com	Michigan	Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-176104-1
Address: 530 Community Drive, Suite 11,	Due Date Requested: 11/22/2022			
City: South Burlington	TAT Requested (days):			
State, Zip: VT, 05403				
Phone: 802-660-1990(Tel) 802-660-1919(Fax)	PO #:			
Email:	WO #:			
Project Name: Racer Lansing	Project #: 24017406			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Y - Trizma
Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	522/522_CWA_Prep	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
TWP-90-04-110822 (240-176104-1)	11/8/22	08:30 Eastern		Water			X	1	
TWP-90-03-110822 (240-176104-2)	11/8/22	08:45 Eastern		Water			X	1	
FB-01-110822 (240-176104-3)	11/8/22	08:50 Eastern		Water			X	1	
DUP-11-110822 (240-176104-4)	11/8/22	Eastern		Water			X	1	

Note. Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing North Central, LLC

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

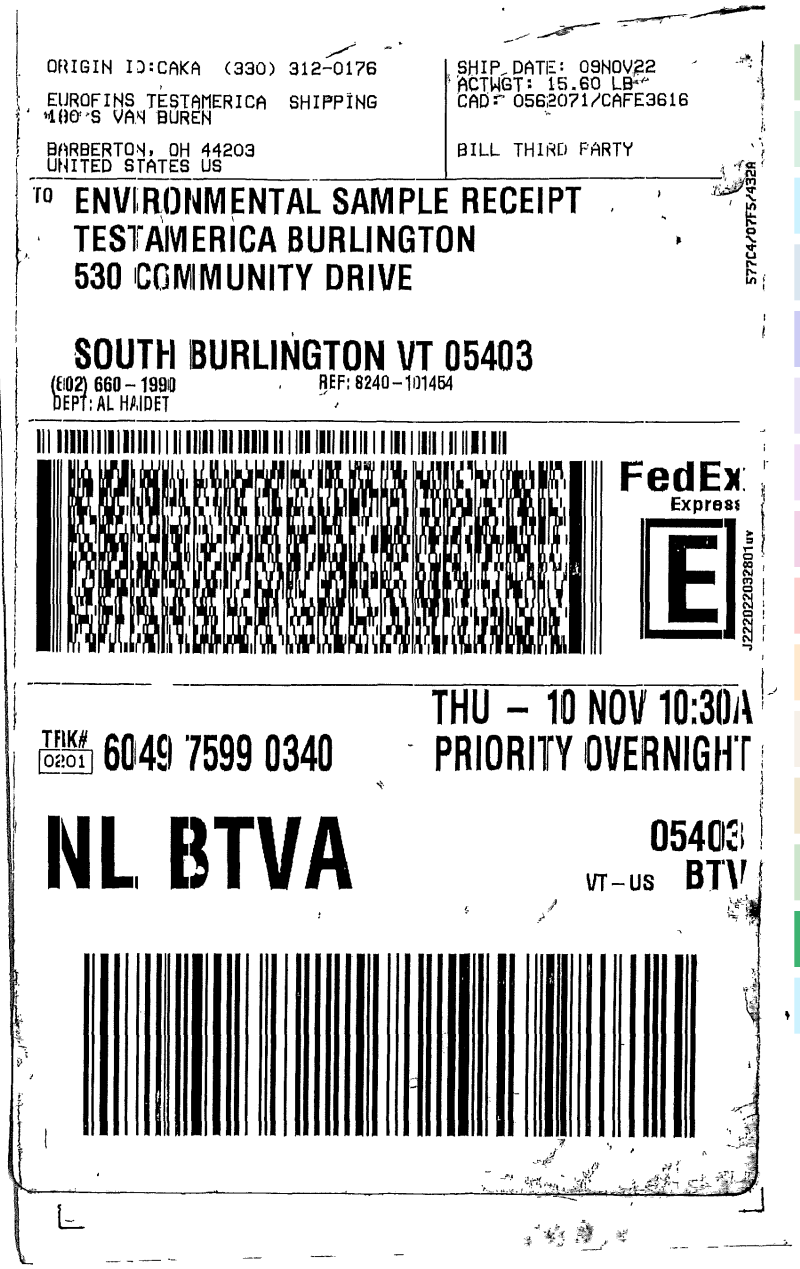
Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 11-9-22 1640	Company: ETNC	Received by:	Date/Time: 11/10/22 10:35	Company: TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time.	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time.	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Page 20 of 22

11/29/2022



ORIGIN ID:CAKA (330) 312-0176
EUROFINS TESTAMERICA SHIPPING
4100 S VAN BUREN
BARBERTON, OH 44203
UNITED STATES US

SHIP DATE: 09NOV22
ACTWGT: 15.60 LB
CAD: 0562071/CAFE3616

BILL THIRD PARTY

TO ENVIRONMENTAL SAMPLE RECEIPT
TESTAMERICA BURLINGTON
530 COMMUNITY DRIVE

SOUTH BURLINGTON VT 05403
(802) 660-1990
DEPT: AL HAIDET

REF: 8240-101464

577C4/07F5/4328

FedEx Express

J22202203280lux

TRK# 0201 6049 7599 0340

THU - 10 NOV 10:30A
PRIORITY OVERNIGHT

NL BTVA

05403
VT-US BTV

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 240-176104-1

Login Number: 176104
List Number: 2
Creator: Cunningham, Caroline R

List Source: Eurofins Burlington
List Creation: 11/10/22 04:03 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.2ºC
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix B

Monitoring Well Sampling Laboratory Analytical Reports

Analytical Laboratory Report

Report ID: S32761.01(01)+QC01
Generated on 02/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder, Patrick Curry

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S32761.01
Project: 30112892.47A / RACER Lansing
Collected Date(s): 02/10/2022
Submitted Date/Time: 02/10/2022 12:00
Sampled by: Unknown
P.O. #: 30112892.47A

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S32761.01	MW-14-58R_021022	Groundwater	02/10/22 11:20

Analytical Laboratory Report

Lab Sample ID: S32761.01
Sample Tag: MW-14-58R_021022
Collected Date/Time: 02/10/2022 11:20
Matrix: Groundwater
COC Reference: 141667

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/11/22 15:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/11/22 14:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	520	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Quality Control Report

Report ID: S32761.01(01)+QC01
Generated on 02/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S32761.01
Project: 30112892.47A / RACER Lansing
Submitted Date/Time: 02/10/2022 12:00
Sampled by: Unknown
P.O. #: 30112892.47A

QC Report Sections

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Analysis Summary (Page 8)
Prep Batch Summary (Page 9)
Surrogates per QC Sample (Page 10)
Internal Standards per Lab Sample (Page 11)
Internal Standards per QC Sample (Page 12)
Batch QC Results (Page 13)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S32761.01
Sample Tag: MW-14-58R_021022
Collected Date/Time: 02/10/2022 11:20
Matrix: Groundwater
COC Reference: 141667

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/11/22 14:18	220211A9	VS220211W1	Yes	BLK/LCS/LCSD

Organics - Volatiles, Prep Batch ID: VS220211W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S32761.01	1,4-Dioxane	SW8260B - SIM	02/11/22 14:18	220211A9

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220211W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220211A9.BLKW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 13:37, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 11:56, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220211A9.LCSDW11A, Parent Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 12:16, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S32761.01

Sample Tag: MW-14-58R_021022

Collected Date/Time: 02/10/2022 11:20

Matrix: Groundwater

COC Reference: 141667

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220211A9, Run Date: 02/11/2022 14:18, Matrix: WW, Dilution: 10

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**88.4**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220211W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220211A9.BLKW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 13:37, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**88.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 11:56, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.6**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220211A9.LCSDW11A, Parent Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 12:16, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**99.0**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220211W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220211A9.BLKW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 13:37, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.88	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 11:56, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		91.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220211A9.LCSDW11A, Parent Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 12:16, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		94.7	70.0	130.0	3.1	30.0

Merit Laboratories Login Checklist

Lab Set ID: S32761
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.47A / RACER Lansing
Submitted: 02/10/2022 12:00 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 6.0
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

141667

CHAIN OF CUSTODY RECORD

Plant 2

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 810-225-1928 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.47A / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME:

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☒ Other MI

Special Instructions

MERIT LAB NO. FOR LAB USE ONLY	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane 8260 SIMS
32761.01	2/10/22	1120	MW-14-58R_021022	GW	3		3						X

RELINQUISHED BY: SIGNATURE/ORGANIZATION: [signature] / Arcadis ☒ Sampler DATE: 2/10/22 TIME: 1200
RECEIVED BY: SIGNATURE/ORGANIZATION: Merit Drop Box DATE: 2/10/22 TIME: 1200

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box DATE: 2/10/22 TIME: 1200
RECEIVED BY: SIGNATURE/ORGANIZATION: [signature] DATE: 2/10/22 TIME: 1200

RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 6.0

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

* Please also email results to: Patrick.Curry@arcadis.com and Alex.Villhauer@arcadis.com

Analytical Laboratory Report

Report ID: S33473.01(01)+QC01
Generated on 03/08/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S33473.01-S33473.08
Project: 30112892.470B / RACER Lansing
Collected Date(s): 03/02/2022
Submitted Date/Time: 03/03/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.470B

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QC Report (Pages 14-32)

Maya Murshak
Technical Director

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Analytical results relate only to the samples tested, in the condition received by the laboratory.
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'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
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40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
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Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
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Report Narrative

There is no additional narrative for this analytical report

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Michigan DEQ	#9956
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WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

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S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S33473.01	TW-15-11_030222	Groundwater	03/02/22 14:45
S33473.02	TW-14-06_030222	Groundwater	03/02/22 16:20
S33473.03	MW-13-34_030222	Groundwater	03/02/22 14:50
S33473.04	MW-13-22_030222	Groundwater	03/02/22 14:50
S33473.05	MW-13-22_030222 MS	Groundwater	03/02/22 14:50
S33473.06	MW-13-22_030222 MSD	Groundwater	03/02/22 13:40
S33473.07	PW-14-03_030222	Groundwater	03/02/22 15:05
S33473.08	DUP-03_030222	Groundwater	03/02/22 00:01

Analytical Laboratory Report

Lab Sample ID: S33473.01
Sample Tag: TW-15-11_030222
Collected Date/Time: 03/02/2022 14:45
Matrix: Groundwater
COC Reference: 137970

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 18:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	5	1		ug/L	1	123-91-1	

Lab Sample ID: S33473.02
Sample Tag: TW-14-06_030222
Collected Date/Time: 03/02/2022 16:20
Matrix: Groundwater
COC Reference: 137970

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 19:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	7	1		ug/L	1	123-91-1	

Lab Sample ID: S33473.03
Sample Tag: MW-13-34_030222
Collected Date/Time: 03/02/2022 14:50
Matrix: Groundwater
COC Reference: 137970

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 19:22, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	75	1		ug/L	1	123-91-1	

Lab Sample ID: S33473.04
Sample Tag: MW-13-22_030222
Collected Date/Time: 03/02/2022 14:50
Matrix: Groundwater
COC Reference: 137970

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 18:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	100	1		ug/L	1	123-91-1	

Lab Sample ID: S33473.05
Sample Tag: MW-13-22_030222 MS
Collected Date/Time: 03/02/2022 14:50
Matrix: Groundwater
COC Reference: 137970

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 16:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	177	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S33473.06
Sample Tag: MW-13-22_030222 MSD
Collected Date/Time: 03/02/2022 13:40
Matrix: Groundwater
COC Reference: 137970

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 16:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	187	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S33473.07
Sample Tag: PW-14-03_030222
Collected Date/Time: 03/02/2022 15:05
Matrix: Groundwater
COC Reference: 137970

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 19:43, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S33473.08
Sample Tag: DUP-03_030222
Collected Date/Time: 03/02/2022 00:01
Matrix: Groundwater
COC Reference: 137970

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 20:05, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S33473.01(01)+QC01
Generated on 03/08/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S33473.01-S33473.08
Project: 30112892.470B / RACER Lansing
Submitted Date/Time: 03/03/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.470B

QC Report Sections

Cover Page (Page 14)
Analysis Summary (Pages 15-22)
Prep Batch Summary (Page 23)
Surrogates per QC Sample (Page 24)
Internal Standards per Lab Sample (Pages 25-30)
Internal Standards per QC Sample (Page 31)
Batch QC Results (Page 32)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S33473.01
Sample Tag: TW-15-11_030222
Collected Date/Time: 03/02/2022 14:45
Matrix: Groundwater
COC Reference: 137970

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 18:37	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33473.02
Sample Tag: TW-14-06_030222
Collected Date/Time: 03/02/2022 16:20
Matrix: Groundwater
COC Reference: 137970

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 19:00	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33473.03
Sample Tag: MW-13-34_030222
Collected Date/Time: 03/02/2022 14:50
Matrix: Groundwater
COC Reference: 137970

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 19:22	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33473.04
Sample Tag: MW-13-22_030222
Collected Date/Time: 03/02/2022 14:50
Matrix: Groundwater
COC Reference: 137970

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 18:16	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33473.05

Sample Tag: MW-13-22_030222 MS

Collected Date/Time: 03/02/2022 14:50

Matrix: Groundwater

COC Reference: 137970

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 16:07	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33473.06
Sample Tag: MW-13-22_030222 MSD
Collected Date/Time: 03/02/2022 13:40
Matrix: Groundwater
COC Reference: 137970

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 16:28	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33473.07
Sample Tag: PW-14-03_030222
Collected Date/Time: 03/02/2022 15:05
Matrix: Groundwater
COC Reference: 137970

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 19:43	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33473.08
Sample Tag: DUP-03_030222
Collected Date/Time: 03/02/2022 00:01
Matrix: Groundwater
COC Reference: 137970

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 20:05	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS220307W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S33473.01	1,4-Dioxane	SW8260B - SIM	03/07/22 18:37	220307A9
S33473.02	1,4-Dioxane	SW8260B - SIM	03/07/22 19:00	220307A9
S33473.03	1,4-Dioxane	SW8260B - SIM	03/07/22 19:22	220307A9
S33473.04	1,4-Dioxane	SW8260B - SIM	03/07/22 18:16	220307A9
S33473.05	1,4-Dioxane	SW8260B - SIM	03/07/22 16:07	220307A9
S33473.06	1,4-Dioxane	SW8260B - SIM	03/07/22 16:28	220307A9
S33473.07	1,4-Dioxane	SW8260B - SIM	03/07/22 19:43	220307A9
S33473.08	1,4-Dioxane	SW8260B - SIM	03/07/22 20:05	220307A9

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220307W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220307A9.BLKS07A

Run in Batch: 220307A9, Run Date: 03/07/2022 17:09, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:25, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220307A9.LCSDS07X, Parent Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:46, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220307A9.3347305M, Parent Sample ID: S33473.04

Run in Batch: 220307A9, Run Date: 03/07/2022 16:07, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220307A9.3347306N, Parent Sample ID: 220307A9.3347305M

Run in Batch: 220307A9, Run Date: 03/07/2022 16:28, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S33473.01

Sample Tag: TW-15-11_030222

Collected Date/Time: 03/02/2022 14:45

Matrix: Groundwater

COC Reference: 137970

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 18:37, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**116.3**	50.0	200.0

Lab Sample ID: S33473.02

Sample Tag: TW-14-06_030222

Collected Date/Time: 03/02/2022 16:20

Matrix: Groundwater

COC Reference: 137970

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 19:00, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**95.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S33473.03

Sample Tag: MW-13-34_030222

Collected Date/Time: 03/02/2022 14:50

Matrix: Groundwater

COC Reference: 137970

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 19:22, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.9**	50.0	200.0

Lab Sample ID: S33473.04

Sample Tag: MW-13-22_030222

Collected Date/Time: 03/02/2022 14:50

Matrix: Groundwater

COC Reference: 137970

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 18:16, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**120.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S33473.07

Sample Tag: PW-14-03_030222

Collected Date/Time: 03/02/2022 15:05

Matrix: Groundwater

COC Reference: 137970

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 19:43, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.7**	50.0	200.0

Lab Sample ID: S33473.08

Sample Tag: DUP-03_030222

Collected Date/Time: 03/02/2022 00:01

Matrix: Groundwater

COC Reference: 137970

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 20:05, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**113.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220307W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220307A9.BLKS07A

Run in Batch: 220307A9, Run Date: 03/07/2022 17:09, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:25, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**107.9**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220307A9.LCSDS07X, Parent Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:46, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.3**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220307A9.3347305M, Parent Sample ID: S33473.04

Run in Batch: 220307A9, Run Date: 03/07/2022 16:07, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.4**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220307A9.3347306N, Parent Sample ID: 220307A9.3347305M

Run in Batch: 220307A9, Run Date: 03/07/2022 16:28, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.6**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220307W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220307A9.BLKS07A

Run in Batch: 220307A9, Run Date: 03/07/2022 17:09, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.73	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:25, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		88.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220307A9.LCSDS07X, Parent Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:46, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		92.4	70.0	130.0	4.4	30.0

Matrix Spike (MS)

Lab Sample ID: 220307A9.3347305M, Parent Sample ID: S33473.04

Run in Batch: 220307A9, Run Date: 03/07/2022 16:07, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane	*	154.0	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220307A9.3347306N, Parent Sample ID: 220307A9.3347305M

Run in Batch: 220307A9, Run Date: 03/07/2022 16:28, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane	*	174.2	70.0	130.0	5.5	30.0

Merit Laboratories Login Checklist

Lab Set ID: S33473
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.470B / RACER Lansing
Submitted: 03/03/2022 08:15 Login User: PFD

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.5
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

137970

CHAIN OF CUSTODY RECORD Plant 3

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 947-777-5215 FAX NO: P.O. NO:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis QUOTE NO:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.0470B / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☒ Other MI

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane 8260B SIMS									
33473.01	3/2/22	1445	TW-15-11_030222	GW	3		3						X									
.02	3/2/22	1620	TW-14-06_030222	GW	3		3						X									
.03	3/2/22	1450	MW-13-34_030222	GW	3		3						X									
.04/05/06	3/2/22	1340	MW-13-22_030222	GW	9		9						X									MS/MSD
.07	3/2/22	1505	PW-14-03_030222	GW	3		3						X									
.08	3/2/22	—	Dup-03_030222	GW	3		3						X									

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Austin Westhuis ☒ Sampler — DATE: 3/2/22 TIME: 1700
RECEIVED BY: SIGNATURE/ORGANIZATION: Merit Drop Box — DATE: 3/2/22 TIME: 1700
RELINQUISHED BY: SIGNATURE/ORGANIZATION: — DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: — DATE: TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box Detroit — DATE: 3/3/22 TIME: 0815
RECEIVED BY: SIGNATURE/ORGANIZATION: — DATE: 3/3/22 TIME: 0815

SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:
SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:

NOTES: TEMP. ON ARRIVAL: 4.5

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev 5.18.12

Analytical Laboratory Report

Report ID: S33474.01(01)+QC01
Generated on 03/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S33474.01-S33474.08
Project: 30112892.0470B / RACER Lansing
Collected Date(s): 03/01/2022 - 03/02/2022
Submitted Date/Time: 03/03/2022 08:15
Sampled by: Donald Richmond
P.O. #: 30112892.0470B

Table of Contents

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S33474.01	MW-19-121_030122	Groundwater	03/01/22 11:40
S33474.02	MW-20-126_030122	Groundwater	03/01/22 13:30
S33474.03	MW-20-127 _030122	Groundwater	03/01/22 15:15
S33474.04	PW-14-02_030122	Groundwater	03/01/22 16:20
S33474.05	TW-15-12_030222	Groundwater	03/02/22 10:00
S33474.06	TW-14-02_030222	Groundwater	03/02/22 11:40
S33474.07	Trip Blank	Water	03/01/22 00:01
S33474.08	Dup-01_030122	Groundwater	03/01/22 00:01

Analytical Laboratory Report

Lab Sample ID: S33474.01
Sample Tag: MW-19-121_030122
Collected Date/Time: 03/01/2022 11:40
Matrix: Groundwater
COC Reference: 140303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 20:27, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S33474.02
Sample Tag: MW-20-126_030122
Collected Date/Time: 03/01/2022 13:30
Matrix: Groundwater
COC Reference: 140303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 20:49, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	130	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S33474.03
Sample Tag: MW-20-127 _030122
Collected Date/Time: 03/01/2022 15:15
Matrix: Groundwater
COC Reference: 140303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 21:10, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	130	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S33474.04
Sample Tag: PW-14-02_030122
Collected Date/Time: 03/01/2022 16:20
Matrix: Groundwater
COC Reference: 140303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 21:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	11	1		ug/L	1	123-91-1	

Lab Sample ID: S33474.05
Sample Tag: TW-15-12_030222
Collected Date/Time: 03/02/2022 10:00
Matrix: Groundwater
COC Reference: 140303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 21:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	4	1		ug/L	1	123-91-1	

Lab Sample ID: S33474.06
Sample Tag: TW-14-02_030222
Collected Date/Time: 03/02/2022 11:40
Matrix: Groundwater
COC Reference: 140303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/07/22 22:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S33474.07
Sample Tag: Trip Blank
Collected Date/Time: 03/01/2022 00:01
Matrix: Water
COC Reference: 140303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.5	IR

Other / Misc.

Method: , Run Date: 03/08/22 11:09, Analyst: JRM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hold until notified*	Completed				1		

Lab Sample ID: S33474.08
Sample Tag: Dup-01_030122
Collected Date/Time: 03/01/2022 00:01
Matrix: Groundwater
COC Reference: 140303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/08/22 11:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/11/22 13:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	12	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S33474.01(01)+QC01
Generated on 03/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S33474.01-S33474.06, S33474.08
Project: 30112892.0470B / RACER Lansing
Submitted Date/Time: 03/03/2022 08:15
Sampled by: Donald Richmond
P.O. #: 30112892.0470B

QC Report Sections

Cover Page (Page 14)
Analysis Summary (Pages 15-21)
Prep Batch Summary (Page 22)
Surrogates per QC Sample (Pages 23-24)
Internal Standards per Lab Sample (Pages 25-31)
Internal Standards per QC Sample (Pages 32-33)
Batch QC Results (Pages 34-35)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S33474.01
Sample Tag: MW-19-121_030122
Collected Date/Time: 03/01/2022 11:40
Matrix: Groundwater
COC Reference: 140303

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 20:27	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33474.02
Sample Tag: MW-20-126_030122
Collected Date/Time: 03/01/2022 13:30
Matrix: Groundwater
COC Reference: 140303

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 20:49	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33474.03
Sample Tag: MW-20-127 _030122
Collected Date/Time: 03/01/2022 15:15
Matrix: Groundwater
COC Reference: 140303

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 21:10	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33474.04
Sample Tag: PW-14-02_030122
Collected Date/Time: 03/01/2022 16:20
Matrix: Groundwater
COC Reference: 140303

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 21:32	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33474.05
Sample Tag: TW-15-12_030222
Collected Date/Time: 03/02/2022 10:00
Matrix: Groundwater
COC Reference: 140303

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 21:53	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33474.06
Sample Tag: TW-14-02_030222
Collected Date/Time: 03/02/2022 11:40
Matrix: Groundwater
COC Reference: 140303

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/07/22 22:15	220307A9	VS220307W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S33474.08
Sample Tag: Dup-01_030122
Collected Date/Time: 03/01/2022 00:01
Matrix: Groundwater
COC Reference: 140303

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/11/22 13:42	220311A9	VS220311W2	Yes	BLK/LCS/LCSD

Organics - Volatiles, Prep Batch ID: VS220307W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S33474.01	1,4-Dioxane	SW8260B - SIM	03/07/22 20:27	220307A9
S33474.02	1,4-Dioxane	SW8260B - SIM	03/07/22 20:49	220307A9
S33474.03	1,4-Dioxane	SW8260B - SIM	03/07/22 21:10	220307A9
S33474.04	1,4-Dioxane	SW8260B - SIM	03/07/22 21:32	220307A9
S33474.05	1,4-Dioxane	SW8260B - SIM	03/07/22 21:53	220307A9
S33474.06	1,4-Dioxane	SW8260B - SIM	03/07/22 22:15	220307A9

Organics - Volatiles, Prep Batch ID: VS220311W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S33474.08	1,4-Dioxane	SW8260B - SIM	03/11/22 13:42	220311A9

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220307W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220307A9.BLKS07A

Run in Batch: 220307A9, Run Date: 03/07/2022 17:09, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:25, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220307A9.LCSDS07X, Parent Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:46, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220307A9.3347305M, Parent Sample ID: S33473.04

Run in Batch: 220307A9, Run Date: 03/07/2022 16:07, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220307A9.3347306N, Parent Sample ID: 220307A9.3347305M

Run in Batch: 220307A9, Run Date: 03/07/2022 16:28, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS220311W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220311A9.BLKS11A

Run in Batch: 220311A9, Run Date: 03/11/2022 13:20, Prep Date: 03/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample (LCS)

Lab Sample ID: 220311A9.LCS11X

Run in Batch: 220311A9, Run Date: 03/11/2022 12:18, Prep Date: 03/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220311A9.LCSDS11A, Parent Sample ID: 220311A9.LCS11X

Run in Batch: 220311A9, Run Date: 03/11/2022 12:39, Prep Date: 03/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S33474.01

Sample Tag: MW-19-121_030122

Collected Date/Time: 03/01/2022 11:40

Matrix: Groundwater

COC Reference: 140303

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 20:27, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**111.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S33474.02

Sample Tag: MW-20-126_030122

Collected Date/Time: 03/01/2022 13:30

Matrix: Groundwater

COC Reference: 140303

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 20:49, Matrix: WW, Dilution: 10

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**111.1**	50.0	200.0

Lab Sample ID: S33474.03

Sample Tag: MW-20-127 _030122

Collected Date/Time: 03/01/2022 15:15

Matrix: Groundwater

COC Reference: 140303

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 21:10, Matrix: WW, Dilution: 10

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**110.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S33474.04

Sample Tag: PW-14-02_030122

Collected Date/Time: 03/01/2022 16:20

Matrix: Groundwater

COC Reference: 140303

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 21:32, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.1**	50.0	200.0

Lab Sample ID: S33474.05

Sample Tag: TW-15-12_030222

Collected Date/Time: 03/02/2022 10:00

Matrix: Groundwater

COC Reference: 140303

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 21:53, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.3**	50.0	200.0

Lab Sample ID: S33474.06

Sample Tag: TW-14-02_030222

Collected Date/Time: 03/02/2022 11:40

Matrix: Groundwater

COC Reference: 140303

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220307A9, Run Date: 03/07/2022 22:15, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**105.9**	50.0	200.0

Lab Sample ID: S33474.08

Sample Tag: Dup-01_030122

Collected Date/Time: 03/01/2022 00:01

Matrix: Groundwater

COC Reference: 140303

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220311A9, Run Date: 03/11/2022 13:42, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**151.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220307W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220307A9.BLKS07A

Run in Batch: 220307A9, Run Date: 03/07/2022 17:09, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:25, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**107.9**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220307A9.LCSDS07X, Parent Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:46, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.3**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220307A9.3347305M, Parent Sample ID: S33473.04

Run in Batch: 220307A9, Run Date: 03/07/2022 16:07, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.4**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220307A9.3347306N, Parent Sample ID: 220307A9.3347305M

Run in Batch: 220307A9, Run Date: 03/07/2022 16:28, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.6**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220311W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220311A9.BLKS11A

Run in Batch: 220311A9, Run Date: 03/11/2022 13:20, Prep Date: 03/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**140.6**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220311A9.LCS11X

Run in Batch: 220311A9, Run Date: 03/11/2022 12:18, Prep Date: 03/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**100.0**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220311A9.LCSDS11A, Parent Sample ID: 220311A9.LCS11X

Run in Batch: 220311A9, Run Date: 03/11/2022 12:39, Prep Date: 03/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**141.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220307W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220307A9.BLKS07A

Run in Batch: 220307A9, Run Date: 03/07/2022 17:09, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.73	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:25, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		88.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220307A9.LCSDS07X, Parent Sample ID: 220307A9.LCSS07X

Run in Batch: 220307A9, Run Date: 03/07/2022 15:46, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		92.4	70.0	130.0	4.4	30.0

Matrix Spike (MS)

Lab Sample ID: 220307A9.3347305M, Parent Sample ID: S33473.04

Run in Batch: 220307A9, Run Date: 03/07/2022 16:07, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane	*	154.0	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220307A9.3347306N, Parent Sample ID: 220307A9.3347305M

Run in Batch: 220307A9, Run Date: 03/07/2022 16:28, Prep Date: 03/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane	*	174.2	70.0	130.0	5.5	30.0

Organics - Volatiles, Prep Batch ID: VS220311W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220311A9.BLKS11A

Run in Batch: 220311A9, Run Date: 03/11/2022 13:20, Prep Date: 03/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.81	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220311A9.LCS11X

Run in Batch: 220311A9, Run Date: 03/11/2022 12:18, Prep Date: 03/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		96.2	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220311A9.LCSDS11A, Parent Sample ID: 220311A9.LCS11X

Run in Batch: 220311A9, Run Date: 03/11/2022 12:39, Prep Date: 03/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		87.9	70.0	130.0	9.0	30.0

Merit Laboratories Login Checklist

Lab Set ID: S33474
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470B / RACER Lansing
Submitted: 03/03/2022 08:15 Login User: PFD

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.5
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

140303

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 947 777 5215 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☑ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Donald Richmond

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☑ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES

Project Locations: ☐ Detroit ☐ New York ☒ Other MI

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4 Dioxane 8260	Special Instructions
33474.01	3/1/22	1140	MW-19-121-030122	GW	3		X						X	
.02	3/1/22	1330	MW-20-126-030122	GW	3		X						X	
.03	3/1/22	1515	MW-20-127-030122	GW	3		X						X	
.04	3/1/22	1620	PW-14-02-030122	GW	3		X						X	
.05	3/2/22	1000	TW-15-12-030222	GW	3		X						X	
.06	3/2/22	1140	TW-14-02-030222	GW	3		X						X	
	~~3/2/22~~	~~1340~~	~~MW-13-22-030222~~	~~GW~~	~~9~~		X						X	~~MS/MSD taken~~
.07	—	—	Trip Blank		1		X							No trip blank needed
.08	3/1/22	—	Dup-01-030122	GW	3		X						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☐ Sampler Austin Westhuis/Arcadis	DATE 3/2/22	TIME 1700
RECEIVED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 3/2/22	TIME 1700
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 3/3/22	TIME 0815
RECEIVED BY: SIGNATURE/ORGANIZATION	Patricia M	DATE 3/3/22	TIME 0815

SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:
SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:

NOTES: TEMP. ON ARRIVAL 4.5

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev 5.18.12

Analytical Laboratory Report

Report ID: S34187.01(01)
Generated on 03/31/2022

Report to

Attention: Tiffany Linder
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis.com

Addtional Contacts: Alex Villhauer, Caitlin Cisco

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S34187.01-S34187.11
Project: 30075941.04100 / RACER Lansing
Collected Date(s): 03/22/2022 - 03/23/2022
Submitted Date/Time: 03/23/2022 15:45
Sampled by: Austin Westhuis
P.O. #: 30075941.04100

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (11 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S34187.01	SB-A4-MY63_26-30	Groundwater	03/22/22 12:55
S34187.02	SB-A4-MY63_18-22	Groundwater	03/22/22 13:25
S34187.03	SB-A4-NB60_30-34	Groundwater	03/22/22 15:15
S34187.04	SB-A4-NB60_22-26	Groundwater	03/22/22 16:00
S34187.05	SB-A4-MV60_29.5-33.5	Groundwater	03/23/22 10:20
S34187.06	SB-A4-MV60_21-25	Groundwater	03/23/22 11:00
S34187.07	SB-A4-MY55_25.5-29.5	Groundwater	03/23/22 13:15
S34187.08	SB-A4-MY55_25.5-29.5 MS	Groundwater	03/23/22 13:15
S34187.09	SB-A4-MY55_25.5-29.5 MSD	Groundwater	03/23/22 13:15
S34187.10	SB-A4-MY55_15-19	Groundwater	03/23/22 14:40
S34187.11	Dup-01	Groundwater	03/23/22 00:01

Lab Sample ID: S34187.01
Sample Tag: SB-A4-MY63_26-30
Collected Date/Time: 03/22/2022 12:55
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/30/22 18:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	100	1		ug/L	1	123-91-1	

Lab Sample ID: S34187.02
Sample Tag: SB-A4-MY63_18-22
Collected Date/Time: 03/22/2022 13:25
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/30/22 19:57, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	51	1		ug/L	1	123-91-1	

Lab Sample ID: S34187.03
Sample Tag: SB-A4-NB60_30-34
Collected Date/Time: 03/22/2022 15:15
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/30/22 19:36, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	191	1		ug/L	1	123-91-1	

Lab Sample ID: S34187.04
Sample Tag: SB-A4-NB60_22-26
Collected Date/Time: 03/22/2022 16:00
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/30/22 20:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	18	1		ug/L	1	123-91-1	

Lab Sample ID: S34187.05
Sample Tag: SB-A4-MV60_29.5-33.5
Collected Date/Time: 03/23/2022 10:20
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/31/22 11:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	32	1		ug/L	1	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S34187.06
Sample Tag: SB-A4-MV60_21-25
Collected Date/Time: 03/23/2022 11:00
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/30/22 21:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	13	1		ug/L	1	123-91-1	

Lab Sample ID: S34187.07
Sample Tag: SB-A4-MY55_25.5-29.5
Collected Date/Time: 03/23/2022 13:15
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/30/22 13:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	128	1		ug/L	1	123-91-1	

Lab Sample ID: S34187.08
Sample Tag: SB-A4-MY55_25.5-29.5 MS
Collected Date/Time: 03/23/2022 13:15
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/30/22 12:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	192	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S34187.09
Sample Tag: SB-A4-MY55_25.5-29.5 MSD
Collected Date/Time: 03/23/2022 13:15
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/30/22 12:30, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	172	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Analytical Laboratory Report

Lab Sample ID: S34187.10
Sample Tag: SB-A4-MY55_15-19
Collected Date/Time: 03/23/2022 14:40
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/30/22 21:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S34187.11
Sample Tag: Dup-01
Collected Date/Time: 03/23/2022 00:01
Matrix: Groundwater
COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	03/31/22 11:45	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 03/31/22 11:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	31	1		ug/L	1	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID: S34187
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30075941.04100 / RACER Lansing
Submitted: 03/23/2022 15:45 Login User: PFD

Attention: Tiffany Linder
Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.6
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

140688

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 810-225-1928 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: 30075941.04100 / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / AnCW-C

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG, IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane 8260 SIM									Special Instructions
34187.01	3/22/22	1255	SB-A4-MW63_26-30	GW	3		3						X									
.02	3/22/22	1325	SB-A4-MW63_18-22	GW	3		3						X									
.03	3/22/22	1515	SB-A4-NB60_30-34	GW	3		3						X									
.04	3/22/22	1600	SB-A4-NB60_22-26	GW	3		3						X									
.05	3/23/22	1020	SB-A4-MW60_29.5-33.5	GW	3		3						X									
.06	3/23/22	1100	SB-A4-MW60_21-25	GW	3		3						X									
.07,.08,.09	3/23/22	1315	SB-A4-MW55_25.5-29.5	GW	9		9						X									MS/MSD
.10 ~~.04~~	3/23/22	1440	SB-A4-MW55_15-19	GW	3		3						X									
.11 ~~.04~~	3/23/22	—	Dup-01	GW	3		3						X									

RELINQUISHED BY: SIGNATURE/ORGANIZATION: AnCW-C / Arcadis ☒Sampler	DATE: 3/23/22	TIME: 1545	RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box
RECEIVED BY: SIGNATURE/ORGANIZATION: Merit Drop Box	DATE: 3/23/22	TIME: 1545	RECEIVED BY: SIGNATURE/ORGANIZATION: M Allcatt
RELINQUISHED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	SEAL NO. / SEAL INTACT YES ☐ NO ☐ / INITIALS
RECEIVED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	SEAL NO. / SEAL INTACT YES ☐ NO ☐ / INITIALS

DATE: 3/23/22 TIME: 1545

NOTES: TEMP. ON ARRIVAL: 2.6

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER TRUST PFAS

Project Number: 30112892.0370A

Lot Number:**XC03034**

Date Completed:03/28/2022

Kathy Smith

03/28/2022 10:53 AM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
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Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XC03034

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples was in compliance with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Samples XC03034-002, XC03034-004, XC03034-005, XC03034-006, XC03034-007, XC03034-008, XC03034-009, XC03034-010, XC03034-011 had surrogates recovered outside of the acceptance limits due to confirmed matrix interference.

The MS/MSD associated with sample XC03034-002 had compounds recovered outside of the acceptance limits. The LCS was recovered within the required acceptance limits; therefore, this demonstrates a matrix effect and data quality is not impacted.

Sample Summary
Arcadis U.S., Inc.
Lot Number: XC03034

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	EB-01_030122	Aqueous	03/01/2022 0940	03/03/2022
002	MW-18-105_030122	Aqueous	03/01/2022 1015	03/03/2022
003	MW-18-103_030122	Aqueous	03/01/2022 1125	03/03/2022
004	MW-18-99_030122	Aqueous	03/01/2022 1250	03/03/2022
005	MW-18-98_030122	Aqueous	03/01/2022 1350	03/03/2022
006	MW-18-91_030122	Aqueous	03/01/2022 1510	03/03/2022
007	MW-18-95_030222	Aqueous	03/02/2022 0835	03/03/2022
008	Dup-02_030222	Aqueous	03/02/2022	03/03/2022
009	MW-18-88_030222	Aqueous	03/02/2022 0940	03/03/2022
010	MW-18-89_030222	Aqueous	03/02/2022 1030	03/03/2022
011	MW-18-90_030222	Aqueous	03/02/2022 1210	03/03/2022

(11 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XC03034

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	EB-01_030122	Aqueous	6:2 FTS	PFAS by ID	27		ng/L	7
002	MW-18-105_030122	Aqueous	PFBS	PFAS by ID	5.6		ng/L	9
002	MW-18-105_030122	Aqueous	PFPeS	PFAS by ID	0.67	J	ng/L	9
002	MW-18-105_030122	Aqueous	PFHxS	PFAS by ID	2.2	J	ng/L	9
002	MW-18-105_030122	Aqueous	PFBA	PFAS by ID	6.7		ng/L	9
002	MW-18-105_030122	Aqueous	PFHpA	PFAS by ID	0.57	J	ng/L	9
002	MW-18-105_030122	Aqueous	PFHxA	PFAS by ID	0.72	J	ng/L	9
002	MW-18-105_030122	Aqueous	PFOA	PFAS by ID	2.6	J	ng/L	9
002	MW-18-105_030122	Aqueous	PFPeA	PFAS by ID	1.1	J	ng/L	9
002	MW-18-105_030122	Aqueous	PFOS	PFAS by ID	13		ng/L	9
003	MW-18-103_030122	Aqueous	PFBS	PFAS by ID	13		ng/L	11
003	MW-18-103_030122	Aqueous	PFPeS	PFAS by ID	8.4		ng/L	11
003	MW-18-103_030122	Aqueous	PFHxS	PFAS by ID	62		ng/L	11
003	MW-18-103_030122	Aqueous	PFBA	PFAS by ID	14		ng/L	11
003	MW-18-103_030122	Aqueous	PFHxA	PFAS by ID	1.3	J	ng/L	11
003	MW-18-103_030122	Aqueous	PFOA	PFAS by ID	2.2	J	ng/L	11
003	MW-18-103_030122	Aqueous	PFPeA	PFAS by ID	2.1	J	ng/L	11
003	MW-18-103_030122	Aqueous	PFOS	PFAS by ID	5.3		ng/L	11
004	MW-18-99_030122	Aqueous	PFBS	PFAS by ID	0.70	J	ng/L	13
004	MW-18-99_030122	Aqueous	PFDS	PFAS by ID	1.1	J	ng/L	13
004	MW-18-99_030122	Aqueous	PFHpS	PFAS by ID	1.0	J	ng/L	13
004	MW-18-99_030122	Aqueous	PFHxS	PFAS by ID	2.1	J	ng/L	13
004	MW-18-99_030122	Aqueous	PFBA	PFAS by ID	11		ng/L	13
004	MW-18-99_030122	Aqueous	PFDA	PFAS by ID	1.4	J	ng/L	13
004	MW-18-99_030122	Aqueous	PFHpA	PFAS by ID	3.4	J	ng/L	13
004	MW-18-99_030122	Aqueous	PFHxA	PFAS by ID	5.4		ng/L	13
004	MW-18-99_030122	Aqueous	PFNA	PFAS by ID	1.7	J	ng/L	13
004	MW-18-99_030122	Aqueous	PFOA	PFAS by ID	7.3		ng/L	13
004	MW-18-99_030122	Aqueous	PFPeA	PFAS by ID	3.4	J	ng/L	13
004	MW-18-99_030122	Aqueous	PFUdA	PFAS by ID	0.56	J	ng/L	13
004	MW-18-99_030122	Aqueous	PFOS	PFAS by ID	93		ng/L	13
005	MW-18-98_030122	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	15
005	MW-18-98_030122	Aqueous	PFHpS	PFAS by ID	0.61	J	ng/L	15
005	MW-18-98_030122	Aqueous	PFOSA	PFAS by ID	4.9		ng/L	15
005	MW-18-98_030122	Aqueous	PFHxS	PFAS by ID	0.52	J	ng/L	15
005	MW-18-98_030122	Aqueous	PFBA	PFAS by ID	18		ng/L	15
005	MW-18-98_030122	Aqueous	PFHpA	PFAS by ID	3.8		ng/L	15
005	MW-18-98_030122	Aqueous	PFHxA	PFAS by ID	7.4		ng/L	15
005	MW-18-98_030122	Aqueous	PFNA	PFAS by ID	1.4	J	ng/L	15
005	MW-18-98_030122	Aqueous	PFOA	PFAS by ID	9.5		ng/L	15
005	MW-18-98_030122	Aqueous	PFPeA	PFAS by ID	5.6		ng/L	15
005	MW-18-98_030122	Aqueous	PFOS	PFAS by ID	33		ng/L	15
006	MW-18-91_030122	Aqueous	6:2 FTS	PFAS by ID	2.3	JQ	ng/L	17
006	MW-18-91_030122	Aqueous	PFBS	PFAS by ID	1.6	J	ng/L	17
006	MW-18-91_030122	Aqueous	PFDS	PFAS by ID	0.68	J	ng/L	17

Detection Summary (Continued)

Lot Number: XC03034

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
006	MW-18-91_030122	Aqueous	PFHpS	PFAS by ID	0.75	J	ng/L	17
006	MW-18-91_030122	Aqueous	PFOSA	PFAS by ID	1.5	J	ng/L	17
006	MW-18-91_030122	Aqueous	PFPeS	PFAS by ID	0.61	J	ng/L	17
006	MW-18-91_030122	Aqueous	PFHxS	PFAS by ID	2.1	J	ng/L	17
006	MW-18-91_030122	Aqueous	PFBA	PFAS by ID	8.0		ng/L	17
006	MW-18-91_030122	Aqueous	PFDA	PFAS by ID	0.91	J	ng/L	17
006	MW-18-91_030122	Aqueous	PFHpA	PFAS by ID	2.4	J	ng/L	17
006	MW-18-91_030122	Aqueous	PFHxA	PFAS by ID	3.0	J	ng/L	17
006	MW-18-91_030122	Aqueous	PFNA	PFAS by ID	1.2	J	ng/L	17
006	MW-18-91_030122	Aqueous	PFOA	PFAS by ID	7.7		ng/L	17
006	MW-18-91_030122	Aqueous	PFPeA	PFAS by ID	3.6		ng/L	17
006	MW-18-91_030122	Aqueous	PFOS	PFAS by ID	44		ng/L	17
007	MW-18-95_030222	Aqueous	PFBS	PFAS by ID	2.8	J	ng/L	19
007	MW-18-95_030222	Aqueous	PFHxS	PFAS by ID	1.0	J	ng/L	19
007	MW-18-95_030222	Aqueous	PFBA	PFAS by ID	9.5		ng/L	19
007	MW-18-95_030222	Aqueous	PFHpA	PFAS by ID	0.84	J	ng/L	19
007	MW-18-95_030222	Aqueous	PFHxA	PFAS by ID	0.81	J	ng/L	19
007	MW-18-95_030222	Aqueous	PFNA	PFAS by ID	0.45	J	ng/L	19
007	MW-18-95_030222	Aqueous	PFOA	PFAS by ID	2.3	J	ng/L	19
007	MW-18-95_030222	Aqueous	PFPeA	PFAS by ID	1.2	J	ng/L	19
007	MW-18-95_030222	Aqueous	PFOS	PFAS by ID	27		ng/L	19
008	Dup-02_030222	Aqueous	PFBS	PFAS by ID	2.6	J	ng/L	21
008	Dup-02_030222	Aqueous	PFHxS	PFAS by ID	0.86	J	ng/L	21
008	Dup-02_030222	Aqueous	PFBA	PFAS by ID	9.8		ng/L	21
008	Dup-02_030222	Aqueous	PFHpA	PFAS by ID	0.81	J	ng/L	21
008	Dup-02_030222	Aqueous	PFHxA	PFAS by ID	0.72	J	ng/L	21
008	Dup-02_030222	Aqueous	PFNA	PFAS by ID	0.78	J	ng/L	21
008	Dup-02_030222	Aqueous	PFOA	PFAS by ID	2.6	J	ng/L	21
008	Dup-02_030222	Aqueous	PFPeA	PFAS by ID	1.0	J	ng/L	21
008	Dup-02_030222	Aqueous	PFOS	PFAS by ID	25		ng/L	21
009	MW-18-88_030222	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	23
009	MW-18-88_030222	Aqueous	PFHpS	PFAS by ID	1.1	J	ng/L	23
009	MW-18-88_030222	Aqueous	PFPeS	PFAS by ID	0.60	J	ng/L	23
009	MW-18-88_030222	Aqueous	PFHxS	PFAS by ID	2.6	J	ng/L	23
009	MW-18-88_030222	Aqueous	PFBA	PFAS by ID	9.5		ng/L	23
009	MW-18-88_030222	Aqueous	PFHpA	PFAS by ID	0.40	J	ng/L	23
009	MW-18-88_030222	Aqueous	PFHxA	PFAS by ID	0.66	J	ng/L	23
009	MW-18-88_030222	Aqueous	PFOA	PFAS by ID	5.6		ng/L	23
009	MW-18-88_030222	Aqueous	PFPeA	PFAS by ID	0.81	J	ng/L	23
009	MW-18-88_030222	Aqueous	PFOS	PFAS by ID	120		ng/L	23
010	MW-18-89_030222	Aqueous	PFBS	PFAS by ID	1.3	J	ng/L	25
010	MW-18-89_030222	Aqueous	PFHpS	PFAS by ID	1.9	J	ng/L	25
010	MW-18-89_030222	Aqueous	PFPeS	PFAS by ID	0.78	J	ng/L	25
010	MW-18-89_030222	Aqueous	PFHxS	PFAS by ID	3.9		ng/L	25
010	MW-18-89_030222	Aqueous	PFBA	PFAS by ID	8.6		ng/L	25
010	MW-18-89_030222	Aqueous	PFDA	PFAS by ID	1.0	J	ng/L	25
010	MW-18-89_030222	Aqueous	PFHpA	PFAS by ID	3.4	J	ng/L	25
010	MW-18-89_030222	Aqueous	PFHxA	PFAS by ID	5.3		ng/L	25

Detection Summary (Continued)

Lot Number: XC03034

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
010	MW-18-89_030222	Aqueous	PFNA	PFAS by ID	1.2	J	ng/L	25
010	MW-18-89_030222	Aqueous	PFOA	PFAS by ID	12		ng/L	25
010	MW-18-89_030222	Aqueous	PFPeA	PFAS by ID	6.0		ng/L	25
010	MW-18-89_030222	Aqueous	PFOS	PFAS by ID	110		ng/L	25
011	MW-18-90_030222	Aqueous	PFBS	PFAS by ID	1.8	J	ng/L	27
011	MW-18-90_030222	Aqueous	PFHpS	PFAS by ID	21		ng/L	27
011	MW-18-90_030222	Aqueous	PFOSA	PFAS by ID	0.95	J	ng/L	27
011	MW-18-90_030222	Aqueous	PFPeS	PFAS by ID	2.5	J	ng/L	27
011	MW-18-90_030222	Aqueous	PFHxS	PFAS by ID	19		ng/L	27
011	MW-18-90_030222	Aqueous	PFBA	PFAS by ID	9.6		ng/L	27
011	MW-18-90_030222	Aqueous	PFDA	PFAS by ID	1.8	J	ng/L	27
011	MW-18-90_030222	Aqueous	PFHpA	PFAS by ID	3.9		ng/L	27
011	MW-18-90_030222	Aqueous	PFHxA	PFAS by ID	5.0		ng/L	27
011	MW-18-90_030222	Aqueous	PFNA	PFAS by ID	1.6	J	ng/L	27
011	MW-18-90_030222	Aqueous	PFOA	PFAS by ID	17		ng/L	27
011	MW-18-90_030222	Aqueous	PFPeA	PFAS by ID	3.5	J	ng/L	27
011	MW-18-90_030222	Aqueous	PFOS	PFAS by ID	1000		ng/L	27

(110 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-001**

Description: **EB-01_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 0940**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/18/2022 2241	ASD	03/16/2022 1951	35115
2	SOP SPE	PFAS by ID SOP	1	03/22/2022 1555	NK1	03/21/2022 1258	35515

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**27**		**6.9**	**1.7**	**ng/L**	**2**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		111	25-150		111	25-150
13C2_6:2FTS		114	25-150		111	25-150
13C2_8:2FTS		114	25-150		106	25-150
13C2_PFDoA		100	25-150		95	25-150
13C2_PFTeDA		95	25-150		85	25-150
13C3_PFBS		106	25-150		107	25-150
13C3_PFHxS		96	25-150		104	25-150
13C3-HFPO-DA		96	25-150		107	25-150
13C4_PFBA		107	25-150		106	25-150
13C4_PFHpA		103	25-150		103	25-150
13C5_PFHxA		109	25-150		100	25-150
13C5_PFPeA		110	25-150		102	25-150
13C6_PFDA		105	25-150		99	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-001**
Description: **EB-01_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 0940**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		103	25-150		105	25-150
13C8_PFOA		108	25-150		102	25-150
13C8_PFOS		111	25-150		111	25-150
13C8_PFOSA		95	10-150		97	10-150
13C9_PFNA		112	25-150		108	25-150
d5-EtFOSAA		100	25-150		100	25-150
d3-MeFOSAA		91	25-150		99	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-002**

Description: **MW-18-105_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1015**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/18/2022 2252	ASD	03/16/2022 1951	35115

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	S	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**5.6**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.67**	**J**	**3.5**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.2**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**6.7**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.57**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.72**	**J**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.6**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**13**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	206	25-150
13C2_6:2FTS		124	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		90	25-150
13C2_PFTeDA		87	25-150
13C3_PFBS		109	25-150
13C3_PFHxS		115	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		72	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		104	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-002**
Description: **MW-18-105_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1015**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		119	25-150
13C8_PFOS		115	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		113	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		87	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-003**

Description: **MW-18-103_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1125**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/18/2022 2325	ASD	03/16/2022 1951	35115

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		9.9	0.60	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		9.9	0.82	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		9.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		9.9	2.5	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		9.9	1.1	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		9.9	2.6	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		9.9	0.60	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		9.9	0.93	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		9.9	1.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**13**		**5.0**	**0.51**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		5.0	0.96	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		5.0	0.62	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		5.0	0.88	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		5.0	0.76	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**8.4**		**5.0**	**0.74**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**62**		**5.0**	**0.68**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**14**		**5.0**	**0.74**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		5.0	0.65	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		5.0	0.58	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		5.0	0.55	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.3**	**J**	**5.0**	**0.85**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		5.0	0.57	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.2**	**J**	**5.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.1**	**J**	**5.0**	**0.67**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		5.0	0.74	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		5.0	0.65	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		5.0	0.78	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**5.3**		**5.0**	**2.5**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		85	25-150
13C2_6:2FTS		84	25-150
13C2_8:2FTS		66	25-150
13C2_PFDoA		35	25-150
13C2_PFTeDA		25	25-150
13C3_PFBS		79	25-150
13C3_PFHxS		75	25-150
13C3-HFPO-DA		72	25-150
13C4_PFBA		63	25-150
13C4_PFHpA		81	25-150
13C5_PFHxA		77	25-150
13C5_PFPeA		80	25-150
13C6_PFDA		63	25-150
13C7_PFUdA		48	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-003**
Description: **MW-18-103_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1125**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		79	25-150
13C8_PFOS		68	25-150
13C8_PFOSA		61	10-150
13C9_PFNA		74	25-150
d5-EtFOSAA		43	25-150
d3-MeFOSAA		45	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-004**

Description: **MW-18-99_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1250**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/18/2022 2336	ASD	03/16/2022 1951	35115
2	SOP SPE	PFAS by ID SOP	1	03/22/2022 1606	NK1	03/21/2022 1258	35515

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.70**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	**335-77-3**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.68**	**ng/L**	**1**
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**1.0**	**J**	**3.5**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.1**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.4**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**5.4**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.3**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.4**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	**2058-94-8**	**PFAS by ID SOP**	**0.56**	**J**	**3.5**	**0.55**	**ng/L**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**93**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	261	25-150	N	260	25-150
13C2_6:2FTS	N	201	25-150	N	197	25-150
13C2_8:2FTS	N	167	25-150	N	170	25-150
13C2_PFDoA		109	25-150		110	25-150
13C2_PFTeDA		88	25-150		98	25-150
13C3_PFBS		95	25-150		100	25-150
13C3_PFHxS		95	25-150		109	25-150
13C3-HFPO-DA		84	25-150		97	25-150
13C4_PFBA		63	25-150		64	25-150
13C4_PFHpA		106	25-150		110	25-150
13C5_PFHxA		97	25-150		104	25-150
13C5_PFPeA		87	25-150		87	25-150
13C6_PFDA		112	25-150		114	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-004**
Description: **MW-18-99_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1250**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		104	25-150		117	25-150
13C8_PFOA		105	25-150		109	25-150
13C8_PFOS		113	25-150		115	25-150
13C8_PFOSA		93	10-150		109	10-150
13C9_PFNA		110	25-150		116	25-150
d5-EtFOSAA		121	25-150		114	25-150
d3-MeFOSAA		102	25-150		118	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-005**

Description: **MW-18-98_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1350**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/18/2022 2347	ASD	03/16/2022 1951	35115
2	SOP SPE	PFAS by ID SOP	1	03/22/2022 1617	NK1	03/21/2022 1258	35515

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.5**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.61**	**J**	**3.5**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**4.9**		**3.5**	**0.54**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.52**	**J**	**3.5**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**18**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.8**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**7.4**		**3.5**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**9.5**		**3.5**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.6**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**33**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	204	25-150	N	182	25-150
13C2_6:2FTS		139	25-150		126	25-150
13C2_8:2FTS		110	25-150		106	25-150
13C2_PFDoA		86	25-150		97	25-150
13C2_PFTeDA		88	25-150		101	25-150
13C3_PFBS		117	25-150		106	25-150
13C3_PFHxS		109	25-150		110	25-150
13C3-HFPO-DA		105	25-150		108	25-150
13C4_PFBA		91	25-150		90	25-150
13C4_PFHpA		117	25-150		107	25-150
13C5_PFHxA		123	25-150		106	25-150
13C5_PFPeA		117	25-150		105	25-150
13C6_PFDA		104	25-150		101	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-005**
Description: **MW-18-98_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1350**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		90	25-150		95	25-150
13C8_PFOA		118	25-150		103	25-150
13C8_PFOS		114	25-150		103	25-150
13C8_PFOSA		99	10-150		101	10-150
13C9_PFNA		109	25-150		104	25-150
d5-EtFOSAA		87	25-150		94	25-150
d3-MeFOSAA		80	25-150		94	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-006**

Description: **MW-18-91_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1510**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/18/2022 2358	ASD	03/16/2022 1951	35115
2	SOP SPE	PFAS by ID SOP	1	03/22/2022 1628	NK1	03/21/2022 1258	35515

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**2.3**	**JQ**	**6.9**	**1.7**	**ng/L**	**2**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.6**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	**335-77-3**	**PFAS by ID SOP**	**0.68**	**J**	**3.4**	**0.67**	**ng/L**	**1**
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.75**	**J**	**3.4**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**1.5**	**J**	**3.4**	**0.53**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.61**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.1**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.0**		**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.91**	**J**	**3.4**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.4**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.0**	**J**	**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.2**	**J**	**3.4**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.7**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.6**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**44**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	272	25-150	N	279	25-150
13C2_6:2FTS	N	291	25-150	N	280	25-150
13C2_8:2FTS	N	306	25-150	N	266	25-150
13C2_PFDoA		102	25-150		114	25-150
13C2_PFTeDA		81	25-150		94	25-150
13C3_PFBS		95	25-150		95	25-150
13C3_PFHxS		89	25-150		99	25-150
13C3-HFPO-DA		71	25-150		80	25-150
13C4_PFBA		46	25-150		47	25-150
13C4_PFHpA		91	25-150		91	25-150
13C5_PFHxA		84	25-150		86	25-150
13C5_PFPeA		68	25-150		70	25-150
13C6_PFDA		119	25-150		118	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-006**
Description: **MW-18-91_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1510**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		115	25-150		125	25-150
13C8_PFOA		107	25-150		108	25-150
13C8_PFOS		109	25-150		113	25-150
13C8_PFOSA		95	10-150		106	10-150
13C9_PFNA		111	25-150		112	25-150
d5-EtFOSAA		123	25-150		127	25-150
d3-MeFOSAA		108	25-150		119	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-007**

Description: **MW-18-95_030222** Matrix: **Aqueous**

Date Sampled: **03/02/2022 0835**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 1747	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.8**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.0**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.5**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.84**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.81**	**J**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.45**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.3**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**27**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	261	25-150
13C2_6:2FTS	N	241	25-150
13C2_8:2FTS	N	223	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		97	25-150
13C3_PFBS		91	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		82	25-150
13C4_PFBA		61	25-150
13C4_PFHpA		102	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		77	25-150
13C6_PFDA		116	25-150
13C7_PFUdA		110	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-007**
Description: **MW-18-95_030222**
Matrix: **Aqueous**
Date Sampled: **03/02/2022 0835**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		118	25-150
d3-MeFOSAA		108	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-008**

Description: **Dup-02_030222** Matrix: **Aqueous**

Date Sampled: **03/02/2022**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 1758	ASD	03/17/2022 1638	35233
2	SOP SPE	PFAS by ID SOP	1	03/24/2022 2108	MMM	03/23/2022 1615	35845

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	Q	7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	Q	7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	Q	7.0	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	Q	7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.6**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	Q	3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	Q	3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	Q	3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.86**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.8**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	Q	3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	Q	3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.81**	**J**	**3.5**	**0.39**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.72**	**J**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.78**	**J**	**3.5**	**0.41**	**ng/L**	**2**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.6**	**J**	**3.5**	**0.73**	**ng/L**	**2**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.0**	**J**	**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	Q	3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	Q	3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**25**		**3.5**	**1.8**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	400	25-150	N	238	25-150
13C2_6:2FTS	N	468	25-150	N	266	25-150
13C2_8:2FTS	N	436	25-150	N	268	25-150
13C2_PFDoA	N	177	25-150		102	25-150
13C2_PFTeDA		113	25-150		99	25-150
13C3_PFBS		150	25-150		102	25-150
13C3_PFHxS		150	25-150		105	25-150
13C3-HFPO-DA		122	25-150		74	25-150
13C4_PFBA		71	25-150		74	25-150
13C4_PFHpA	N	151	25-150		112	25-150
13C5_PFHxA		140	25-150		104	25-150
13C5_PFPeA		107	25-150		94	25-150
13C6_PFDA	N	193	25-150		111	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-008**
Description: **Dup-02_030222**
Matrix: **Aqueous**
Date Sampled: **03/02/2022**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA	N	184	25-150		119	25-150
13C8_PFOA	N	168	25-150		115	25-150
13C8_PFOS	N	160	25-150		103	25-150
13C8_PFOSA	N	163	10-150		108	10-150
13C9_PFNA	N	182	25-150		129	25-150
d5-EtFOSAA	N	192	25-150		117	25-150
d3-MeFOSAA	N	178	25-150		129	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-009**

Description: **MW-18-88_030222** Matrix: **Aqueous**

Date Sampled: **03/02/2022 0940**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 1809	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**1.1**	**J**	**3.6**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.60**	**J**	**3.6**	**0.53**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.6**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.5**		**3.6**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.40**	**J**	**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.66**	**J**	**3.6**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.6**		**3.6**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.81**	**J**	**3.6**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**120**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	199	25-150
13C2_6:2FTS		124	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		92	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		76	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		89	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-009**
Description: **MW-18-88_030222**
Matrix: **Aqueous**
Date Sampled: **03/02/2022 0940**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		94	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-010**

Description: **MW-18-89_030222** Matrix: **Aqueous**

Date Sampled: **03/02/2022 1030**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 1831	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.3**	**J**	**3.5**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**1.9**	**J**	**3.5**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.78**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.9**		**3.5**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.6**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.0**	**J**	**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.4**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**5.3**		**3.5**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**12**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**6.0**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**110**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	249	25-150
13C2_6:2FTS	N	202	25-150
13C2_8:2FTS	N	159	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		96	25-150
13C3_PFBS		94	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		83	25-150
13C4_PFBA		61	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		79	25-150
13C6_PFDA		112	25-150
13C7_PFUdA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-010**
Description: **MW-18-89_030222**
Matrix: **Aqueous**
Date Sampled: **03/02/2022 1030**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		107	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03034-011**

Description: **MW-18-90_030222** Matrix: **Aqueous**

Date Sampled: **03/02/2022 1210**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 1853	ASD	03/17/2022 1638	35233
2	SOP SPE	PFAS by ID SOP	5	03/25/2022 1425	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.3	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.8**	**J**	**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**21**		**3.6**	**0.45**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.95**	**J**	**3.6**	**0.56**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**2.5**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**19**		**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.6**		**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.8**	**J**	**3.6**	**0.48**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.9**		**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**5.0**		**3.6**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.6**	**J**	**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**17**		**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.5**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1000**		**18**	**9.1**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	275	25-150	N	199	25-150
13C2_6:2FTS	N	227	25-150		124	25-150
13C2_8:2FTS	N	248	25-150		128	25-150
13C2_PFDoA		115	25-150		105	25-150
13C2_PFTeDA		99	25-150		101	25-150
13C3_PFBS		97	25-150		100	25-150
13C3_PFHxS		98	25-150		115	25-150
13C3-HFPO-DA		81	25-150		106	25-150
13C4_PFBA		32	25-150		44	25-150
13C4_PFHpA		102	25-150		123	25-150
13C5_PFHxA		96	25-150		115	25-150
13C5_PFPeA		82	25-150		111	25-150
13C6_PFDA		123	25-150		118	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03034-011**
Description: **MW-18-90_030222**
Matrix: **Aqueous**
Date Sampled: **03/02/2022 1210**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		117	25-150		105	25-150
13C8_PFOA		108	25-150		106	25-150
13C8_PFOS		100	25-150		111	25-150
13C8_PFOSA		105	10-150		104	10-150
13C9_PFNA		106	25-150		107	25-150
d5-EtFOSAA		125	25-150		111	25-150
d3-MeFOSAA		114	25-150		121	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ35115-001
Batch: 35115
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/16/2022 1951

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	03/18/2022 1924
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	03/18/2022 1924
8:2 FTS	ND		1	8.0	1.6	ng/L	03/18/2022 1924
6:2 FTS	**12**		**1**	**8.0**	**2.0**	**ng/L**	**03/18/2022 1924**
4:2 FTS	ND		1	8.0	0.87	ng/L	03/18/2022 1924
GenX	ND		1	8.0	2.1	ng/L	03/18/2022 1924
ADONA	ND		1	8.0	0.48	ng/L	03/18/2022 1924
EtFOSAA	ND		1	8.0	0.75	ng/L	03/18/2022 1924
MeFOSAA	ND		1	8.0	0.93	ng/L	03/18/2022 1924
PFBS	ND		1	4.0	0.41	ng/L	03/18/2022 1924
PFDS	ND		1	4.0	0.78	ng/L	03/18/2022 1924
PFHpS	ND		1	4.0	0.50	ng/L	03/18/2022 1924
PFNS	ND		1	4.0	0.71	ng/L	03/18/2022 1924
PFOSA	ND		1	4.0	0.61	ng/L	03/18/2022 1924
PFPeS	ND		1	4.0	0.59	ng/L	03/18/2022 1924
PFHxS	ND		1	4.0	0.55	ng/L	03/18/2022 1924
PFBA	ND		1	4.0	0.60	ng/L	03/18/2022 1924
PFDA	ND		1	4.0	0.52	ng/L	03/18/2022 1924
PFDoA	ND		1	4.0	0.47	ng/L	03/18/2022 1924
PFHpA	ND		1	4.0	0.45	ng/L	03/18/2022 1924
PFHxA	ND		1	4.0	0.69	ng/L	03/18/2022 1924
PFNA	ND		1	4.0	0.46	ng/L	03/18/2022 1924
PFOA	ND		1	4.0	0.83	ng/L	03/18/2022 1924
PFPeA	ND		1	4.0	0.54	ng/L	03/18/2022 1924
PFTeDA	ND		1	4.0	0.60	ng/L	03/18/2022 1924
PFTrDA	ND		1	4.0	0.53	ng/L	03/18/2022 1924
PFUdA	ND		1	4.0	0.63	ng/L	03/18/2022 1924
PFOS	ND		1	4.0	2.0	ng/L	03/18/2022 1924

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		103	25-150
13C2_6:2FTS		106	25-150
13C2_8:2FTS		106	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		101	25-150
13C3_PFBS		106	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		99	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		108	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ35115-001
Batch: 35115
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/16/2022 1951

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		101	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		105	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		93	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		94	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ35115-002
Batch: 35115
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/16/2022 1951

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	91	50-150	03/18/2022 1935
11Cl-PF3OUdS	15	14		1	90	50-150	03/18/2022 1935
8:2 FTS	15	15		1	95	50-150	03/18/2022 1935
6:2 FTS	15	18		1	118	50-150	03/18/2022 1935
4:2 FTS	15	14		1	96	50-150	03/18/2022 1935
GenX	32	31		1	97	50-150	03/18/2022 1935
ADONA	15	13		1	89	50-150	03/18/2022 1935
EtFOSAA	16	15		1	96	50-150	03/18/2022 1935
MeFOSAA	16	16		1	103	50-150	03/18/2022 1935
PFBS	14	13		1	91	50-150	03/18/2022 1935
PFDS	15	14		1	92	50-150	03/18/2022 1935
PFHpS	15	14		1	94	50-150	03/18/2022 1935
PFNS	15	13		1	88	50-150	03/18/2022 1935
PFOSA	16	16		1	98	50-150	03/18/2022 1935
PFPeS	15	14		1	90	50-150	03/18/2022 1935
PFHxS	15	13		1	91	50-150	03/18/2022 1935
PFBA	16	15		1	91	50-150	03/18/2022 1935
PFDA	16	15		1	93	50-150	03/18/2022 1935
PFDoA	16	15		1	96	50-150	03/18/2022 1935
PFHpA	16	15		1	96	50-150	03/18/2022 1935
PFHxA	16	15		1	91	50-150	03/18/2022 1935
PFNA	16	14		1	90	50-150	03/18/2022 1935
PFOA	16	15		1	93	50-150	03/18/2022 1935
PFPeA	16	15		1	91	50-150	03/18/2022 1935
PFTeDA	16	16		1	99	50-150	03/18/2022 1935
PFTrDA	16	15		1	93	50-150	03/18/2022 1935
PFUdA	16	15		1	92	50-150	03/18/2022 1935
PFOS	15	15		1	100	50-150	03/18/2022 1935

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		109	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		110	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		112	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		108	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		112	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ35115-002
Batch: 35115
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/16/2022 1951

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		104	25-150
13C7_PFUdA		109	25-150
13C8_PFOA		108	25-150
13C8_PFOS		113	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		107	25-150
d5-EtFOSAA		110	25-150
d3-MeFOSAA		94	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XC03034-002MS
Batch: 35115
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/16/2022 1951

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	12		1	94	50-150	03/18/2022 2303
11Cl-PF3OUdS	ND	13	10		1	78	50-150	03/18/2022 2303
8:2 FTS	ND	13	13		1	99	50-150	03/18/2022 2303
6:2 FTS	ND	13	20	N	1	154	50-150	03/18/2022 2303
4:2 FTS	ND	13	12		1	95	50-150	03/18/2022 2303
GenX	ND	28	28		1	102	50-150	03/18/2022 2303
ADONA	ND	13	12		1	96	50-150	03/18/2022 2303
EtFOSAA	ND	14	14		1	103	50-150	03/18/2022 2303
MeFOSAA	ND	14	17		1	120	50-150	03/18/2022 2303
PFBS	5.6	12	17		1	95	50-150	03/18/2022 2303
PFDS	ND	13	11		1	81	50-150	03/18/2022 2303
PFHpS	ND	13	12		1	93	50-150	03/18/2022 2303
PFNS	ND	13	12		1	90	50-150	03/18/2022 2303
PFOSA	ND	14	14		1	103	50-150	03/18/2022 2303
PFPeS	0.67	13	13		1	97	50-150	03/18/2022 2303
PFHxS	2.2	13	14		1	92	50-150	03/18/2022 2303
PFBA	6.7	14	20		1	93	50-150	03/18/2022 2303
PFDA	ND	14	14		1	101	50-150	03/18/2022 2303
PFDoA	ND	14	14		1	100	50-150	03/18/2022 2303
PFHpA	0.57	14	14		1	96	50-150	03/18/2022 2303
PFHxA	0.72	14	13		1	91	50-150	03/18/2022 2303
PFNA	ND	14	14		1	102	50-150	03/18/2022 2303
PFOA	2.6	14	16		1	99	50-150	03/18/2022 2303
PFPeA	1.1	14	15		1	99	50-150	03/18/2022 2303
PFTeDA	ND	14	15		1	106	50-150	03/18/2022 2303
PFTrDA	ND	14	13		1	93	50-150	03/18/2022 2303
PFUdA	ND	14	14		1	104	50-150	03/18/2022 2303
PFOS	13	13	25		1	95	50-150	03/18/2022 2303

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	188	25-150
13C2_6:2FTS		113	25-150
13C2_8:2FTS		110	25-150
13C2_PFDoA		89	25-150
13C2_PFTeDA		83	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		70	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XC03034-002MS
Batch: 35115
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/16/2022 1951

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		91	25-150
13C8_PFOA		102	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		90	25-150
d3-MeFOSAA		80	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XC03034-002MD
Batch: 35115
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/16/2022 1951

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	13	13		1	100	6.7	50-150	30	03/18/2022 2314
11Cl-PF3OUdS	ND	13	11		1	86	9.6	50-150	30	03/18/2022 2314
8:2 FTS	ND	13	14		1	105	7.5	50-150	30	03/18/2022 2314
6:2 FTS	ND	13	20		1	150	1.9	50-150	30	03/18/2022 2314
4:2 FTS	ND	13	12		1	95	1.2	50-150	30	03/18/2022 2314
GenX	ND	28	29		1	103	1.6	50-150	30	03/18/2022 2314
ADONA	ND	13	13		1	96	1.0	50-150	30	03/18/2022 2314
EtFOSAA	ND	14	16		1	112	8.4	50-150	30	03/18/2022 2314
MeFOSAA	ND	14	17		1	124	3.8	50-150	30	03/18/2022 2314
PFBS	5.6	12	17		1	89	3.7	50-150	30	03/18/2022 2314
PFDS	ND	13	13		1	95	17	50-150	30	03/18/2022 2314
PFHpS	ND	13	13		1	100	8.7	50-150	30	03/18/2022 2314
PFNS	ND	13	13		1	101	12	50-150	30	03/18/2022 2314
PFOSA	ND	14	15		1	105	3.0	50-150	30	03/18/2022 2314
PFPeS	0.67	13	14		1	102	5.1	50-150	30	03/18/2022 2314
PFHxS	2.2	13	15		1	103	10	50-150	30	03/18/2022 2314
PFBA	6.7	14	20		1	95	1.6	50-150	30	03/18/2022 2314
PFDA	ND	14	14		1	101	0.42	50-150	30	03/18/2022 2314
PFDoA	ND	14	15		1	106	6.5	50-150	30	03/18/2022 2314
PFHpA	0.57	14	14		1	95	0.89	50-150	30	03/18/2022 2314
PFHxA	0.72	14	14		1	94	3.3	50-150	30	03/18/2022 2314
PFNA	ND	14	14		1	97	4.2	50-150	30	03/18/2022 2314
PFOA	2.6	14	17		1	101	2.0	50-150	30	03/18/2022 2314
PFPeA	1.1	14	14		1	93	5.6	50-150	30	03/18/2022 2314
PFTeDA	ND	14	15		1	107	1.3	50-150	30	03/18/2022 2314
PFTrDA	ND	14	14		1	100	7.6	50-150	30	03/18/2022 2314
PFUdA	ND	14	14		1	101	2.7	50-150	30	03/18/2022 2314
PFOS	13	13	27		1	109	7.5	50-150	30	03/18/2022 2314

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	237	25-150
13C2_6:2FTS		132	25-150
13C2_8:2FTS		114	25-150
13C2_PFDoA		94	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		113	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		74	25-150
13C4_PFHpA		120	25-150
13C5_PFHxA		123	25-150
13C5_PFPeA		111	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XC03034-002MD
Batch: 35115
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/16/2022 1951

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		105	25-150
13C7_PFUdA		100	25-150
13C8_PFOA		117	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		101	10-150
13C9_PFNA		117	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		86	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ35233-001
Batch: 35233
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	03/19/2022 1725
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	03/19/2022 1725
8:2 FTS	ND		1	8.0	1.6	ng/L	03/19/2022 1725
6:2 FTS	ND		1	8.0	2.0	ng/L	03/19/2022 1725
4:2 FTS	ND		1	8.0	0.87	ng/L	03/19/2022 1725
GenX	ND		1	8.0	2.1	ng/L	03/19/2022 1725
ADONA	ND		1	8.0	0.48	ng/L	03/19/2022 1725
EtFOSAA	ND		1	8.0	0.75	ng/L	03/19/2022 1725
MeFOSAA	ND		1	8.0	0.93	ng/L	03/19/2022 1725
PFBS	ND		1	4.0	0.41	ng/L	03/19/2022 1725
PFDS	ND		1	4.0	0.78	ng/L	03/19/2022 1725
PFHpS	ND		1	4.0	0.50	ng/L	03/19/2022 1725
PFNS	ND		1	4.0	0.71	ng/L	03/19/2022 1725
PFOSA	ND		1	4.0	0.61	ng/L	03/19/2022 1725
PFPeS	ND		1	4.0	0.59	ng/L	03/19/2022 1725
PFHxS	ND		1	4.0	0.55	ng/L	03/19/2022 1725
PFBA	ND		1	4.0	0.60	ng/L	03/19/2022 1725
PFDA	ND		1	4.0	0.52	ng/L	03/19/2022 1725
PFDoA	ND		1	4.0	0.47	ng/L	03/19/2022 1725
PFHpA	ND		1	4.0	0.45	ng/L	03/19/2022 1725
PFHxA	ND		1	4.0	0.69	ng/L	03/19/2022 1725
PFNA	ND		1	4.0	0.46	ng/L	03/19/2022 1725
PFOA	ND		1	4.0	0.83	ng/L	03/19/2022 1725
PFPeA	ND		1	4.0	0.54	ng/L	03/19/2022 1725
PFTeDA	ND		1	4.0	0.60	ng/L	03/19/2022 1725
PFTrDA	ND		1	4.0	0.53	ng/L	03/19/2022 1725
PFUdA	ND		1	4.0	0.63	ng/L	03/19/2022 1725
PFOS	ND		1	4.0	2.0	ng/L	03/19/2022 1725

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		110	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		111	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ35233-001
Batch: 35233
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		107	25-150
13C7_PFUdA		104	25-150
13C8_PFOA		112	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ35233-002
Batch: 35233
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	99	50-150	03/19/2022 1736
11Cl-PF3OUdS	15	14		1	93	50-150	03/19/2022 1736
8:2 FTS	15	16		1	107	50-150	03/19/2022 1736
6:2 FTS	15	17		1	111	50-150	03/19/2022 1736
4:2 FTS	15	15		1	99	50-150	03/19/2022 1736
GenX	32	33		1	103	50-150	03/19/2022 1736
ADONA	15	16		1	104	50-150	03/19/2022 1736
EtFOSAA	16	16		1	101	50-150	03/19/2022 1736
MeFOSAA	16	18		1	113	50-150	03/19/2022 1736
PFBS	14	14		1	100	50-150	03/19/2022 1736
PFDS	15	15		1	96	50-150	03/19/2022 1736
PFHpS	15	14		1	93	50-150	03/19/2022 1736
PFNS	15	15		1	98	50-150	03/19/2022 1736
PFOSA	16	16		1	103	50-150	03/19/2022 1736
PFPeS	15	14		1	93	50-150	03/19/2022 1736
PFHxS	15	14		1	99	50-150	03/19/2022 1736
PFBA	16	16		1	98	50-150	03/19/2022 1736
PFDA	16	16		1	101	50-150	03/19/2022 1736
PFDoA	16	16		1	98	50-150	03/19/2022 1736
PFHpA	16	16		1	97	50-150	03/19/2022 1736
PFHxA	16	16		1	100	50-150	03/19/2022 1736
PFNA	16	15		1	96	50-150	03/19/2022 1736
PFOA	16	16		1	101	50-150	03/19/2022 1736
PFPeA	16	15		1	96	50-150	03/19/2022 1736
PFTeDA	16	16		1	102	50-150	03/19/2022 1736
PFTrDA	16	15		1	92	50-150	03/19/2022 1736
PFUdA	16	16		1	98	50-150	03/19/2022 1736
PFOS	15	15		1	102	50-150	03/19/2022 1736

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		96	25-150
13C2_6:2FTS		93	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		94	25-150
13C2_PFTeDA		87	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ35233-002
Batch: 35233
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		95	25-150
13C8_PFOA		100	25-150
13C8_PFOS		90	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		97	25-150
d5-EtFOSAA		90	25-150
d3-MeFOSAA		91	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XC03034-009MS
Batch: 35233
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	11		1	86	50-150	03/19/2022 1820
11Cl-PF3OUdS	ND	13	11		1	84	50-150	03/19/2022 1820
8:2 FTS	ND	13	12		1	93	50-150	03/19/2022 1820
6:2 FTS	ND	13	13		1	95	50-150	03/19/2022 1820
4:2 FTS	ND	13	12		1	94	50-150	03/19/2022 1820
GenX	ND	28	27		1	96	50-150	03/19/2022 1820
ADONA	ND	13	13		1	98	50-150	03/19/2022 1820
EtFOSAA	ND	14	12		1	89	50-150	03/19/2022 1820
MeFOSAA	ND	14	15		1	105	50-150	03/19/2022 1820
PFBS	2.0	12	13		1	87	50-150	03/19/2022 1820
PFDS	ND	13	12		1	88	50-150	03/19/2022 1820
PFHpS	1.1	13	13		1	89	50-150	03/19/2022 1820
PFNS	ND	13	12		1	86	50-150	03/19/2022 1820
PFOSA	ND	14	13		1	91	50-150	03/19/2022 1820
PFPeS	0.60	13	13		1	96	50-150	03/19/2022 1820
PFHxS	2.6	13	14		1	87	50-150	03/19/2022 1820
PFBA	9.5	14	22		1	87	50-150	03/19/2022 1820
PFDA	ND	14	12		1	90	50-150	03/19/2022 1820
PFDoA	ND	14	13		1	92	50-150	03/19/2022 1820
PFHpA	0.40	14	13		1	96	50-150	03/19/2022 1820
PFHxA	0.66	14	12		1	86	50-150	03/19/2022 1820
PFNA	ND	14	12		1	90	50-150	03/19/2022 1820
PFOA	5.6	14	18		1	86	50-150	03/19/2022 1820
PFPeA	0.81	14	13		1	89	50-150	03/19/2022 1820
PFTeDA	ND	14	13		1	95	50-150	03/19/2022 1820
PFTrDA	ND	14	12		1	88	50-150	03/19/2022 1820
PFUdA	ND	14	13		1	94	50-150	03/19/2022 1820
PFOS	120	13	140		1	122	50-150	03/19/2022 1820

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	216	25-150
13C2_6:2FTS		134	25-150
13C2_8:2FTS		113	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		104	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		80	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		114	25-150
13C5_PFPeA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XC03034-009MS
Batch: 35233
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		104	25-150
13C7_PFUdA		101	25-150
13C8_PFOA		105	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		107	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XC03034-010DU
Batch: 35233
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Parameter	Sample Amount (ng/L)	Result (ng/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
9Cl-PF3ONS	ND	ND		1	0.00	20	03/19/2022 1842
11Cl-PF3OUdS	ND	ND		1	0.00	20	03/19/2022 1842
8:2 FTS	ND	ND		1	0.00	20	03/19/2022 1842
6:2 FTS	ND	ND		1	0.00	20	03/19/2022 1842
4:2 FTS	ND	ND		1	0.00	20	03/19/2022 1842
GenX	ND	ND		1	0.00	20	03/19/2022 1842
ADONA	ND	ND		1	0.00	20	03/19/2022 1842
EtFOSAA	ND	ND		1	0.00	20	03/19/2022 1842
MeFOSAA	ND	ND		1	0.00	20	03/19/2022 1842
PFBS	1.3	1.1	J	1	16	20	03/19/2022 1842
PFDS	ND	ND		1	0.00	20	03/19/2022 1842
PFHpS	1.9	1.9	J	1	1.8	20	03/19/2022 1842
PFNS	ND	ND		1	0.00	20	03/19/2022 1842
PFOSA	ND	ND		1	0.00	20	03/19/2022 1842
PFPeS	0.78	0.87	J	1	11	20	03/19/2022 1842
PFHxS	3.9	4.1		1	3.4	20	03/19/2022 1842
PFBA	8.6	8.1		1	6.1	20	03/19/2022 1842
PFDA	1.0	1.0	J	1	0.25	20	03/19/2022 1842
PFDoA	ND	ND		1	0.00	20	03/19/2022 1842
PFHpA	3.4	3.6		1	4.5	20	03/19/2022 1842
PFHxA	5.3	5.0		1	4.6	20	03/19/2022 1842
PFNA	1.2	1.0	J	1	18	20	03/19/2022 1842
PFOA	12	12		1	2.5	20	03/19/2022 1842
PFPeA	6.0	5.6		1	7.0	20	03/19/2022 1842
PFTeDA	ND	ND		1	0.00	20	03/19/2022 1842
PFTrDA	ND	ND		1	0.00	20	03/19/2022 1842
PFUdA	ND	ND		1	0.00	20	03/19/2022 1842
PFOS	110	110		1	2.0	20	03/19/2022 1842

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	276	25-150
13C2_6:2FTS	N	213	25-150
13C2_8:2FTS	N	167	25-150
13C2_PFDoA		111	25-150
13C2_PFTeDA		105	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		91	25-150
13C4_PFBA		64	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		86	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XC03034-010DU
Batch: 35233
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		120	25-150
13C7_PFUdA		117	25-150
13C8_PFOA		117	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		113	10-150
13C9_PFNA		122	25-150
d5-EtFOSAA		123	25-150
d3-MeFOSAA		114	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ35515-001
Batch: 35515
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/21/2022 1258

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
6:2 FTS	ND		1	8.0	2.0	ng/L	03/22/2022 1533

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		111	25-150
13C2_6:2FTS		115	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		108	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		115	25-150
13C4_PFBA		112	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		108	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		105	25-150
13C8_PFOA		105	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		107	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ35515-002
Batch: 35515
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/21/2022 1258

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
6:2 FTS	15	16		1	105	50-150	03/22/2022 1544

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		110	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		74	25-150
13C3_PFBS		111	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		113	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		110	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		108	25-150
13C8_PFOA		107	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ35845-001
Batch: 35845
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/23/2022 1615

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
PFHpA	ND		1	4.0	0.45	ng/L	03/24/2022 2036
PFNA	ND		1	4.0	0.46	ng/L	03/24/2022 2036
PFOA	ND		1	4.0	0.83	ng/L	03/24/2022 2036
PFOS	ND		1	4.0	2.0	ng/L	03/24/2022 2036

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		113	25-150
13C2_6:2FTS	N	190	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		112	25-150
13C3_PFBS		112	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		113	25-150
13C4_PFBA		115	25-150
13C4_PFHpA		116	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		114	25-150
13C6_PFDA		106	25-150
13C7_PFUdA		109	25-150
13C8_PFOA		131	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		119	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		119	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ35845-002
Batch: 35845
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/23/2022 1615

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
PFHpA	16	16		1	102	50-150	03/24/2022 2047
PFNA	16	16		1	98	50-150	03/24/2022 2047
PFOA	16	17		1	103	50-150	03/24/2022 2047
PFOS	15	14		1	95	50-150	03/24/2022 2047

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS	N	216	25-150
13C2_8:2FTS		114	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		112	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		121	25-150
13C5_PFPeA		115	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		115	25-150
13C8_PFOA		131	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		119	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

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Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

PLANT - 3

Number 131742

ARCADIS

Client: 28550 CABOT DRIVE SUITE 500	Report to Contact: KAITLYN HUNT	Telephone No. / E-mail: 947-777-5215 KAITLYN.HUNT@ARCADIS.COM	Quote No.
Address: NOVI, MI 48377	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 1 of 2
City / State / Zip Code	Printed Name: BILLY J. COBEAN		
Project Name: RACER TRUST			XC03034
Project No.: 30112892.0370A	P.O. No.		KBS2

Sample ID / Description (Containers for each sample may be contained on one line.)	Collection Date(s)	Collection Time (Military)	Grab / Composite	Matrix: Aqueous	Soil	Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	Soda Ash	Field Filtered	6PPS VOA methanol 537 MOD 1,4-dioxane	Dissolved Metals 6020A	Remarks / Cooler I.D.
EB-01_030122	3/1/22	9:40	G	X			2							X		
MW-18-105_030122	3/1/22	10:15	G	X			2							X		MS/MSD
MW-18-103_030122	3/1/22	11:25	G	X			2							X		
MW-18-99_030122	3/1/22	12:50	G	X			2							X		
MW-18-98_030122	3/1/22	13:50	G	X			2							X		
MW-18-91_030122	3/1/22	15:10	G	X			2							X		
MW-18-95_030222	3/2/22	8:35	G	X			2							X		
DUP-02_030222	3/2/22	—	G	X			2							X		
MW-18-88_030222	3/2/22	9:40	G	X			2							X		
MW-18-89_030222	3/2/22	10:30	G	X			2							X		

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☐ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify): REPORT EDLS 38 COMPOUNDS

	Date	Time		Date	Time
1. Relinquished by	3-2-22	12:25	1. Received by: Austin Westhuis/Arcadis	3/2/22	1225
2. Relinquished by: Austin Westhuis/Arcadis	3/2/22		2. Received by: Fedex	3/2/22	
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: fedex	Date 3.3.22	Time 1530	4. Laboratory received by: Lauren Means	Date 3.3.22	Time 1530

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on ice (Circle): (Yes) No Ice Pack — Receipt Temp. 1.9 °C — Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: MEC03N2-01

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www.pacelabs.com

PLANT-3

Number 131743

Client: ARCADIS	Report to Contact: KAITLYN MUNT	Telephone No. / E-mail: 947.777.5215 KAITLYN.MUNT@ARCADIS.COM	Quote No.
Address: 28550 CABOT DR SUITE 500	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 2 of 2
City: NOVI / State: MI / Zip Code: 48377	Printed Name: BILLY J. COBURN		
Project Name: RACER TRUST			

Project No.: 30112892.0310A
P.O. No.:

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab / Composite	Matrix: Aqueous	Soil	Other	No. of Containers	Unpres.	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Field Filtered	PFAS UIA Method 537 Mod Isotope Dilution List	PFAS UIA Method 537 Mod Isotope Dilution List
MW-18-90_030222	3/2/22	12:10	G	X			2								X	

XC03034
KES2
Remarks / Cooler I.D.

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☐ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by	3/2/22	12:25	1. Received by	3/2/22	1225
2. Relinquished by: Austin Westhuis / Arcadis	3/2/22		2. Received by: Fedex	3/2/22	
3. Relinquished by			3. Received by		
4. Relinquished by: fedex	3.3.22	1530	4. Laboratory received by	3.3.22	1530

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle): Yes No Ice Pack — Receipt Temp: 1.9 °C — Temp Blank: ☑ Y ☐ N

DISTRIBUTION: WHITE & YELLOW Return to laboratory with Sample(s); PINK Field/Client Copy

Document Number: MEDCSN3.01

PACE ANALYTICAL SERVICES, LLC

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Arcadis

Cooler inspected by/date: KDRW / 03/03/2022 Lot #: XC03034

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

1.9 / 1.9 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
☑ Yes	☐ No		21. Was the quote number listed on the container label? If yes, Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.

Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: KDRW Date: 03/03/2022

Comments:

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER LANSING

Project Number: 30112892.0370A

Lot Number:**XC03037**

Date Completed:03/28/2022

Kathy Smith

03/28/2022 11:01 AM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Case Narrative
Arcadis U.S., Inc.
Lot Number: XC03037

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples was in compliance with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Samples XC03037-001, XC03037-002, XC03037-003, XC03037-004, XC03037-005, XC03037-007, XC03037-008, XC03037-009 had surrogates recovered outside of the acceptance limits due to confirmed matrix interference.

Sample Summary
Arcadis U.S., Inc.
Lot Number: XC03037

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-12-13_030122	Aqueous	03/01/2022 1135	03/03/2022
002	MW-14-67_030122	Aqueous	03/01/2022 1230	03/03/2022
003	MW-13-36R_030122	Aqueous	03/01/2022 1325	03/03/2022
004	MW-14-70_030122	Aqueous	03/01/2022 1430	03/03/2022
005	MW-12-12_030122	Aqueous	03/01/2022 1520	03/03/2022
006	EB-02_030122	Aqueous	03/01/2022 1535	03/03/2022
007	MW-12-10R_030222	Aqueous	03/02/2022 0940	03/03/2022
008	P6-SB-07_030222	Aqueous	03/02/2022 1100	03/03/2022
009	Dup-04_030222	Aqueous	03/02/2022	03/03/2022

(9 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XC03037

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-12-13_030122	Aqueous	PFBS	PFAS by ID	2.4	J	ng/L	6
001	MW-12-13_030122	Aqueous	PFBA	PFAS by ID	24		ng/L	6
001	MW-12-13_030122	Aqueous	PFHpA	PFAS by ID	12		ng/L	6
001	MW-12-13_030122	Aqueous	PFHxA	PFAS by ID	52		ng/L	6
001	MW-12-13_030122	Aqueous	PFOA	PFAS by ID	2.2	J	ng/L	6
001	MW-12-13_030122	Aqueous	PFPeA	PFAS by ID	38		ng/L	6
002	MW-14-67_030122	Aqueous	PFBS	PFAS by ID	10		ng/L	8
002	MW-14-67_030122	Aqueous	PFBA	PFAS by ID	36		ng/L	8
002	MW-14-67_030122	Aqueous	PFDA	PFAS by ID	1.6	J	ng/L	8
002	MW-14-67_030122	Aqueous	PFHpA	PFAS by ID	27		ng/L	8
002	MW-14-67_030122	Aqueous	PFHxA	PFAS by ID	74		ng/L	8
002	MW-14-67_030122	Aqueous	PFNA	PFAS by ID	0.88	J	ng/L	8
002	MW-14-67_030122	Aqueous	PFOA	PFAS by ID	13		ng/L	8
002	MW-14-67_030122	Aqueous	PFPeA	PFAS by ID	58		ng/L	8
002	MW-14-67_030122	Aqueous	PFOS	PFAS by ID	3.1	J	ng/L	8
003	MW-13-36R_030122	Aqueous	EtFOSAA	PFAS by ID	5.6	J	ng/L	10
003	MW-13-36R_030122	Aqueous	MeFOSAA	PFAS by ID	3.8	J	ng/L	10
003	MW-13-36R_030122	Aqueous	PFBS	PFAS by ID	3.4		ng/L	10
003	MW-13-36R_030122	Aqueous	PFHpS	PFAS by ID	0.55	J	ng/L	10
003	MW-13-36R_030122	Aqueous	PFOSA	PFAS by ID	3.3		ng/L	10
003	MW-13-36R_030122	Aqueous	PFPeS	PFAS by ID	0.66	J	ng/L	10
003	MW-13-36R_030122	Aqueous	PFHxS	PFAS by ID	1.6	J	ng/L	10
003	MW-13-36R_030122	Aqueous	PFBA	PFAS by ID	20		ng/L	10
003	MW-13-36R_030122	Aqueous	PFDA	PFAS by ID	23		ng/L	10
003	MW-13-36R_030122	Aqueous	PFDoA	PFAS by ID	0.49	J	ng/L	10
003	MW-13-36R_030122	Aqueous	PFHpA	PFAS by ID	38		ng/L	10
003	MW-13-36R_030122	Aqueous	PFHxA	PFAS by ID	33		ng/L	10
003	MW-13-36R_030122	Aqueous	PFNA	PFAS by ID	15		ng/L	10
003	MW-13-36R_030122	Aqueous	PFOA	PFAS by ID	81		ng/L	10
003	MW-13-36R_030122	Aqueous	PFPeA	PFAS by ID	31		ng/L	10
003	MW-13-36R_030122	Aqueous	PFUdA	PFAS by ID	0.68	J	ng/L	10
003	MW-13-36R_030122	Aqueous	PFOS	PFAS by ID	41		ng/L	10
004	MW-14-70_030122	Aqueous	PFBS	PFAS by ID	7.2		ng/L	12
004	MW-14-70_030122	Aqueous	PFPeS	PFAS by ID	1.2	J	ng/L	12
004	MW-14-70_030122	Aqueous	PFHxS	PFAS by ID	2.7	J	ng/L	12
004	MW-14-70_030122	Aqueous	PFBA	PFAS by ID	42		ng/L	12
004	MW-14-70_030122	Aqueous	PFHpA	PFAS by ID	55		ng/L	12
004	MW-14-70_030122	Aqueous	PFHxA	PFAS by ID	84		ng/L	12
004	MW-14-70_030122	Aqueous	PFNA	PFAS by ID	0.45	J	ng/L	12
004	MW-14-70_030122	Aqueous	PFOA	PFAS by ID	36		ng/L	12
004	MW-14-70_030122	Aqueous	PFPeA	PFAS by ID	120		ng/L	12
005	MW-12-12_030122	Aqueous	PFBS	PFAS by ID	2.1	J	ng/L	14
005	MW-12-12_030122	Aqueous	PFHxS	PFAS by ID	1.3	J	ng/L	14
005	MW-12-12_030122	Aqueous	PFBA	PFAS by ID	25		ng/L	14
005	MW-12-12_030122	Aqueous	PFDA	PFAS by ID	9.5		ng/L	14

Detection Summary (Continued)

Lot Number: XC03037

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
005	MW-12-12_030122	Aqueous	PFHpA	PFAS by ID	26		ng/L	14
005	MW-12-12_030122	Aqueous	PFHxA	PFAS by ID	51		ng/L	14
005	MW-12-12_030122	Aqueous	PFNA	PFAS by ID	6.0		ng/L	14
005	MW-12-12_030122	Aqueous	PFOA	PFAS by ID	52		ng/L	14
005	MW-12-12_030122	Aqueous	PFPeA	PFAS by ID	44		ng/L	14
005	MW-12-12_030122	Aqueous	PFOS	PFAS by ID	35		ng/L	14
007	MW-12-10R_030222	Aqueous	PFBS	PFAS by ID	5.0		ng/L	18
007	MW-12-10R_030222	Aqueous	PFHxS	PFAS by ID	1.0	J	ng/L	18
007	MW-12-10R_030222	Aqueous	PFBA	PFAS by ID	6.9		ng/L	18
007	MW-12-10R_030222	Aqueous	PFHpA	PFAS by ID	2.9	J	ng/L	18
007	MW-12-10R_030222	Aqueous	PFHxA	PFAS by ID	3.4		ng/L	18
007	MW-12-10R_030222	Aqueous	PFNA	PFAS by ID	0.53	J	ng/L	18
007	MW-12-10R_030222	Aqueous	PFOA	PFAS by ID	6.7		ng/L	18
007	MW-12-10R_030222	Aqueous	PFPeA	PFAS by ID	4.1		ng/L	18
007	MW-12-10R_030222	Aqueous	PFOS	PFAS by ID	6.4		ng/L	18
008	P6-SB-07_030222	Aqueous	PFBS	PFAS by ID	2.9	J	ng/L	20
008	P6-SB-07_030222	Aqueous	PFPeS	PFAS by ID	0.71	J	ng/L	20
008	P6-SB-07_030222	Aqueous	PFHxS	PFAS by ID	2.6	J	ng/L	20
008	P6-SB-07_030222	Aqueous	PFBA	PFAS by ID	190		ng/L	20
008	P6-SB-07_030222	Aqueous	PFDA	PFAS by ID	20		ng/L	20
008	P6-SB-07_030222	Aqueous	PFHpA	PFAS by ID	480		ng/L	20
008	P6-SB-07_030222	Aqueous	PFHxA	PFAS by ID	640		ng/L	20
008	P6-SB-07_030222	Aqueous	PFNA	PFAS by ID	78		ng/L	20
008	P6-SB-07_030222	Aqueous	PFOA	PFAS by ID	640		ng/L	20
008	P6-SB-07_030222	Aqueous	PFPeA	PFAS by ID	730		ng/L	20
008	P6-SB-07_030222	Aqueous	PFOS	PFAS by ID	38		ng/L	20
009	Dup-04_030222	Aqueous	PFBS	PFAS by ID	3.1	J	ng/L	22
009	Dup-04_030222	Aqueous	PFHpS	PFAS by ID	0.43	J	ng/L	22
009	Dup-04_030222	Aqueous	PFPeS	PFAS by ID	1.1	J	ng/L	22
009	Dup-04_030222	Aqueous	PFHxS	PFAS by ID	2.4	J	ng/L	22
009	Dup-04_030222	Aqueous	PFBA	PFAS by ID	180		ng/L	22
009	Dup-04_030222	Aqueous	PFDA	PFAS by ID	19		ng/L	22
009	Dup-04_030222	Aqueous	PFHpA	PFAS by ID	450		ng/L	22
009	Dup-04_030222	Aqueous	PFHxA	PFAS by ID	630		ng/L	22
009	Dup-04_030222	Aqueous	PFNA	PFAS by ID	74		ng/L	22
009	Dup-04_030222	Aqueous	PFOA	PFAS by ID	610		ng/L	22
009	Dup-04_030222	Aqueous	PFPeA	PFAS by ID	710		ng/L	22
009	Dup-04_030222	Aqueous	PFOS	PFAS by ID	34		ng/L	22

(83 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03037-001**

Description: **MW-12-13_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1135**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 1904	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.40	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.55	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.7	0.73	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.40	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.4**	**J**	**3.3**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.3	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.3	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.3	0.59	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.3	0.51	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.3	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.3	0.46	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**24**		**3.3**	**0.50**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.3	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.3	0.39	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**12**		**3.3**	**0.37**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**52**		**3.3**	**0.57**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.3	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.2**	**J**	**3.3**	**0.69**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**38**		**3.3**	**0.45**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.3	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.3	0.44	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.3	0.52	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.3	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	212	25-150
13C2_6:2FTS		114	25-150
13C2_8:2FTS		104	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		98	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		66	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		83	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03037-001**
Description: **MW-12-13_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1135**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	25-150
13C8_PFOS		95	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		94	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03037-002**

Description: **MW-14-67_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1230**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 1914	ASD	03/17/2022 1638	35233
2	SOP SPE	PFAS by ID SOP	1	03/24/2022 2119	MMM	03/23/2022 1615	35845

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.5	0.39	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.5	0.53	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.5	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.5	1.6	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.5	0.70	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.5	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.5	0.39	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.5	0.61	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.5	0.75	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**10**		**3.2**	**0.33**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.2	0.63	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.2	0.40	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.2	0.57	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.2	0.49	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.2	0.48	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.2	0.44	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**36**		**3.3**	**0.49**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.6**	**J**	**3.2**	**0.42**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.2	0.38	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**27**		**3.2**	**0.36**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**74**		**3.2**	**0.55**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.88**	**J**	**3.2**	**0.37**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**13**		**3.2**	**0.67**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**58**		**3.2**	**0.44**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.2	0.48	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.2	0.43	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.2	0.51	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**3.1**	**J**	**3.2**	**1.6**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	180	25-150	N	177	25-150
13C2_6:2FTS	N	169	25-150	N	206	25-150
13C2_8:2FTS		113	25-150		139	25-150
13C2_PFDoA		95	25-150		88	25-150
13C2_PFTeDA		94	25-150		94	25-150
13C3_PFBS		80	25-150		82	25-150
13C3_PFHxS		93	25-150		109	25-150
13C3-HFPO-DA		67	25-150		65	25-150
13C4_PFBA	N	24	25-150		30	25-150
13C4_PFHpA		87	25-150		99	25-150
13C5_PFHxA		71	25-150		83	25-150
13C5_PFPeA		41	25-150		56	25-150
13C6_PFDA		107	25-150		108	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03037-002**
Description: **MW-14-67_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1230**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		100	25-150		118	25-150
13C8_PFOA		101	25-150		112	25-150
13C8_PFOS		103	25-150		105	25-150
13C8_PFOSA		102	10-150		113	10-150
13C9_PFNA		106	25-150		120	25-150
d5-EtFOSAA		102	25-150		111	25-150
d3-MeFOSAA		97	25-150		127	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03037-003**

Description: **MW-13-36R_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1325**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 1925	ASD	03/17/2022 1638	35233
2	SOP SPE	PFAS by ID SOP	1	03/24/2022 2129	MMM	03/23/2022 1615	35845

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.40	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.55	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.7	0.73	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.40	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	**2991-50-6**	**PFAS by ID SOP**	**5.6**	**J**	**6.5**	**0.61**	**ng/L**	**2**
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	**2355-31-9**	**PFAS by ID SOP**	**3.8**	**J**	**6.5**	**0.76**	**ng/L**	**2**
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.4**		**3.3**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.3	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.55**	**J**	**3.3**	**0.42**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.3	0.59	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**3.3**		**3.3**	**0.51**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.66**	**J**	**3.3**	**0.50**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.6**	**J**	**3.3**	**0.46**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**20**		**3.3**	**0.49**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**23**		**3.3**	**0.43**	**ng/L**	**2**
Perfluoro-n-dodecanoic acid (PFDoA)	**307-55-1**	**PFAS by ID SOP**	**0.49**	**J**	**3.3**	**0.39**	**ng/L**	**2**
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**38**		**3.3**	**0.37**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**33**		**3.3**	**0.57**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**15**		**3.3**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**81**		**3.3**	**0.69**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**31**		**3.3**	**0.45**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.3	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	Q	3.3	0.44	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	**2058-94-8**	**PFAS by ID SOP**	**0.68**	**J**	**3.3**	**0.51**	**ng/L**	**2**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**41**		**3.3**	**1.7**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	349	25-150	N	282	25-150
13C2_6:2FTS	N	442	25-150	N	349	25-150
13C2_8:2FTS	N	457	25-150	N	391	25-150
13C2_PFDoA	N	160	25-150		100	25-150
13C2_PFTeDA		126	25-150		90	25-150
13C3_PFBS		122	25-150		99	25-150
13C3_PFHxS		127	25-150		111	25-150
13C3-HFPO-DA		92	25-150		71	25-150
13C4_PFBA	N	20	25-150		37	25-150
13C4_PFHpA		117	25-150		107	25-150
13C5_PFHxA		107	25-150		97	25-150
13C5_PFPeA		79	25-150		87	25-150
13C6_PFDA	N	156	25-150		119	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03037-003**
Description: **MW-13-36R_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1325**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA	N	161	25-150		122	25-150
13C8_PFOA		135	25-150		108	25-150
13C8_PFOS		132	25-150		105	25-150
13C8_PFOSA		128	10-150		103	10-150
13C9_PFNA		142	25-150		117	25-150
d5-EtFOSAA	N	178	25-150		132	25-150
d3-MeFOSAA	N	153	25-150		125	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
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DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03037-004**

Description: **MW-14-70_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1430**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 1936	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.4	0.39	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.4	0.53	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.4	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.4	1.6	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.4	0.70	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.4	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.4	0.39	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.4	0.60	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.4	0.75	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**7.2**		**3.2**	**0.33**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.2	0.62	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.2	0.40	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.2	0.57	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.2	0.49	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.2**	**0.48**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.7**	**J**	**3.2**	**0.44**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**42**		**3.2**	**0.48**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.2	0.42	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.2	0.38	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**55**		**3.2**	**0.36**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**84**		**3.2**	**0.55**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.45**	**J**	**3.2**	**0.37**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**36**		**3.2**	**0.66**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**120**		**3.2**	**0.44**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.2	0.48	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.2	0.42	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.2	0.50	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.2	1.6	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	268	25-150
13C2_6:2FTS	N	154	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		104	25-150
13C3_PFBS		99	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		85	25-150
13C4_PFBA		35	25-150
13C4_PFHpA		116	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		64	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		110	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03037-004**
Description: **MW-14-70_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1430**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		113	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
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H = Out of holding time
B = Detected in the method blank
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J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03037-005**

Description: **MW-12-12_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1520**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 1947	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.6	0.40	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.6	0.55	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.6	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.6	1.6	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.6	0.72	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.6	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.6	0.40	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.6	0.62	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.6	0.77	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.1**	**J**	**3.3**	**0.34**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.3	0.64	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.3	0.41	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.3	0.59	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.3	0.50	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.3	0.49	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.3**	**J**	**3.3**	**0.45**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**25**		**3.3**	**0.49**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**9.5**		**3.3**	**0.43**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.3	0.39	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**26**		**3.3**	**0.37**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**51**		**3.3**	**0.57**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**6.0**		**3.3**	**0.38**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**52**		**3.3**	**0.68**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**44**		**3.3**	**0.45**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.3	0.49	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.3	0.43	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.3	0.52	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**35**		**3.3**	**1.6**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	271	25-150
13C2_6:2FTS	N	296	25-150
13C2_8:2FTS	N	244	25-150
13C2_PFDoA		123	25-150
13C2_PFTeDA		117	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		79	25-150
13C4_PFBA		46	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		95	25-150
13C5_PFPeA		68	25-150
13C6_PFDA		134	25-150
13C7_PFUdA		134	25-150

LOQ = Limit of Quantitation
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H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03037-005**
Description: **MW-12-12_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1520**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		119	25-150
13C8_PFOS		116	25-150
13C8_PFOSA		120	10-150
13C9_PFNA		126	25-150
d5-EtFOSAA		139	25-150
d3-MeFOSAA		132	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03037-006**

Description: **EB-02_030122** Matrix: **Aqueous**

Date Sampled: **03/01/2022 1535**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 2020	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.7	0.46	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.7	0.64	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.7	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.7	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.7	0.84	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.7	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.7	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.7	0.72	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.7	0.90	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.8	0.40	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.75	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.48	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.68	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.59	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.57	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.8	0.53	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.45	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.8	0.43	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.8	0.66	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.8	0.44	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.8	0.80	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.8	0.52	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.51	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.60	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.8	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		103	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		106	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03037-006**
Description: **EB-02_030122**
Matrix: **Aqueous**
Date Sampled: **03/01/2022 1535**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03037-007**

Description: **MW-12-10R_030222** Matrix: **Aqueous**

Date Sampled: **03/02/2022 0940**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 2031	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.4	0.38	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.4	0.53	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.4	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.4	1.6	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.4	0.70	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.4	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.4	0.39	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.4	0.60	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.4	0.74	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**5.0**		**3.2**	**0.33**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.2	0.62	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.2	0.40	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.2	0.57	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.2	0.49	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.2	0.47	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.0**	**J**	**3.2**	**0.44**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**6.9**		**3.2**	**0.48**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.2	0.42	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.2	0.38	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.9**	**J**	**3.2**	**0.36**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.4**		**3.2**	**0.55**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.53**	**J**	**3.2**	**0.37**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**6.7**		**3.2**	**0.66**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**4.1**		**3.2**	**0.43**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.2	0.48	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.2	0.42	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.2	0.50	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**6.4**		**3.2**	**1.6**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	262	25-150
13C2_6:2FTS	N	232	25-150
13C2_8:2FTS		145	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		92	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		77	25-150
13C4_PFBA		33	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		87	25-150
13C5_PFPeA		57	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03037-007**
Description: **MW-12-10R_030222**
Matrix: **Aqueous**
Date Sampled: **03/02/2022 0940**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		110	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		114	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03037-008**

Description: **P6-SB-07_030222** Matrix: **Aqueous**

Date Sampled: **03/02/2022 1100**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 2042	ASD	03/17/2022 1638	35233
2	SOP SPE	PFAS by ID SOP	5	03/25/2022 1436	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.9**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.71**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.6**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**190**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**20**		**3.4**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**480**		**17**	**1.9**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**640**		**17**	**2.9**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**78**		**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**640**		**17**	**3.5**	**ng/L**	**2**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**730**		**17**	**2.3**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**38**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	236	25-150	N	168	25-150
13C2_6:2FTS	N	161	25-150		115	25-150
13C2_8:2FTS		133	25-150		103	25-150
13C2_PFDoA		97	25-150		104	25-150
13C2_PFTeDA		97	25-150		100	25-150
13C3_PFBS		94	25-150		104	25-150
13C3_PFHxS		98	25-150		105	25-150
13C3-HFPO-DA		83	25-150		110	25-150
13C4_PFBA		53	25-150		100	25-150
13C4_PFHpA		97	25-150		115	25-150
13C5_PFHxA		91	25-150		110	25-150
13C5_PFPeA		67	25-150		103	25-150
13C6_PFDA		112	25-150		110	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03037-008**
Description: **P6-SB-07_030222**
Matrix: **Aqueous**
Date Sampled: **03/02/2022 1100**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		102	25-150		105	25-150
13C8_PFOA		101	25-150		106	25-150
13C8_PFOS		101	25-150		113	25-150
13C8_PFOSA		104	10-150		96	10-150
13C9_PFNA		109	25-150		101	25-150
d5-EtFOSAA		100	25-150		102	25-150
d3-MeFOSAA		103	25-150		112	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XC03037-009**

Description: **Dup-04_030222** Matrix: **Aqueous**

Date Sampled: **03/02/2022**

Date Received: **03/03/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	03/19/2022 2053	ASD	03/17/2022 1638	35233
2	SOP SPE	PFAS by ID SOP	5	03/25/2022 1447	ASD	03/17/2022 1638	35233

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.1**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.43**	**J**	**3.5**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.4**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**180**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**19**		**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**450**		**17**	**1.9**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**630**		**17**	**3.0**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**74**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**610**		**17**	**3.6**	**ng/L**	**2**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**710**		**17**	**2.4**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**34**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	238	25-150	N	172	25-150
13C2_6:2FTS	N	158	25-150		122	25-150
13C2_8:2FTS		128	25-150		109	25-150
13C2_PFDoA		100	25-150		103	25-150
13C2_PFTeDA		99	25-150		104	25-150
13C3_PFBS		98	25-150		101	25-150
13C3_PFHxS		96	25-150		117	25-150
13C3-HFPO-DA		86	25-150		110	25-150
13C4_PFBA		54	25-150		103	25-150
13C4_PFHpA		98	25-150		116	25-150
13C5_PFHxA		93	25-150		110	25-150
13C5_PFPeA		67	25-150		105	25-150
13C6_PFDA		108	25-150		113	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XC03037-009**
Description: **Dup-04_030222**
Matrix: **Aqueous**
Date Sampled: **03/02/2022**
Date Received: **03/03/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		106	25-150		105	25-150
13C8_PFOA		97	25-150		106	25-150
13C8_PFOS		107	25-150		106	25-150
13C8_PFOSA		101	10-150		99	10-150
13C9_PFNA		113	25-150		110	25-150
d5-EtFOSAA		105	25-150		106	25-150
d3-MeFOSAA		102	25-150		116	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ35233-001
Batch: 35233
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	03/19/2022 1725
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	03/19/2022 1725
8:2 FTS	ND		1	8.0	1.6	ng/L	03/19/2022 1725
6:2 FTS	ND		1	8.0	2.0	ng/L	03/19/2022 1725
4:2 FTS	ND		1	8.0	0.87	ng/L	03/19/2022 1725
GenX	ND		1	8.0	2.1	ng/L	03/19/2022 1725
ADONA	ND		1	8.0	0.48	ng/L	03/19/2022 1725
EtFOSAA	ND		1	8.0	0.75	ng/L	03/19/2022 1725
MeFOSAA	ND		1	8.0	0.93	ng/L	03/19/2022 1725
PFBS	ND		1	4.0	0.41	ng/L	03/19/2022 1725
PFDS	ND		1	4.0	0.78	ng/L	03/19/2022 1725
PFHpS	ND		1	4.0	0.50	ng/L	03/19/2022 1725
PFNS	ND		1	4.0	0.71	ng/L	03/19/2022 1725
PFOSA	ND		1	4.0	0.61	ng/L	03/19/2022 1725
PFPeS	ND		1	4.0	0.59	ng/L	03/19/2022 1725
PFHxS	ND		1	4.0	0.55	ng/L	03/19/2022 1725
PFBA	ND		1	4.0	0.60	ng/L	03/19/2022 1725
PFDA	ND		1	4.0	0.52	ng/L	03/19/2022 1725
PFDoA	ND		1	4.0	0.47	ng/L	03/19/2022 1725
PFHpA	ND		1	4.0	0.45	ng/L	03/19/2022 1725
PFHxA	ND		1	4.0	0.69	ng/L	03/19/2022 1725
PFNA	ND		1	4.0	0.46	ng/L	03/19/2022 1725
PFOA	ND		1	4.0	0.83	ng/L	03/19/2022 1725
PFPeA	ND		1	4.0	0.54	ng/L	03/19/2022 1725
PFTeDA	ND		1	4.0	0.60	ng/L	03/19/2022 1725
PFTrDA	ND		1	4.0	0.53	ng/L	03/19/2022 1725
PFUdA	ND		1	4.0	0.63	ng/L	03/19/2022 1725
PFOS	ND		1	4.0	2.0	ng/L	03/19/2022 1725

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		110	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		111	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ35233-001
Batch: 35233
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		107	25-150
13C7_PFUdA		104	25-150
13C8_PFOA		112	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ35233-002
Batch: 35233
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	99	50-150	03/19/2022 1736
11Cl-PF3OUdS	15	14		1	93	50-150	03/19/2022 1736
8:2 FTS	15	16		1	107	50-150	03/19/2022 1736
6:2 FTS	15	17		1	111	50-150	03/19/2022 1736
4:2 FTS	15	15		1	99	50-150	03/19/2022 1736
GenX	32	33		1	103	50-150	03/19/2022 1736
ADONA	15	16		1	104	50-150	03/19/2022 1736
EtFOSAA	16	16		1	101	50-150	03/19/2022 1736
MeFOSAA	16	18		1	113	50-150	03/19/2022 1736
PFBS	14	14		1	100	50-150	03/19/2022 1736
PFDS	15	15		1	96	50-150	03/19/2022 1736
PFHpS	15	14		1	93	50-150	03/19/2022 1736
PFNS	15	15		1	98	50-150	03/19/2022 1736
PFOSA	16	16		1	103	50-150	03/19/2022 1736
PFPeS	15	14		1	93	50-150	03/19/2022 1736
PFHxS	15	14		1	99	50-150	03/19/2022 1736
PFBA	16	16		1	98	50-150	03/19/2022 1736
PFDA	16	16		1	101	50-150	03/19/2022 1736
PFDoA	16	16		1	98	50-150	03/19/2022 1736
PFHpA	16	16		1	97	50-150	03/19/2022 1736
PFHxA	16	16		1	100	50-150	03/19/2022 1736
PFNA	16	15		1	96	50-150	03/19/2022 1736
PFOA	16	16		1	101	50-150	03/19/2022 1736
PFPeA	16	15		1	96	50-150	03/19/2022 1736
PFTeDA	16	16		1	102	50-150	03/19/2022 1736
PFTrDA	16	15		1	92	50-150	03/19/2022 1736
PFUdA	16	16		1	98	50-150	03/19/2022 1736
PFOS	15	15		1	102	50-150	03/19/2022 1736

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		96	25-150
13C2_6:2FTS		93	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		94	25-150
13C2_PFTeDA		87	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ35233-002
Batch: 35233
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/17/2022 1638

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		95	25-150
13C8_PFOA		100	25-150
13C8_PFOS		90	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		97	25-150
d5-EtFOSAA		90	25-150
d3-MeFOSAA		91	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ35845-001
Batch: 35845
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/23/2022 1615

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
EtFOSAA	ND		1	8.0	0.75	ng/L	03/24/2022 2036
MeFOSAA	ND		1	8.0	0.93	ng/L	03/24/2022 2036
PFBA	ND		1	4.0	0.60	ng/L	03/24/2022 2036
PFDA	ND		1	4.0	0.52	ng/L	03/24/2022 2036
PFDoA	ND		1	4.0	0.47	ng/L	03/24/2022 2036
PFUdA	ND		1	4.0	0.63	ng/L	03/24/2022 2036

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		113	25-150
13C2_6:2FTS	N	190	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		112	25-150
13C3_PFBS		112	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		113	25-150
13C4_PFBA		115	25-150
13C4_PFHpA		116	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		114	25-150
13C6_PFDA		106	25-150
13C7_PFUdA		109	25-150
13C8_PFOA		131	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		119	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		119	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ35845-002
Batch: 35845
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 03/23/2022 1615

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
EtFOSAA	16	17		1	105	50-150	03/24/2022 2047
MeFOSAA	16	16		1	100	50-150	03/24/2022 2047
PFBA	16	17		1	103	50-150	03/24/2022 2047
PFDA	16	16		1	100	50-150	03/24/2022 2047
PFDoA	16	17		1	106	50-150	03/24/2022 2047
PFUdA	16	15		1	91	50-150	03/24/2022 2047

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS	N	216	25-150
13C2_8:2FTS		114	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		112	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		121	25-150
13C5_PFPeA		115	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		115	25-150
13C8_PFOA		131	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		119	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

Plant 6

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 131741

Client: Arcadis	Report to Contact: Kaitlyn.Hunt@arcadis.com; Tiffany.Linder@arcadis.com	Telephone No. / E-mail: 947-777-3315 / Kaitlyn.Hunt@arcadis.com; 810-225-1988 / Tiffany.Linder@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Novi / State: MI / Zip Code: 48377	Printed Name: Austin Westhuis		XC03037 KES2
Project Name: RACER Lansing			Remarks / Cooler I.D.
Project No.: 30112892.0370A	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab (G) / Composite (C)	Matrix: Aqueous	Soil	Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Field Filtered	PFAS via Auxilliary SOP (Modified from 537.1 per QSM 5.1)
MW-12-13_030122	3/1/22	1135	G	X			2							X
MW-14-67_030122	3/1/22	1230	G	X			2							X
MW-13-36R_030122	3/1/22	1325	G	X			2							X
MW-14-70_030122	3/1/22	1430	G	X			2							X
MW-12-12_030122	3/1/22	1520	G	X			2							X
EB-02_030122	3/1/22	1585	G	X			2							X
MW-12-10R_030222	3/2/22	0940	G	X			2							X
P6-SB-07_030222	3/2/22	1100	G	X			2							X
Dup-04_030222	3/2/22	—	G	X			2							X

Turn Around Time Required (Prior lab approval required for expedited T.A.T.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Austin Westhuis / Arcadis	3/2/22		1. Received by: FedEx	3/2/22	
2. Relinquished by	Date:	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	Date: 3.3.21	Time: 530	4. Laboratory received by	Date: 3.3.22	Time: 1530

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY: Received on ice (Circle) (Yes) No Ice Pack — Receipt Temp: 1.9 °C — Temp Blank: ☐ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

* Need all 28 analytes in EGLE list reported *

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Arcadis

Cooler Inspected by/date: KDRW / 03/03/2022

Lot #: XC03037

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

1.9 / 1.9 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☑ Yes	☐ No		21. Was the quote number listed on the container label? If yes, Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: KDRW Date: 03/03/2022

Comments:

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-167984-1
Client Project/Site: Racer Lansing

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Tiffany Linder

Authorized for release by:
6/16/2022 2:26:37 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS
Review your project results through my EOL
Have a Question? Ask The Expert
Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-167984-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-167984-1

Comments
The EPA Method 522 1,4-Dioxane analysis was performed at the Eurofins Burlington laboratory.

Receipt
The samples were received on 6/9/2022 2:20 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.5º C.

GC/MS Semi VOA
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Method	Method Description	Protocol	Laboratory
522	1,4 Dioxane (GC/MS SIM)	EPA	TAL BUR
522	Solid-Phase Extraction (SPE)	EPA	TAL BUR

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL BUR = Eurofins Burlington, 530 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-167984-1	MW-13-47_060722	Water	06/07/22 12:10	06/09/22 14:20
240-167984-2	MW-91-6_060722	Water	06/07/22 13:25	06/09/22 14:20
240-167984-3	MW-13-38_060722	Water	06/07/22 15:00	06/09/22 14:20
240-167984-4	MW-13-37_060722	Water	06/07/22 16:10	06/09/22 14:20
240-167984-5	DUP-13_060722	Water	06/07/22 00:00	06/09/22 14:20
240-167984-6	MW-13-28_060822	Water	06/08/22 09:45	06/09/22 14:20
240-167984-7	MW-91-5_060822	Water	06/08/22 11:00	06/09/22 14:20
240-167984-8	MW-19-119S_060822	Water	06/08/22 12:40	06/09/22 14:20
240-167984-9	MW-19-119D_060822	Water	06/08/22 14:35	06/09/22 14:20
240-167984-10	FB-01_060822	Water	06/08/22 15:30	06/09/22 14:20

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-13-47_060722 — Lab Sample ID: 240-167984-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.6		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-91-6_060722 — Lab Sample ID: 240-167984-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.41		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-13-38_060722 — Lab Sample ID: 240-167984-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	5.9		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-13-37_060722 — Lab Sample ID: 240-167984-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.39		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: DUP-13_060722 — Lab Sample ID: 240-167984-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.40		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-13-28_060822 — Lab Sample ID: 240-167984-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.53		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-91-5_060822 — Lab Sample ID: 240-167984-7

No Detections.

Client Sample ID: MW-19-119S_060822 — Lab Sample ID: 240-167984-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.43		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-19-119D_060822 — Lab Sample ID: 240-167984-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.50		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: FB-01_060822 — Lab Sample ID: 240-167984-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.093	J	0.20	0.077	ug/L	1		522	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-13-47_060722
Date Collected: 06/07/22 12:10
Date Received: 06/09/22 14:20

Lab Sample ID: 240-167984-1
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.6		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 12:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*99*		*46 - 130*	*06/14/22 19:30*	*06/15/22 12:40*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-91-6_060722
Date Collected: 06/07/22 13:25
Date Received: 06/09/22 14:20

Lab Sample ID: 240-167984-2
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.41		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 12:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*106*		*46 - 130*	*06/14/22 19:30*	*06/15/22 12:53*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-13-38_060722
Date Collected: 06/07/22 15:00
Date Received: 06/09/22 14:20

Lab Sample ID: 240-167984-3
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	5.9		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 13:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*87*		*46 - 130*	*06/14/22 19:30*	*06/15/22 13:07*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-13-37_060722
Date Collected: 06/07/22 16:10
Date Received: 06/09/22 14:20

Lab Sample ID: 240-167984-4
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.39		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 13:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*92*		*46 - 130*	*06/14/22 19:30*	*06/15/22 13:20*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: DUP-13_060722
Date Collected: 06/07/22 00:00
Date Received: 06/09/22 14:20

Lab Sample ID: 240-167984-5
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 13:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*104*		*46 - 130*	*06/14/22 19:30*	*06/15/22 13:34*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-13-28_060822
Date Collected: 06/08/22 09:45
Date Received: 06/09/22 14:20

Lab Sample ID: 240-167984-6
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.53		0.20	0.077	ug/L		06/14/22 12:15	06/14/22 20:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*92*		*46 - 130*	*06/14/22 12:15*	*06/14/22 20:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-91-5_060822
Date Collected: 06/08/22 11:00
Date Received: 06/09/22 14:20

Lab Sample ID: 240-167984-7
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.20	U	0.20	0.077	ug/L		06/14/22 12:15	06/14/22 20:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*95*		*46 - 130*	*06/14/22 12:15*	*06/14/22 20:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-19-119S_060822
Date Collected: 06/08/22 12:40
Date Received: 06/09/22 14:20

Lab Sample ID: 240-167984-8
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.43		0.20	0.077	ug/L		06/14/22 12:15	06/14/22 20:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*93*		*46 - 130*	*06/14/22 12:15*	*06/14/22 20:28*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-19-119D_060822
Date Collected: 06/08/22 14:35
Date Received: 06/09/22 14:20

Lab Sample ID: 240-167984-9
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.50		0.20	0.077	ug/L		06/14/22 12:15	06/14/22 20:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*100*		*46 - 130*	*06/14/22 12:15*	*06/14/22 20:41*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: FB-01_060822
Date Collected: 06/08/22 15:30
Date Received: 06/09/22 14:20

Lab Sample ID: 240-167984-10
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.093	J	0.20	0.077	ug/L		06/14/22 12:15	06/14/22 20:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*107*		*46 - 130*	*06/14/22 12:15*	*06/14/22 20:55*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
		DXE
Lab Sample ID	Client Sample ID	(46-130)
240-167984-1	MW-13-47_060722	99
240-167984-2	MW-91-6_060722	106
240-167984-3	MW-13-38_060722	87
240-167984-4	MW-13-37_060722	92
240-167984-5	DUP-13_060722	104
240-167984-6	MW-13-28_060822	92
240-167984-7	MW-91-5_060822	95
240-167984-8	MW-19-119S_060822	93
240-167984-9	MW-19-119D_060822	100
240-167984-10	FB-01_060822	107
LCS 200-180796/2-A	Lab Control Sample	110
LLCS 200-180764/2-A	Lab Control Sample	99
MB 200-180764/1-A	Method Blank	101
MB 200-180796/1-A	Method Blank	111

Surrogate Legend

DXE = 1,4-Dioxane-d8 (Surr)

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Lab Sample ID: MB 200-180764/1-A
Matrix: Water
Analysis Batch: 180789

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 180764

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.20	U	0.20	0.077	ug/L		06/14/22 12:15	06/14/22 16:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*101*		*46 - 130*	*06/14/22 12:15*	*06/14/22 16:26*	*1*

Lab Sample ID: LLCS 200-180764/2-A
Matrix: Water
Analysis Batch: 180789

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 180764

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	0.200	0.227		ug/L		113	50 - 150

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
1,4-Dioxane-d8 (Surr)	*99*		*46 - 130*

Lab Sample ID: MB 200-180796/1-A
Matrix: Water
Analysis Batch: 180816

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 180796

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.20	U	0.20	0.077	ug/L		06/14/22 19:30	06/15/22 12:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*111*		*46 - 130*	*06/14/22 19:30*	*06/15/22 12:26*	*1*

Lab Sample ID: LCS 200-180796/2-A
Matrix: Water
Analysis Batch: 180816

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 180796

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dioxane	2.00	2.26		ug/L		113	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8 (Surr)	*110*		*46 - 130*

GC/MS Semi VOA

Prep Batch: 180764

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167984-6	MW-13-28_060822	Total/NA	Water	522	
240-167984-7	MW-91-5_060822	Total/NA	Water	522	
240-167984-8	MW-19-119S_060822	Total/NA	Water	522	
240-167984-9	MW-19-119D_060822	Total/NA	Water	522	
240-167984-10	FB-01_060822	Total/NA	Water	522	
MB 200-180764/1-A	Method Blank	Total/NA	Water	522	
LLCS 200-180764/2-A	Lab Control Sample	Total/NA	Water	522	

Analysis Batch: 180789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167984-6	MW-13-28_060822	Total/NA	Water	522	180764
240-167984-7	MW-91-5_060822	Total/NA	Water	522	180764
240-167984-8	MW-19-119S_060822	Total/NA	Water	522	180764
240-167984-9	MW-19-119D_060822	Total/NA	Water	522	180764
240-167984-10	FB-01_060822	Total/NA	Water	522	180764
MB 200-180764/1-A	Method Blank	Total/NA	Water	522	180764
LLCS 200-180764/2-A	Lab Control Sample	Total/NA	Water	522	180764

Prep Batch: 180796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167984-1	MW-13-47_060722	Total/NA	Water	522	
240-167984-2	MW-91-6_060722	Total/NA	Water	522	
240-167984-3	MW-13-38_060722	Total/NA	Water	522	
240-167984-4	MW-13-37_060722	Total/NA	Water	522	
240-167984-5	DUP-13_060722	Total/NA	Water	522	
MB 200-180796/1-A	Method Blank	Total/NA	Water	522	
LCS 200-180796/2-A	Lab Control Sample	Total/NA	Water	522	

Analysis Batch: 180816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167984-1	MW-13-47_060722	Total/NA	Water	522	180796
240-167984-2	MW-91-6_060722	Total/NA	Water	522	180796
240-167984-3	MW-13-38_060722	Total/NA	Water	522	180796
240-167984-4	MW-13-37_060722	Total/NA	Water	522	180796
240-167984-5	DUP-13_060722	Total/NA	Water	522	180796
MB 200-180796/1-A	Method Blank	Total/NA	Water	522	180796
LCS 200-180796/2-A	Lab Control Sample	Total/NA	Water	522	180796

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-13-47_060722
Lab Sample ID: 240-167984-1
Date Collected: 06/07/22 12:10
Matrix: Water
Date Received: 06/09/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 12:40	A1B	TAL BUR

Client Sample ID: MW-91-6_060722
Lab Sample ID: 240-167984-2
Date Collected: 06/07/22 13:25
Matrix: Water
Date Received: 06/09/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 12:53	A1B	TAL BUR

Client Sample ID: MW-13-38_060722
Lab Sample ID: 240-167984-3
Date Collected: 06/07/22 15:00
Matrix: Water
Date Received: 06/09/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 13:07	A1B	TAL BUR

Client Sample ID: MW-13-37_060722
Lab Sample ID: 240-167984-4
Date Collected: 06/07/22 16:10
Matrix: Water
Date Received: 06/09/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 13:20	A1B	TAL BUR

Client Sample ID: DUP-13_060722
Lab Sample ID: 240-167984-5
Date Collected: 06/07/22 00:00
Matrix: Water
Date Received: 06/09/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 13:34	A1B	TAL BUR

Client Sample ID: MW-13-28_060822
Lab Sample ID: 240-167984-6
Date Collected: 06/08/22 09:45
Matrix: Water
Date Received: 06/09/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180764	06/14/22 12:15	MJW	TAL BUR
Total/NA	Analysis	522		1	180789	06/14/22 20:01	K1P	TAL BUR

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Client Sample ID: MW-91-5_060822
Lab Sample ID: 240-167984-7
Date Collected: 06/08/22 11:00
Matrix: Water
Date Received: 06/09/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180764	06/14/22 12:15	MJW	TAL BUR
Total/NA	Analysis	522		1	180789	06/14/22 20:14	K1P	TAL BUR

Client Sample ID: MW-19-119S_060822
Lab Sample ID: 240-167984-8
Date Collected: 06/08/22 12:40
Matrix: Water
Date Received: 06/09/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180764	06/14/22 12:15	MJW	TAL BUR
Total/NA	Analysis	522		1	180789	06/14/22 20:28	K1P	TAL BUR

Client Sample ID: MW-19-119D_060822
Lab Sample ID: 240-167984-9
Date Collected: 06/08/22 14:35
Matrix: Water
Date Received: 06/09/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180764	06/14/22 12:15	MJW	TAL BUR
Total/NA	Analysis	522		1	180789	06/14/22 20:41	K1P	TAL BUR

Client Sample ID: FB-01_060822
Lab Sample ID: 240-167984-10
Date Collected: 06/08/22 15:30
Matrix: Water
Date Received: 06/09/22 14:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180764	06/14/22 12:15	MJW	TAL BUR
Total/NA	Analysis	522		1	180789	06/14/22 20:55	K1P	TAL BUR

Laboratory References:

TAL BUR = Eurofins Burlington, 530 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167984-1

Laboratory: Eurofins Burlington

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2336	02-25-23
Connecticut	State	PH-0751	09-30-23
Florida	NELAP	E87467	06-30-22
Minnesota	NELAP	050-999-436	12-31-22
New Hampshire	NELAP	2006	12-18-22
New Jersey	NELAP	VT972	06-30-22
New York	NELAP	10391	04-01-23
Pennsylvania	NELAP	68-00489	04-30-23
Rhode Island	State	LAO00298	12-30-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-17-00272	10-30-23
Vermont	State	VT4000	02-10-23
Virginia	NELAP	460209	12-14-22
Wisconsin	State	399133350	08-31-22

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: Bill CoBern	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-96067-29231.1
Client Contact: Alex Villhauer	Phone: 810-588-3642	E-Mail: Michael.DelMonico@et.eurofinsus.com	State of Origin:	Page: Page 1 of 3
Company: ARCADIS U.S., Inc.	PWSID:			Job #:

Address: 300 South Washington Square Suite 315	Due Date Requested:	
City: Lansing	TAT Requested (days): STANDARD	
State, Zip: MI, 48933	Compliance Project: Δ Yes Δ No	
Phone: 810-225-1928(Tel)	PO #: Purchase Order not required	
Email: alex.villhauer@arcadis.com	WO #: 30112692.0470A Project #: ~~B006.4607.2016.00001~~	
Project Name: Racer Lansing method 522	Project #: 24017406	
Site: PLANT-3	SSOW#:	

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	522 - 522- 1,4-Dioxane	522 - Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	A		
MW-13-47_060722	6/7/22	12:10	G	Water	N	N	X			
MW-91-6_060722	6/7/22	13:25	G	Water	N	N	X			
MW-13-38_060722	6/7/22	15:00	G	Water	N	N	X			
MW-13-37_060722	6/7/22	16:10	G	Water	N	N	X			
DUP-13_060722	6/7/22	—	G	Water	N	N	X			
MW-13-28_060822	6/8/22	9:45	G	Water	N	N	X			
MW-91-5_060822	6/8/22	11:00	G	Water	N	N	X			
MW-19-119S_060822	6/8/22	12:40	G	Water	N	N	X			
MW-19-119D_060822	6/8/22	14:35	G	Water	N	N	X			
FB-01_060822	6/8/22	15:30	G	Water	N	N	X			
				Water						

240-167984 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time	Company	Received by	Date/Time	Company
Relinquished by:	6-8-22 17:00	ARCADIS	Received by:	6-9-22 14:20	EEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 167984**
Barberton Facility

Client Arcadis Site Name

Cooler unpacked by: Mandoly Bl

Cooler Received on 6-9-22 Opened on 6-9-22

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # TA Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF **0.0** °C) Observed Cooler Temp. 3.5 °C Corrected Cooler Temp. 3.5 °C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity ____	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# **HC178690**
14. Were VOAs on the COC?	Yes	(No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes No	(NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 240-167984-1

Login Number: 167984
List Number: 2
Creator: Khudaier, Zahraa

List Source: Eurofins Burlington
List Creation: 06/10/22 02:51 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.2ºC
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-167985-1
Client Project/Site: Racer Lansing

For:
ARCADIS U.S., Inc.
28550 Cabot Drive
Suite 500
Novi, Michigan 48377

Attn: Tiffany Linder

Authorized for release by:
6/16/2022 3:35:27 PM

Michael DelMonico, Project Manager I
(330)497-9396
Michael.DelMonico@et.eurofinsus.com

LINKS

Review your project results through my EOL

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-167985-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-167985-1

Comments
No additional comments.

Receipt
The samples were received on 6/9/2022 3:26 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.5º C.

GC/MS Semi VOA
Method 522: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 200-180796 and analytical batch 200-180816 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Method	Method Description	Protocol	Laboratory
522	1,4 Dioxane (GC/MS SIM)	EPA	TAL BUR
522	Solid-Phase Extraction (SPE)	EPA	TAL BUR

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL BUR = Eurofins Burlington, 530 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-167985-1	MW-12-01_060622	Water	06/06/22 09:45	06/09/22 15:26
240-167985-2	MW-17-87_060622	Water	06/06/22 11:05	06/09/22 15:26
240-167985-3	MW-19-118S_060622	Water	06/06/22 12:20	06/09/22 15:26
240-167985-4	MW-19-118D_060622	Water	06/06/22 13:40	06/09/22 15:26
240-167985-5	MW-19-125_060622	Water	06/06/22 14:55	06/09/22 15:26
240-167985-6	MW-12-06_060622	Water	06/06/22 16:35	06/09/22 15:26
240-167985-7	MW-13-44_060722	Water	06/07/22 09:10	06/09/22 15:26
240-167985-8	MW-12-02_060722	Water	06/07/22 10:35	06/09/22 15:26
240-167985-9	DUP-06_060722	Water	06/07/22 00:00	06/09/22 15:26

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-12-01_060622 — Lab Sample ID: 240-167985-1

No Detections.

Client Sample ID: MW-17-87_060622 — Lab Sample ID: 240-167985-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	6.5		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-19-118S_060622 — Lab Sample ID: 240-167985-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.2		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-19-118D_060622 — Lab Sample ID: 240-167985-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.19	J F2	0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-19-125_060622 — Lab Sample ID: 240-167985-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.31		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-12-06_060622 — Lab Sample ID: 240-167985-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.19	J	0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-13-44_060722 — Lab Sample ID: 240-167985-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	1.7		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: MW-12-02_060722 — Lab Sample ID: 240-167985-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.86		0.20	0.077	ug/L	1		522	Total/NA

Client Sample ID: DUP-06_060722 — Lab Sample ID: 240-167985-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	0.90		0.20	0.077	ug/L	1		522	Total/NA

This Detection Summary does not include radiochemical test results.

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-12-01_060622
Date Collected: 06/06/22 09:45
Date Received: 06/09/22 15:26

Lab Sample ID: 240-167985-1
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.20	U	0.20	0.077	ug/L		06/14/22 19:30	06/15/22 13:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*101*		*46 - 130*	*06/14/22 19:30*	*06/15/22 13:47*	*1*

Client Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-17-87_060622
Date Collected: 06/06/22 11:05
Date Received: 06/09/22 15:26

Lab Sample ID: 240-167985-2
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	6.5		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 14:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*101*		*46 - 130*	*06/14/22 19:30*	*06/15/22 14:01*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-19-118S_060622
Date Collected: 06/06/22 12:20
Date Received: 06/09/22 15:26

Lab Sample ID: 240-167985-3
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.2		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*103*		*46 - 130*	*06/14/22 19:30*	*06/15/22 14:14*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-19-118D_060622
Date Collected: 06/06/22 13:40
Date Received: 06/09/22 15:26

Lab Sample ID: 240-167985-4
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.19	J F2	0.20	0.077	ug/L		06/14/22 19:30	06/15/22 14:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*114*		*46 - 130*	*06/14/22 19:30*	*06/15/22 14:41*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-19-125_060622
Date Collected: 06/06/22 14:55
Date Received: 06/09/22 15:26

Lab Sample ID: 240-167985-5
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.31		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 15:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*94*		*46 - 130*	*06/14/22 19:30*	*06/15/22 15:22*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-12-06_060622
Date Collected: 06/06/22 16:35
Date Received: 06/09/22 15:26

Lab Sample ID: 240-167985-6
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.19	J	0.20	0.077	ug/L		06/14/22 19:30	06/15/22 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*109*		*46 - 130*	*06/14/22 19:30*	*06/15/22 15:35*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-13-44_060722
Date Collected: 06/07/22 09:10
Date Received: 06/09/22 15:26

Lab Sample ID: 240-167985-7
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	1.7		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 15:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*103*		*46 - 130*	*06/14/22 19:30*	*06/15/22 15:49*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-12-02_060722
Date Collected: 06/07/22 10:35
Date Received: 06/09/22 15:26

Lab Sample ID: 240-167985-8
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.86		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 16:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*107*		*46 - 130*	*06/14/22 19:30*	*06/15/22 16:03*	*1*

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: DUP-06_060722
Date Collected: 06/07/22 00:00
Date Received: 06/09/22 15:26

Lab Sample ID: 240-167985-9
Matrix: Water

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.90		0.20	0.077	ug/L		06/14/22 19:30	06/15/22 16:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*102*		*46 - 130*	*06/14/22 19:30*	*06/15/22 16:16*	*1*

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)								
		DXE								
Lab Sample ID	Client Sample ID	(46-130)								
240-167985-1	MW-12-01_060622	101								
240-167985-2	MW-17-87_060622	101								
240-167985-3	MW-19-118S_060622	103								
240-167985-4	MW-19-118D_060622	114								
240-167985-4 MS	MW-19-118D_060622	105								
240-167985-4 MSD	MW-19-118D_060622	93								
240-167985-5	MW-19-125_060622	94								
240-167985-6	MW-12-06_060622	109								
240-167985-7	MW-13-44_060722	103								
240-167985-8	MW-12-02_060722	107								
240-167985-9	DUP-06_060722	102								
LCS 200-180796/2-A	Lab Control Sample	110								
MB 200-180796/1-A	Method Blank	111								

Surrogate Legend

DXE = 1,4-Dioxane-d8 (Surr)

Method: 522 - 1,4 Dioxane (GC/MS SIM)

Lab Sample ID: MB 200-180796/1-A
Matrix: Water
Analysis Batch: 180816

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 180796

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.20	U	0.20	0.077	ug/L		06/14/22 19:30	06/15/22 12:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8 (Surr)	*111*		*46 - 130*	*06/14/22 19:30*	*06/15/22 12:26*	*1*

Lab Sample ID: LCS 200-180796/2-A
Matrix: Water
Analysis Batch: 180816

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 180796

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			2.00	2.26		ug/L		113	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8 (Surr)	*110*		*46 - 130*

Lab Sample ID: 240-167985-4 MS
Matrix: Water
Analysis Batch: 180816

Client Sample ID: MW-19-118D_060622
Prep Type: Total/NA
Prep Batch: 180796

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane	0.19	J F2	2.00	2.44		ug/L		113	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,4-Dioxane-d8 (Surr)	*105*		*46 - 130*

Lab Sample ID: 240-167985-4 MSD
Matrix: Water
Analysis Batch: 180816

Client Sample ID: MW-19-118D_060622
Prep Type: Total/NA
Prep Batch: 180796

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane	0.19	J F2	2.00	1.74	F2	ug/L		78	70 - 130	34	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,4-Dioxane-d8 (Surr)	*93*		*46 - 130*

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

GC/MS Semi VOA

Prep Batch: 180796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167985-1	MW-12-01_060622	Total/NA	Water	522	
240-167985-2	MW-17-87_060622	Total/NA	Water	522	
240-167985-3	MW-19-118S_060622	Total/NA	Water	522	
240-167985-4	MW-19-118D_060622	Total/NA	Water	522	
240-167985-5	MW-19-125_060622	Total/NA	Water	522	
240-167985-6	MW-12-06_060622	Total/NA	Water	522	
240-167985-7	MW-13-44_060722	Total/NA	Water	522	
240-167985-8	MW-12-02_060722	Total/NA	Water	522	
240-167985-9	DUP-06_060722	Total/NA	Water	522	
MB 200-180796/1-A	Method Blank	Total/NA	Water	522	
LCS 200-180796/2-A	Lab Control Sample	Total/NA	Water	522	
240-167985-4 MS	MW-19-118D_060622	Total/NA	Water	522	
240-167985-4 MSD	MW-19-118D_060622	Total/NA	Water	522	

Analysis Batch: 180816

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-167985-1	MW-12-01_060622	Total/NA	Water	522	180796
240-167985-2	MW-17-87_060622	Total/NA	Water	522	180796
240-167985-3	MW-19-118S_060622	Total/NA	Water	522	180796
240-167985-4	MW-19-118D_060622	Total/NA	Water	522	180796
240-167985-5	MW-19-125_060622	Total/NA	Water	522	180796
240-167985-6	MW-12-06_060622	Total/NA	Water	522	180796
240-167985-7	MW-13-44_060722	Total/NA	Water	522	180796
240-167985-8	MW-12-02_060722	Total/NA	Water	522	180796
240-167985-9	DUP-06_060722	Total/NA	Water	522	180796
MB 200-180796/1-A	Method Blank	Total/NA	Water	522	180796
LCS 200-180796/2-A	Lab Control Sample	Total/NA	Water	522	180796
240-167985-4 MS	MW-19-118D_060622	Total/NA	Water	522	180796
240-167985-4 MSD	MW-19-118D_060622	Total/NA	Water	522	180796

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-12-01_060622
Lab Sample ID: 240-167985-1
Date Collected: 06/06/22 09:45
Matrix: Water
Date Received: 06/09/22 15:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 13:47	A1B	TAL BUR

Client Sample ID: MW-17-87_060622
Lab Sample ID: 240-167985-2
Date Collected: 06/06/22 11:05
Matrix: Water
Date Received: 06/09/22 15:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 14:01	A1B	TAL BUR

Client Sample ID: MW-19-118S_060622
Lab Sample ID: 240-167985-3
Date Collected: 06/06/22 12:20
Matrix: Water
Date Received: 06/09/22 15:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 14:14	A1B	TAL BUR

Client Sample ID: MW-19-118D_060622
Lab Sample ID: 240-167985-4
Date Collected: 06/06/22 13:40
Matrix: Water
Date Received: 06/09/22 15:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 14:41	A1B	TAL BUR

Client Sample ID: MW-19-125_060622
Lab Sample ID: 240-167985-5
Date Collected: 06/06/22 14:55
Matrix: Water
Date Received: 06/09/22 15:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 15:22	A1B	TAL BUR

Client Sample ID: MW-12-06_060622
Lab Sample ID: 240-167985-6
Date Collected: 06/06/22 16:35
Matrix: Water
Date Received: 06/09/22 15:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 15:35	A1B	TAL BUR

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Client Sample ID: MW-13-44_060722

Lab Sample ID: 240-167985-7

Date Collected: 06/07/22 09:10

Matrix: Water

Date Received: 06/09/22 15:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 15:49	A1B	TAL BUR

Client Sample ID: MW-12-02_060722

Lab Sample ID: 240-167985-8

Date Collected: 06/07/22 10:35

Matrix: Water

Date Received: 06/09/22 15:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 16:03	A1B	TAL BUR

Client Sample ID: DUP-06_060722

Lab Sample ID: 240-167985-9

Date Collected: 06/07/22 00:00

Matrix: Water

Date Received: 06/09/22 15:26

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	522			180796	06/14/22 19:30	EK	TAL BUR
Total/NA	Analysis	522		1	180816	06/15/22 16:16	A1B	TAL BUR

Laboratory References:

TAL BUR = Eurofins Burlington, 530 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Racer Lansing

Job ID: 240-167985-1

Laboratory: Eurofins Burlington

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2336	02-25-23
Connecticut	State	PH-0751	09-30-23
Florida	NELAP	E87467	06-30-22
Minnesota	NELAP	050-999-436	12-31-22
New Hampshire	NELAP	2006	12-18-22
New Jersey	NELAP	VT972	06-30-22
New York	NELAP	10391	04-01-23
Pennsylvania	NELAP	68-00489	04-30-23
Rhode Island	State	LAO00298	12-30-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-17-00272	10-30-23
Vermont	State	VT4000	02-10-23
Virginia	NELAP	460209	12-14-22
Wisconsin	State	399133350	08-31-22

35/35

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: Bill Cobean	Lab PM: DelMonico, Michael	Carrier Tracking No(s):	COC No: 240-96067-29231.3
Client Contact: Alex Villhauer	Phone: 810-588-3642	E-Mail: Michael.DelMonico@et.eurofinsus.com	State of Origin:	Page: Page 3 of 3
Company: ARCADIS U.S., Inc.	PWSID:	Analysis Requested		Job #:
Address: 300 South Washington Square Suite 315	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
City: Lansing	TAT Requested (days): STANDARD			
State, Zip: MI, 48933	Compliance Project: Δ Yes Δ No			
Phone: 810-225-1928(Tel)	PO #: Purchase Order not required			
Email: alex.villhauer@arcadis.com	WO #: 30112892.04704 Project #: ~~B0064607.2016.00001~~			
Project Name: Racer Lansing method 522	Project #: 24017406			Other:
Site: PLANT-2	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	522 - 522-1,4-Dioxane	522 - Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	A		
MW-12-01_060622	6/6/22	9:45	G	Water	N	N	X			
MW-17-87_060622	6/6/22	11:05	G	W	N	N	X			
MW-19-118S_060622	6/6/22	12:20	G	W	N	N	X			
MW-19-118D_060622	6/6/22	13:40	G	W	N	Y	X			MS/MSD
MW-19-125_060622	6/6/22	14:55	G	W	N	N	X			
MW-12-06_060622	6/6/22	16:35	G	W	N	N	X			
MW-13-44_060722	6/7/22	9:10	G	W	N	N	X			
MW-12-02_060722	6/7/22	10:35	G	W	N	N	X			
DUP-06_060722	6/7/22	—	G	W	N	N	X			

240-167985 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		6-8-22 17:00	ARCADIS	Mandaly Blue	6-9-22 14:20	eurofins
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Eurofins - Canton Sample Receipt Form/Narrative **Login # : 167985**
Barberton Facility

Client Arcadis Site Name

Cooler Received on 6-9-22 Opened on 6-9-22

Cooler unpacked by: Mandoly Bl

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

Eurofins Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-13 (CF **0.0** °C) Observed Cooler Temp. 3.5 °C Corrected Cooler Temp. 3.5 °C
   IR GUN #IR-15 (CF **-0.7**°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Y)	(N) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# **HC178690**
14. Were VOAs on the COC?	Yes	(No)
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM Date by via Verbal Voice Mail Other

Concerning

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 240-167985-1

Login Number: 167985
List Number: 2
Creator: Khudaier, Zahraa

List Source: Eurofins Burlington
List Creation: 06/10/22 02:51 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.2ºC
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Analytical Laboratory Report

Report ID: S34620.01(01)
Generated on 04/19/2022

Report to

Attention: Tiffany Linder
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis.com

Addtional Contacts: Alex Villhauer, Caitlin Cisco, Patrick Curry

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S34620.01-S34620.02
Project: 30075941.04100 / RACER Lansing
Collected Date(s): 04/06/2022
Submitted Date/Time: 04/06/2022 13:45
Sampled by: Austin Westhuis
P.O. #: 30075941.04100

Table of Contents

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein, acrylonitrile, and 2-chlorovinylethyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S34620.01	MW-22-153_040622	Groundwater	04/06/22 11:45
S34620.02	MW-14-58R_040622	Groundwater	04/06/22 12:20

Lab Sample ID: S34620.01
Sample Tag: MW-22-153_040622
Collected Date/Time: 04/06/2022 11:45
Matrix: Groundwater
COC Reference: 139926

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	04/08/22 09:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 04/18/22 12:49, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	92	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/07/22 13:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	1	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	10	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S34620.01 (continued)
Sample Tag: MW-22-153_040622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/07/22 13:20, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S34620.02
Sample Tag: MW-14-58R_040622
Collected Date/Time: 04/06/2022 12:20
Matrix: Groundwater
COC Reference: 139926

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	04/08/22 09:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 04/18/22 16:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	410	10		ug/L	10	123-91-1	Y

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/07/22 13:40, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S34620.02 (continued)
Sample Tag: MW-14-58R_040622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/07/22 13:40, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID: S34620
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30075941.04100 / RACER Lansing
Submitted: 04/06/2022 13:45 Login User: MMC

Attention: Tiffany Linder
Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.4
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

139926

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 810-225-1928 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.04100 / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260 (Full Scan)	1,4-Dioxane 8260 SIMS
34620.01	4/6/22	1145	mw-22-153_040622	GW	3		3						X	X
.02	4/6/22	1220	mw-14-58R_040622	GW	3		3						X	X

RELINQUISHED BY: SIGNATURE/ORGANIZATION: [signature] / Arcadis ☒ Sampler DATE: 4/6/22 TIME: 1345
RECEIVED BY: SIGNATURE/ORGANIZATION: Merit Drop Box DATE: 4/6/22 TIME: 1345
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box DATE: 4/6/22 TIME: 1345
RECEIVED BY: SIGNATURE/ORGANIZATION: M Chilcott DATE: 4/6/22 TIME: 1345

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL: 2.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

* Please also email results to: Patrick.Cunny@arcadis.com, Alex.Villhauer@arcadis.com, and Caitlin.Cisco@arcadis.com

Analytical Laboratory Report

Revised Report

Report ID: S36584.01(02)+QC01
Generated on 06/24/2022
Replaces report S36584.01(01) generated on 06/13/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36584.01-S36584.11
Project: 30112892 Task 0470B / Racer Lansing
Collected Date(s): 06/01/2022
Submitted Date/Time: 06/02/2022 08:15
Sampled by: Donald Richmond
P.O. #: 30112892 TASK 0470B

Table of Contents

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QC Report (Pages 21-68)

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

VOC pH check result corrected.

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E300.0	EPA Method 300.0 Revision 2.1 (1993)
N/A	Not Applicable
SM4500-N(org)/NH	Standard Method 4500 N(org)B / NH3D 2011
SM4500-PE	Standard Method 4500 P E 2011 / 4500 P B(5) 2011
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (11 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36584.01	MW-14-61_060122	Groundwater	06/01/22 10:30
S36584.02	MW-19-123_060122	Groundwater	06/01/22 12:30
S36584.03	MW-19-121_060122	Groundwater	06/01/22 14:05
S36584.04	MW-16-74_060122	Groundwater	06/01/22 15:50
S36584.05	TW-14-02_060122	Groundwater	06/01/22 09:40
S36584.06	MW-20-128_060122	Groundwater	06/01/22 11:15
S36584.07	MW-20-127_060122	Groundwater	06/01/22 12:40
S36584.08	TW-15-12_060122	Groundwater	06/01/22 13:55
S36584.09	PW-14-02_060122	Groundwater	06/01/22 15:45
S36584.10	DUP-05_060122	Groundwater	06/01/22 00:01
S36584.11	MW-15-72_060122	Groundwater	06/01/22 17:15

Lab Sample ID: S36584.01
Sample Tag: MW-14-61_060122
Collected Date/Time: 06/01/2022 10:30
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR
1	125ml Plastic	None	Yes	2.5	IR
1	250ml Plastic	H2SO4	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Inorganics

Method: E300.0, Run Date: 06/02/22 10:48, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 06/12/22 17:38, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.3	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 06/08/22 11:48, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.11	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 02:30, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	16	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 16:30, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	

Lab Sample ID: S36584.01 (continued)

Sample Tag: MW-14-61_060122

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 16:30, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36584.02
Sample Tag: MW-19-123_060122
Collected Date/Time: 06/01/2022 12:30
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR
1	125ml Plastic	None	Yes	2.5	IR
1	250ml Plastic	H2SO4	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Inorganics

Method: E300.0, Run Date: 06/02/22 10:58, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 06/12/22 18:02, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.3	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 06/08/22 11:51, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.01	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 02:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	25	1		ug/L	1	123-91-1	

Lab Sample ID: S36584.03
Sample Tag: MW-19-121_060122
Collected Date/Time: 06/01/2022 14:05
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR
1	125ml Plastic	None	Yes	2.5	IR
1	250ml Plastic	H2SO4	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Inorganics

Method: E300.0, Run Date: 06/02/22 12:49, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	18.6	1.0	0.13	mg/L	10	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 06/12/22 19:59, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.4	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 06/08/22 11:59, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	4.1	0.3	0.2	mg/L	25	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 03:14, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36584.04
Sample Tag: MW-16-74_060122
Collected Date/Time: 06/01/2022 15:50
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 03:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Lab Sample ID: S36584.05
Sample Tag: TW-14-02_060122
Collected Date/Time: 06/01/2022 09:40
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR
1	125ml Plastic	None	Yes	2.5	IR
1	250ml Plastic	H2SO4	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Inorganics

Method: E300.0, Run Date: 06/02/22 11:18, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 06/12/22 20:18, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.5	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 06/08/22 15:34, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.11	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 03:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 16:54, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	

Lab Sample ID: S36584.05 (continued)

Sample Tag: TW-14-02_060122

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 16:54, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36584.06
Sample Tag: MW-20-128_060122
Collected Date/Time: 06/01/2022 11:15
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR
1	125ml Plastic	None	Yes	2.5	IR
1	250ml Plastic	H2SO4	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Inorganics

Method: E300.0, Run Date: 06/02/22 11:29, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 06/12/22 20:45, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	2.2	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 06/08/22 15:41, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.39	0.05	0.045	mg/L	5	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 04:17, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	6	1		ug/L	1	123-91-1	

Lab Sample ID: S36584.07
Sample Tag: MW-20-127_060122
Collected Date/Time: 06/01/2022 12:40
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR
1	125ml Plastic	None	Yes	2.5	IR
1	250ml Plastic	H2SO4	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Inorganics

Method: E300.0, Run Date: 06/02/22 11:39, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 06/12/22 21:08, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.7	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 06/08/22 15:45, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.06	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 04:39, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	142	1		ug/L	1	123-91-1	

Lab Sample ID: S36584.08
Sample Tag: TW-15-12_060122
Collected Date/Time: 06/01/2022 13:55
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR
1	125ml Plastic	None	Yes	2.5	IR
1	250ml Plastic	H2SO4	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Inorganics

Method: E300.0, Run Date: 06/02/22 11:49, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 06/12/22 21:29, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	5.1	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 06/08/22 15:48, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	2.5	0.3	0.2	mg/L	25	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 05:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	9	1		ug/L	1	123-91-1	

Lab Sample ID: S36584.09
Sample Tag: PW-14-02_060122
Collected Date/Time: 06/01/2022 15:45
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR
1	125ml Plastic	None	Yes	2.5	IR
1	250ml Plastic	H2SO4	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Inorganics

Method: E300.0, Run Date: 06/02/22 11:59, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 06/12/22 21:59, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.4	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 06/08/22 15:56, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.03	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 13:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	26	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 17:18, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	

Lab Sample ID: S36584.09 (continued)
Sample Tag: PW-14-02_060122

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 17:18, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36584.10
Sample Tag: DUP-05_060122
Collected Date/Time: 06/01/2022 00:01
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR
1	125ml Plastic	None	Yes	2.5	IR
1	250ml Plastic	H2SO4	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Inorganics

Method: E300.0, Run Date: 06/02/22 12:09, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 06/12/22 22:17, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.8	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 06/08/22 16:01, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.07	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 13:29, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	143	1		ug/L	1	123-91-1	

Lab Sample ID: S36584.11
Sample Tag: MW-15-72_060122
Collected Date/Time: 06/01/2022 17:15
Matrix: Groundwater
COC Reference: 145708

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 13:51, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	144	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 17:41, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36584.11 (continued)

Sample Tag: MW-15-72_060122

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 17:41, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Quality Control Report

Report ID: S36584.01(02)+QC01
Generated on 06/13/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36584.01-S36584.11
Project: 30112892 Task 0470B / Racer Lansing
Submitted Date/Time: 06/02/2022 08:15
Sampled by: Donald Richmond
P.O. #: 30112892 TASK 0470B

QC Report Sections

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Analysis Summary (Pages 22-32)
Prep Batch Summary (Pages 33-34)
Surrogates per Lab Sample (Pages 35-38)
Surrogates per QC Sample (Pages 39-41)
Internal Standards per Lab Sample (Pages 42-52)
Internal Standards per QC Sample (Pages 53-55)
Batch QC Results (Pages 56-68)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S36584.01
Sample Tag: MW-14-61_060122
Collected Date/Time: 06/01/2022 10:30
Matrix: Groundwater
COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	06/02/22 10:48	NTRA220602-W1-A	NTRA220602-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 17:38	TKN220612QC	TKN220612QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	06/08/22 11:48	PHS220608QC	PHS220608QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 02:30	220607B9	VS220607W2	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 16:30	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36584.02
Sample Tag: MW-19-123_060122
Collected Date/Time: 06/01/2022 12:30
Matrix: Groundwater
COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	06/02/22 10:58	NTRA220602-W1-A	NTRA220602-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 18:02	TKN220612QC	TKN220612QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	06/08/22 11:51	PHS220608QC	PHS220608QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 02:52	220607B9	VS220607W2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S36584.03
Sample Tag: MW-19-121_060122
Collected Date/Time: 06/01/2022 14:05
Matrix: Groundwater
COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	06/02/22 12:49	NTRA220602-W1-A	NTRA220602-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 19:59	TKN220612QC	TKN220612QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	06/08/22 11:59	PHS220608QC	PHS220608QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 03:14	220607B9	VS220607W2	Yes	BLK/LCS/LCSD

Lab Sample ID: S36584.04

Sample Tag: MW-16-74_060122

Collected Date/Time: 06/01/2022 15:50

Matrix: Groundwater

COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 03:35	220607B9	VS220607W2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S36584.05
Sample Tag: TW-14-02_060122
Collected Date/Time: 06/01/2022 09:40
Matrix: Groundwater
COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	06/02/22 11:18	NTRA220602-W1-A	NTRA220602-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 20:18	TKN220612QC	TKN220612QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	06/08/22 15:34	PHS220608QC	PHS220608QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 03:56	220607B9	VS220607W2	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 16:54	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36584.06
Sample Tag: MW-20-128_060122
Collected Date/Time: 06/01/2022 11:15
Matrix: Groundwater
COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	06/02/22 11:29	NTRA220602-W1-A	NTRA220602-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 20:45	TKN220612QC	TKN220612QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	06/08/22 15:41	PHS220608QC	PHS220608QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 04:17	220607B9	VS220607W2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S36584.07
Sample Tag: MW-20-127_060122
Collected Date/Time: 06/01/2022 12:40
Matrix: Groundwater
COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	06/02/22 11:39	NTRA220602-W1-A	NTRA220602-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 21:08	TKN220612QC	TKN220612QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	06/08/22 15:45	PHS220608QC	PHS220608QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 04:39	220607B9	VS220607W2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S36584.08
Sample Tag: TW-15-12_060122
Collected Date/Time: 06/01/2022 13:55
Matrix: Groundwater
COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	06/02/22 11:49	NTRA220602-W1-A	NTRA220602-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 21:29	TKN220612QC	TKN220612QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	06/08/22 15:48	PHS220608QC	PHS220608QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 05:00	220607B9	VS220607W2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S36584.09
Sample Tag: PW-14-02_060122
Collected Date/Time: 06/01/2022 15:45
Matrix: Groundwater
COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	06/02/22 11:59	NTRA220602-W1-A	NTRA220602-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 21:59	TKN220612QC	TKN220612QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	06/08/22 15:56	PHS220608QC	PHS220608QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 13:08	220608A9	VS220608W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 17:18	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36584.10
Sample Tag: DUP-05_060122
Collected Date/Time: 06/01/2022 00:01
Matrix: Groundwater
COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	06/02/22 12:09	NTRA220602-W1-A	NTRA220602-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 22:17	TKN220612QC	TKN220612QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	06/08/22 16:01	PHS220608QC	PHS220608QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 13:29	220608A9	VS220608W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36584.11

Sample Tag: MW-15-72_060122

Collected Date/Time: 06/01/2022 17:15

Matrix: Groundwater

COC Reference: 145708

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 13:51	220608A9	VS220608W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 17:41	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: NTRA220602-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36584.01	Nitrate-N	E300.0	06/02/22 10:48	NTRA220602-W1-A
S36584.02	Nitrate-N	E300.0	06/02/22 10:58	NTRA220602-W1-A
S36584.03	Nitrate-N	E300.0	06/02/22 12:49	NTRA220602-W1-A
S36584.05	Nitrate-N	E300.0	06/02/22 11:18	NTRA220602-W1-A
S36584.06	Nitrate-N	E300.0	06/02/22 11:29	NTRA220602-W1-A
S36584.07	Nitrate-N	E300.0	06/02/22 11:39	NTRA220602-W1-A
S36584.08	Nitrate-N	E300.0	06/02/22 11:49	NTRA220602-W1-A
S36584.09	Nitrate-N	E300.0	06/02/22 11:59	NTRA220602-W1-A
S36584.10	Nitrate-N	E300.0	06/02/22 12:09	NTRA220602-W1-A

Inorganics, Prep Batch ID: PHS220608QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36584.01	Total Phosphorus	SM4500-PE	06/08/22 11:48	PHS220608QC
S36584.02	Total Phosphorus	SM4500-PE	06/08/22 11:51	PHS220608QC
S36584.03	Total Phosphorus	SM4500-PE	06/08/22 11:59	PHS220608QC
S36584.05	Total Phosphorus	SM4500-PE	06/08/22 15:34	PHS220608QC
S36584.06	Total Phosphorus	SM4500-PE	06/08/22 15:41	PHS220608QC
S36584.07	Total Phosphorus	SM4500-PE	06/08/22 15:45	PHS220608QC
S36584.08	Total Phosphorus	SM4500-PE	06/08/22 15:48	PHS220608QC
S36584.09	Total Phosphorus	SM4500-PE	06/08/22 15:56	PHS220608QC
S36584.10	Total Phosphorus	SM4500-PE	06/08/22 16:01	PHS220608QC

Inorganics, Prep Batch ID: TKN220612QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36584.01	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 17:38	TKN220612QC
S36584.02	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 18:02	TKN220612QC
S36584.03	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 19:59	TKN220612QC
S36584.05	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 20:18	TKN220612QC
S36584.06	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 20:45	TKN220612QC
S36584.07	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 21:08	TKN220612QC
S36584.08	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 21:29	TKN220612QC
S36584.09	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 21:59	TKN220612QC
S36584.10	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/12/22 22:17	TKN220612QC

Organics - Volatiles, Prep Batch ID: VF220608W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36584.01	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 16:30	220608A7
S36584.05	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 16:54	220608A7
S36584.09	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 17:18	220608A7
S36584.11	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 17:41	220608A7

Organics - Volatiles, Prep Batch ID: VS220607W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36584.01	1,4-Dioxane	SW8260B - SIM	06/08/22 02:30	220607B9
S36584.02	1,4-Dioxane	SW8260B - SIM	06/08/22 02:52	220607B9
S36584.03	1,4-Dioxane	SW8260B - SIM	06/08/22 03:14	220607B9

Organics - Volatiles, Prep Batch ID: VS220607W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36584.04	1,4-Dioxane	SW8260B - SIM	06/08/22 03:35	220607B9
S36584.05	1,4-Dioxane	SW8260B - SIM	06/08/22 03:56	220607B9
S36584.06	1,4-Dioxane	SW8260B - SIM	06/08/22 04:17	220607B9
S36584.07	1,4-Dioxane	SW8260B - SIM	06/08/22 04:39	220607B9
S36584.08	1,4-Dioxane	SW8260B - SIM	06/08/22 05:00	220607B9

Organics - Volatiles, Prep Batch ID: VS220608W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36584.09	1,4-Dioxane	SW8260B - SIM	06/08/22 13:08	220608A9
S36584.10	1,4-Dioxane	SW8260B - SIM	06/08/22 13:29	220608A9
S36584.11	1,4-Dioxane	SW8260B - SIM	06/08/22 13:51	220608A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36584.01

Sample Tag: MW-14-61_060122

Collected Date/Time: 06/01/2022 10:30

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 16:30, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.1**	80.0	124.0
1,2-Dichloroethane-D4		**91.8**	72.0	125.0
Toluene-D8		**99.0**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36584.05

Sample Tag: TW-14-02_060122

Collected Date/Time: 06/01/2022 09:40

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 16:54, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**106.2**	80.0	124.0
1,2-Dichloroethane-D4		**96.3**	72.0	125.0
Toluene-D8		**98.9**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36584.09

Sample Tag: PW-14-02_060122

Collected Date/Time: 06/01/2022 15:45

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 17:18, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.5**	80.0	124.0
1,2-Dichloroethane-D4		**96.5**	72.0	125.0
Toluene-D8		**98.7**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36584.11

Sample Tag: MW-15-72_060122

Collected Date/Time: 06/01/2022 17:15

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 17:41, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.7**	80.0	124.0
1,2-Dichloroethane-D4		**97.3**	72.0	125.0
Toluene-D8		**98.8**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220608W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.2**	80.0	124.0
1,2-Dichloroethane-D4		**96.4**	72.0	125.0
Toluene-D8		**97.9**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.5**	80.0	124.0
1,2-Dichloroethane-D4		**96.2**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.6**	80.0	124.0
1,2-Dichloroethane-D4		**97.7**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.8**	80.0	124.0
1,2-Dichloroethane-D4		**100.5**	72.0	125.0
Toluene-D8		**100.0**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**106.1**	80.0	124.0
1,2-Dichloroethane-D4		**102.7**	72.0	125.0
Toluene-D8		**100.1**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220607W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220607B9.BLKS07B

Run in Batch: 220607B9, Run Date: 06/08/2022 02:09, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220607B9.LCSS07B

Run in Batch: 220607B9, Run Date: 06/08/2022 01:07, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220607B9.LCSDS07B, Parent Sample ID: 220607B9.LCSS07B

Run in Batch: 220607B9, Run Date: 06/08/2022 01:28, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220608W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220608A9.BLKS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:47, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 11:46, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A9.LCSDS08A, Parent Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:06, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.01

Sample Tag: MW-14-61_060122

Collected Date/Time: 06/01/2022 10:30

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607B9, Run Date: 06/08/2022 02:30, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.0**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 16:30, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.0**	50.0	200.0
1,4-Difluorobenzene		**95.1**	50.0	200.0
Chlorobenzene-D5		**94.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.02

Sample Tag: MW-19-123_060122

Collected Date/Time: 06/01/2022 12:30

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607B9, Run Date: 06/08/2022 02:52, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**97.2**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.03

Sample Tag: MW-19-121_060122

Collected Date/Time: 06/01/2022 14:05

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607B9, Run Date: 06/08/2022 03:14, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**94.9**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.04

Sample Tag: MW-16-74_060122

Collected Date/Time: 06/01/2022 15:50

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607B9, Run Date: 06/08/2022 03:35, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**95.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.05

Sample Tag: TW-14-02_060122

Collected Date/Time: 06/01/2022 09:40

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607B9, Run Date: 06/08/2022 03:56, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**95.0**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 16:54, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**98.6**	50.0	200.0
1,4-Difluorobenzene		**99.5**	50.0	200.0
Chlorobenzene-D5		**98.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.06

Sample Tag: MW-20-128_060122

Collected Date/Time: 06/01/2022 11:15

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607B9, Run Date: 06/08/2022 04:17, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.3**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.07

Sample Tag: MW-20-127_060122

Collected Date/Time: 06/01/2022 12:40

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607B9, Run Date: 06/08/2022 04:39, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**113.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.08

Sample Tag: TW-15-12_060122

Collected Date/Time: 06/01/2022 13:55

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607B9, Run Date: 06/08/2022 05:00, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**104.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.09

Sample Tag: PW-14-02_060122

Collected Date/Time: 06/01/2022 15:45

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 13:08, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.7**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 17:18, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**95.5**	50.0	200.0
1,4-Difluorobenzene		**96.6**	50.0	200.0
Chlorobenzene-D5		**96.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**96.3**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.10

Sample Tag: DUP-05_060122

Collected Date/Time: 06/01/2022 00:01

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 13:29, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**83.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36584.11

Sample Tag: MW-15-72_060122

Collected Date/Time: 06/01/2022 17:15

Matrix: Groundwater

COC Reference: 145708

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 13:51, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**85.6**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 17:41, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.3**	50.0	200.0
1,4-Difluorobenzene		**97.4**	50.0	200.0
Chlorobenzene-D5		**98.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.8**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220608W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**95.5**	50.0	200.0
1,4-Difluorobenzene		**96.3**	50.0	200.0
Chlorobenzene-D5		**94.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.1**	50.0	200.0
1,4-Difluorobenzene		**99.0**	50.0	200.0
Chlorobenzene-D5		**98.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**98.6**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**98.3**	50.0	200.0
1,4-Difluorobenzene		**97.1**	50.0	200.0
Chlorobenzene-D5		**97.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.9**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**97.9**	50.0	200.0
1,4-Difluorobenzene		**99.3**	50.0	200.0
Chlorobenzene-D5		**99.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.3**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**97.1**	50.0	200.0
1,4-Difluorobenzene		**99.1**	50.0	200.0
Chlorobenzene-D5		**100.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220607W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220607B9.BLKS07B

Run in Batch: 220607B9, Run Date: 06/08/2022 02:09, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**91.9**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220607B9.LCSS07B

Run in Batch: 220607B9, Run Date: 06/08/2022 01:07, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**95.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220607B9.LCSDS07B, Parent Sample ID: 220607B9.LCSS07B

Run in Batch: 220607B9, Run Date: 06/08/2022 01:28, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**99.0**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220608W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220608A9.BLKS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:47, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**65.8**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 11:46, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**84.8**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A9.LCSDS08A, Parent Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:06, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**97.4**	50.0	200.0

Inorganics, Prep Batch ID: NTRA220602-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: NTRA220602-W1-A.LRB1

Run in Batch: NTRA220602-W1-A, Run Date: 06/02/2022 10:16, Prep Date: 06/02/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Nitrate-N		ND	0.1	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: NTRA220602-W1-A.LCS1

Run in Batch: NTRA220602-W1-A, Run Date: 06/02/2022 10:38, Prep Date: 06/02/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Nitrate-N		93	90	110

Matrix Spike (MS)

Lab Sample ID: NTRA220602-W1-A.MS1, Parent Sample ID: S36584.02

Run in Batch: NTRA220602-W1-A, Run Date: 06/02/2022 12:29, Prep Date: 06/02/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Nitrate-N		101	80	120

Matrix Spike Duplicate (MSD)

Lab Sample ID: NTRA220602-W1-A.MSD1, Parent Sample ID: NTRA220602-W1-A.MS1

Run in Batch: NTRA220602-W1-A, Run Date: 06/02/2022 12:39, Prep Date: 06/02/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Nitrate-N		101	80	120	0	15

Duplicate (DUP)

Lab Sample ID: NTRA220602-W1-A.DP1, Parent Sample ID: S36584.02

Run in Batch: NTRA220602-W1-A, Run Date: 06/02/2022 12:19, Prep Date: 06/02/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	RPD	RPD CL
Nitrate-N		<1	15

Inorganics, Prep Batch ID: PHS220608QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Blank (BLK)

Lab Sample ID: PHS220608QC.LRB1

Run in Batch: PHS220608QC, Run Date: 06/08/2022 11:03, Prep Date: 06/08/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

Blank (BLK)

Lab Sample ID: PHS220608QC.LRB2

Run in Batch: PHS220608QC, Run Date: 06/08/2022 11:11, Prep Date: 06/08/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: PHS220608QC.LCS1

Run in Batch: PHS220608QC, Run Date: 06/08/2022 11:18, Prep Date: 06/08/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		95	90	110

Matrix Spike (MS)

Lab Sample ID: PHS220608QC.MS1, Parent Sample ID: S36611.03

Run in Batch: PHS220608QC, Run Date: 06/08/2022 16:29, Prep Date: 06/08/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		98	80	120

Duplicate (DUP)

Lab Sample ID: PHS220608QC.DP1, Parent Sample ID: S36743.01

Run in Batch: PHS220608QC, Run Date: 06/08/2022 16:26, Prep Date: 06/08/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Phosphorus		4.9	20

Inorganics, Prep Batch ID: TKN220612QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Blank (BLK)

Lab Sample ID: TKN220612QC.LRB1

Run in Batch: TKN220612QC, Run Date: 06/12/2022 13:05, Prep Date: 06/12/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Kjeldahl Nitrogen		ND	0.02	mg/L

Blank (BLK)

Lab Sample ID: TKN220612QC.LRB2

Run in Batch: TKN220612QC, Run Date: 06/12/2022 15:02, Prep Date: 06/12/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Kjeldahl Nitrogen		ND	0.1	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: TKN220612QC.LCS1

Run in Batch: TKN220612QC, Run Date: 06/12/2022 15:14, Prep Date: 06/12/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Kjeldahl Nitrogen		96	90	110

Matrix Spike (MS)

Lab Sample ID: TKN220612QC.MS1, Parent Sample ID: S36994.02

Run in Batch: TKN220612QC, Run Date: 06/12/2022 16:14, Prep Date: 06/12/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Kjeldahl Nitrogen		105	80	120

Matrix Spike (MS)

Lab Sample ID: TKN220612QC.MS2, Parent Sample ID: S36819.01

Run in Batch: TKN220612QC, Run Date: 06/12/2022 00:47, Prep Date: 06/12/2022, Matrix: Solid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Kjeldahl Nitrogen		107	80	120

Duplicate (DUP)

Lab Sample ID: TKN220612QC.DP1, Parent Sample ID: S36994.01

Run in Batch: TKN220612QC, Run Date: 06/12/2022 15:47, Prep Date: 06/12/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Kjeldahl Nitrogen		3.3	20

Duplicate (DUP)

Lab Sample ID: TKN220612QC.DP2, Parent Sample ID: S36819.01

Run in Batch: TKN220612QC, Run Date: 06/12/2022 00:41, Prep Date: 06/12/2022, Matrix: Solid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Kjeldahl Nitrogen		2.3	20

Organics - Volatiles, Prep Batch ID: VF220608W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		105.3	67.4	121.2
Acetone		81.0	29.9	161.5
Methyl iodide		108.6	68.8	116.4
Carbon disulfide		128.4	63.8	137.4
tert-Methyl butyl ether (MTBE)		96.1	73.2	122.4
Acrylonitrile		93.4	69.9	128.9
2-Butanone (MEK)		79.4	44.0	134.4
Dichlorodifluoromethane		109.6	10.0	222.8
Chloromethane		115.0	23.8	166.5
Vinyl chloride		119.8	43.5	149.1
Bromomethane		120.5	56.8	151.3
Chloroethane		118.5	53.4	149.4
Trichlorofluoromethane		119.2	59.7	151.8
1,1-Dichloroethene		102.7	69.6	139.4
Methylene chloride		108.5	73.3	121.1
trans-1,2-Dichloroethene		112.9	73.6	129.3
1,1-Dichloroethane		110.8	71.5	126.2
cis-1,2-Dichloroethene		118.9	76.6	122.1
Tetrahydrofuran		84.8	59.0	117.9
Chloroform		112.9	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		115.6	78.2	120.8
1,1,1-Trichloroethane		104.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		76.8	71.6	125.2
2-Hexanone		72.4	55.4	136.9
Carbon tetrachloride		103.7	72.6	133.0
Benzene		112.2	79.9	124.9
1,2-Dichloroethane		93.2	76.0	126.3
Trichloroethene		109.5	79.7	124.2
1,2-Dichloropropane		109.1	78.6	126.4
Bromodichloromethane		104.4	80.4	128.2
Dibromomethane		102.3	76.9	122.1
cis-1,3-Dichloropropene		102.8	79.8	129.9
Toluene		109.1	79.8	124.5
trans-1,3-Dichloropropene		93.2	74.0	131.3
1,1,2-Trichloroethane		98.3	78.7	123.1
Tetrachloroethene		110.3	74.5	124.5
trans-1,4-Dichloro-2-butene		89.6	68.6	135.4
Dibromochloromethane		106.1	74.6	127.2
1,2-Dibromoethane		98.0	70.3	133.7
Chlorobenzene		115.5	79.2	122.7
1,1,1,2-Tetrachloroethane		113.7	80.3	128.2
Ethylbenzene		115.3	79.5	129.1
p,m-Xylene		119.1	79.4	132.2
o-Xylene		116.7	80.2	131.0
Styrene		118.7	69.5	126.7
Isopropylbenzene		119.5	74.4	121.5
Bromoform		101.2	69.4	128.0
1,1,2,2-Tetrachloroethane		94.8	79.8	126.3
1,2,3-Trichloropropane		92.4	78.3	138.8
n-Propylbenzene		119.3	82.0	130.7
Bromobenzene		118.3	78.7	124.6
1,3,5-Trimethylbenzene		123.8	81.3	128.9
tert-Butylbenzene		114.5	80.7	128.9
1,2,4-Trimethylbenzene		123.3	81.4	130.8
sec-Butylbenzene		110.6	77.4	129.8
p-Isopropyltoluene		114.8	79.8	137.5
1,3-Dichlorobenzene		114.9	77.0	131.3
1,4-Dichlorobenzene		115.6	20.7	137.7
1,2-Dichlorobenzene		113.0	10.0	166.2
1,2,3-Trimethylbenzene		110.9	76.3	124.2
n-Butylbenzene		114.6	80.0	133.3
Hexachloroethane		107.3	23.8	138.1
1,2-Dibromo-3-chloropropane		80.2	21.2	189.4
1,2,4-Trichlorobenzene		113.7	27.4	143.4
1,2,3-Trichlorobenzene		108.5	75.4	131.4
Naphthalene		94.8	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		98.3	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		110.7	67.4	121.2	5.0	30.0
Acetone		93.7	29.9	161.5	14.5	30.0
Methyl iodide		106.1	68.8	116.4	2.3	30.0
Carbon disulfide		126.0	63.8	137.4	1.8	30.0
tert-Methyl butyl ether (MTBE)		104.1	73.2	122.4	8.0	30.0
Acrylonitrile		105.7	69.9	128.9	12.3	30.0
2-Butanone (MEK)		93.1	44.0	134.4	15.8	30.0
Dichlorodifluoromethane		106.5	10.0	222.8	2.9	30.0
Chloromethane		108.7	23.8	166.5	5.7	30.0
Vinyl chloride		113.7	43.5	149.1	5.3	30.0
Bromomethane		114.6	56.8	151.3	5.0	30.0
Chloroethane		111.1	53.4	149.4	6.4	30.0
Trichlorofluoromethane		113.4	59.7	151.8	5.0	30.0
1,1-Dichloroethene		99.2	69.6	139.4	3.4	30.0
Methylene chloride		108.0	73.3	121.1	0.5	30.0
trans-1,2-Dichloroethene		109.8	73.6	129.3	2.8	30.0
1,1-Dichloroethane		109.2	71.5	126.2	1.5	30.0
cis-1,2-Dichloroethene		117.7	76.6	122.1	1.0	30.0
Tetrahydrofuran		100.3	59.0	117.9	16.8	30.0
Chloroform		111.7	78.4	124.0	1.1	30.0
Bromochloromethane		116.1	78.2	120.8	0.4	30.0
1,1,1-Trichloroethane		100.7	79.4	130.9	3.9	30.0
4-Methyl-2-pentanone (MIBK)		90.9	71.6	125.2	16.7	30.0
2-Hexanone		87.0	55.4	136.9	18.4	30.0
Carbon tetrachloride		98.6	72.6	133.0	5.0	30.0
Benzene		110.6	79.9	124.9	1.4	30.0
1,2-Dichloroethane		96.5	76.0	126.3	3.5	30.0
Trichloroethene		108.4	79.7	124.2	1.0	30.0
1,2-Dichloropropane		108.6	78.6	126.4	0.4	30.0
Bromodichloromethane		105.5	80.4	128.2	1.0	30.0
Dibromomethane		109.3	76.9	122.1	6.6	30.0
cis-1,3-Dichloropropene		105.6	79.8	129.9	2.7	30.0
Toluene		107.5	79.8	124.5	1.4	30.0
trans-1,3-Dichloropropene		99.0	74.0	131.3	6.1	30.0
1,1,2-Trichloroethane		104.6	78.7	123.1	6.2	30.0
Tetrachloroethene		107.5	74.5	124.5	2.6	30.0
trans-1,4-Dichloro-2-butene		100.0	68.6	135.4	10.9	30.0
Dibromochloromethane		109.1	74.6	127.2	2.8	30.0
1,2-Dibromoethane		103.5	70.3	133.7	5.5	30.0
Chlorobenzene		114.3	79.2	122.7	1.1	30.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		112.0	80.3	128.2	1.5	30.0
Ethylbenzene		112.5	79.5	129.1	2.4	30.0
p,m-Xylene		116.9	79.4	132.2	1.8	30.0
o-Xylene		114.9	80.2	131.0	1.5	30.0
Styrene		118.0	69.5	126.7	0.6	30.0
Isopropylbenzene		115.4	74.4	121.5	3.5	30.0
Bromoform		108.3	69.4	128.0	6.8	30.0
1,1,2,2-Tetrachloroethane		105.9	79.8	126.3	11.1	30.0
1,2,3-Trichloropropane		102.1	78.3	138.8	10.1	30.0
n-Propylbenzene		114.8	82.0	130.7	3.9	30.0
Bromobenzene		117.7	78.7	124.6	0.5	30.0
1,3,5-Trimethylbenzene		122.1	81.3	128.9	1.4	30.0
tert-Butylbenzene		112.7	80.7	128.9	1.6	30.0
1,2,4-Trimethylbenzene		122.3	81.4	130.8	0.8	30.0
sec-Butylbenzene		107.4	77.4	129.8	2.9	30.0
p-Isopropyltoluene		112.3	79.8	137.5	2.2	30.0
1,3-Dichlorobenzene		114.2	77.0	131.3	0.7	30.0
1,4-Dichlorobenzene		113.6	20.7	137.7	1.8	30.0
1,2-Dichlorobenzene		112.9	10.0	166.2	0.0	30.0
1,2,3-Trimethylbenzene		110.4	76.3	124.2	0.4	30.0
n-Butylbenzene		111.0	80.0	133.3	3.2	30.0
Hexachloroethane		108.2	23.8	138.1	0.9	30.0
1,2-Dibromo-3-chloropropane		95.5	21.2	189.4	17.5	30.0
1,2,4-Trichlorobenzene		117.7	27.4	143.4	3.5	30.0
1,2,3-Trichlorobenzene		113.6	75.4	131.4	4.6	30.0
Naphthalene		106.9	32.9	135.8	12.0	30.0
2-Methylnaphthalene		112.2	25.5	165.5	13.3	30.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		113.6	67.4	121.2
Acetone		82.8	29.9	161.5
Methyl iodide	*	118.7	68.8	116.4
Carbon disulfide		137.0	63.8	137.4
tert-Methyl butyl ether (MTBE)		104.3	73.2	122.4
Acrylonitrile		99.2	69.9	128.9
2-Butanone (MEK)		76.0	44.0	134.4
Dichlorodifluoromethane		112.6	10.0	222.8
Chloromethane		117.9	23.8	166.5
Vinyl chloride		121.0	43.5	149.1
Bromomethane		121.6	56.8	151.3
Chloroethane		118.4	53.4	149.4
Trichlorofluoromethane		119.9	59.7	151.8
1,1-Dichloroethene		106.2	69.6	139.4

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		113.7	73.3	121.1
trans-1,2-Dichloroethene		116.4	73.6	129.3
1,1-Dichloroethane		115.6	71.5	126.2
cis-1,2-Dichloroethene	*	124.9	76.6	122.1
Tetrahydrofuran		82.9	59.0	117.9
Chloroform		117.2	78.4	124.0
Bromochloromethane	*	121.0	78.2	120.8
1,1,1-Trichloroethane		107.6	79.4	130.9
4-Methyl-2-pentanone (MIBK)		80.9	71.6	125.2
2-Hexanone		74.8	55.4	136.9
Carbon tetrachloride		102.5	72.6	133.0
Benzene		113.4	79.9	124.9
1,2-Dichloroethane		96.9	76.0	126.3
Trichloroethene		109.6	79.7	124.2
1,2-Dichloropropane		111.5	78.6	126.4
Bromodichloromethane		106.6	80.4	128.2
Dibromomethane		107.7	76.9	122.1
cis-1,3-Dichloropropene		107.7	79.8	129.9
Toluene		110.2	79.8	124.5
trans-1,3-Dichloropropene		99.4	74.0	131.3
1,1,2-Trichloroethane		102.4	78.7	123.1
Tetrachloroethene		109.9	74.5	124.5
trans-1,4-Dichloro-2-butene		91.9	68.6	135.4
Dibromochloromethane		108.9	74.6	127.2
1,2-Dibromoethane		101.4	70.3	133.7
Chlorobenzene		116.4	79.2	122.7
1,1,1,2-Tetrachloroethane		114.6	80.3	128.2
Ethylbenzene		113.5	79.5	129.1
p,m-Xylene		118.6	79.4	132.2
o-Xylene		116.0	80.2	131.0
Styrene		119.4	69.5	126.7
Isopropylbenzene		117.1	74.4	121.5
Bromoform		103.4	69.4	128.0
1,1,2,2-Tetrachloroethane		98.6	79.8	126.3
1,2,3-Trichloropropane		96.5	78.3	138.8
n-Propylbenzene		115.8	82.0	130.7
Bromobenzene		119.7	78.7	124.6
1,3,5-Trimethylbenzene		123.6	81.3	128.9
tert-Butylbenzene		114.4	80.7	128.9
1,2,4-Trimethylbenzene		123.2	81.4	130.8
sec-Butylbenzene		110.2	77.4	129.8
p-Isopropyltoluene		115.5	79.8	137.5
1,3-Dichlorobenzene		115.6	77.0	131.3
1,4-Dichlorobenzene		117.0	20.7	137.7
1,2-Dichlorobenzene		117.2	10.0	166.2
1,2,3-Trimethylbenzene		113.9	76.3	124.2

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		112.6	80.0	133.3
Hexachloroethane		112.3	23.8	138.1
1,2-Dibromo-3-chloropropane		87.5	21.2	189.4
1,2,4-Trichlorobenzene		119.7	27.4	143.4
1,2,3-Trichlorobenzene		112.4	75.4	131.4
Naphthalene		102.4	32.9	135.8
2-Methylnaphthalene		105.7	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		104.9	67.4	121.2	8.0	30.0
Acetone		79.0	29.9	161.5	4.4	30.0
Methyl iodide		100.7	68.8	116.4	16.4	30.0
Carbon disulfide		118.5	63.8	137.4	14.5	30.0
tert-Methyl butyl ether (MTBE)		96.4	73.2	122.4	7.9	30.0
Acrylonitrile		96.0	69.9	128.9	3.3	30.0
2-Butanone (MEK)		78.0	44.0	134.4	2.6	30.0
Dichlorodifluoromethane		99.8	10.0	222.8	12.1	30.0
Chloromethane		105.2	23.8	166.5	11.4	30.0
Vinyl chloride		104.2	43.5	149.1	14.9	30.0
Bromomethane		106.6	56.8	151.3	13.1	30.0
Chloroethane		103.1	53.4	149.4	13.8	30.0
Trichlorofluoromethane		104.4	59.7	151.8	13.8	30.0
1,1-Dichloroethene		91.0	69.6	139.4	15.4	30.0
Methylene chloride		100.9	73.3	121.1	11.9	30.0
trans-1,2-Dichloroethene		101.6	73.6	129.3	13.6	30.0
1,1-Dichloroethane		101.0	71.5	126.2	13.5	30.0
cis-1,2-Dichloroethene		108.4	76.6	122.1	14.2	30.0
Tetrahydrofuran		85.5	59.0	117.9	3.0	30.0
Chloroform		103.7	78.4	124.0	12.2	30.0
Bromochloromethane		107.0	78.2	120.8	12.3	30.0
1,1,1-Trichloroethane		93.1	79.4	130.9	14.5	30.0
4-Methyl-2-pentanone (MIBK)		81.3	71.6	125.2	0.5	30.0
2-Hexanone		76.1	55.4	136.9	1.6	30.0
Carbon tetrachloride		87.6	72.6	133.0	15.6	30.0
Benzene		98.9	79.9	124.9	13.7	30.0
1,2-Dichloroethane		86.4	76.0	126.3	11.5	30.0
Trichloroethene		95.0	79.7	124.2	14.3	30.0
1,2-Dichloropropane		97.3	78.6	126.4	13.6	30.0
Bromodichloromethane		95.4	80.4	128.2	11.1	30.0
Dibromomethane		97.1	76.9	122.1	10.3	30.0
cis-1,3-Dichloropropene		95.6	79.8	129.9	11.9	30.0
Toluene		96.7	79.8	124.5	13.0	30.0
trans-1,3-Dichloropropene		90.1	74.0	131.3	9.8	30.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		93.9	78.7	123.1	8.6	30.0
Tetrachloroethene		96.1	74.5	124.5	13.4	30.0
trans-1,4-Dichloro-2-butene		87.8	68.6	135.4	4.6	30.0
Dibromochloromethane		98.0	74.6	127.2	10.5	30.0
1,2-Dibromoethane		93.0	70.3	133.7	8.7	30.0
Chlorobenzene		103.1	79.2	122.7	12.2	30.0
1,1,1,2-Tetrachloroethane		99.4	80.3	128.2	14.2	30.0
Ethylbenzene		99.0	79.5	129.1	13.6	30.0
p,m-Xylene		102.1	79.4	132.2	14.9	30.0
o-Xylene		100.2	80.2	131.0	14.7	30.0
Styrene		104.5	69.5	126.7	13.3	30.0
Isopropylbenzene		100.5	74.4	121.5	15.3	30.0
Bromoform		94.5	69.4	128.0	9.0	30.0
1,1,2,2-Tetrachloroethane		94.9	79.8	126.3	3.9	30.0
1,2,3-Trichloropropane		88.7	78.3	138.8	8.4	30.0
n-Propylbenzene		99.7	82.0	130.7	14.9	30.0
Bromobenzene		105.3	78.7	124.6	12.8	30.0
1,3,5-Trimethylbenzene		106.3	81.3	128.9	15.0	30.0
tert-Butylbenzene		98.3	80.7	128.9	15.2	30.0
1,2,4-Trimethylbenzene		107.1	81.4	130.8	14.0	30.0
sec-Butylbenzene		94.2	77.4	129.8	15.7	30.0
p-Isopropyltoluene		98.9	79.8	137.5	15.5	30.0
1,3-Dichlorobenzene		100.7	77.0	131.3	13.8	30.0
1,4-Dichlorobenzene		101.5	20.7	137.7	14.3	30.0
1,2-Dichlorobenzene		102.2	10.0	166.2	13.6	30.0
1,2,3-Trimethylbenzene		99.0	76.3	124.2	14.0	30.0
n-Butylbenzene		95.6	80.0	133.3	16.4	30.0
Hexachloroethane		95.7	23.8	138.1	16.0	30.0
1,2-Dibromo-3-chloropropane		83.7	21.2	189.4	4.4	30.0
1,2,4-Trichlorobenzene		103.3	27.4	143.4	14.7	30.0
1,2,3-Trichlorobenzene		98.6	75.4	131.4	13.1	30.0
Naphthalene		94.4	32.9	135.8	8.2	30.0
2-Methylnaphthalene		96.7	25.5	165.5	9.0	30.0

Organics - Volatiles, Prep Batch ID: VS220607W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220607B9.BLKS07B

Run in Batch: 220607B9, Run Date: 06/08/2022 02:09, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.55	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220607B9.LCSS07B

Run in Batch: 220607B9, Run Date: 06/08/2022 01:07, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		100.7	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220607B9.LCSDS07B, Parent Sample ID: 220607B9.LCSS07B

Run in Batch: 220607B9, Run Date: 06/08/2022 01:28, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		96.8	70.0	130.0	3.9	30.0

Organics - Volatiles, Prep Batch ID: VS220608W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220608A9.BLKS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:47, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.45	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 11:46, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		96.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A9.LCSDS08A, Parent Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:06, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		94.2	70.0	130.0	2.5	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36584
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892 Task 0470B / Racer Lansing
Submitted: 06/02/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.5
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S36584 Submitted: 06/02/2022 08:15

Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30112892 Task 0470B / Racer Lansing

Initial Preservation Check: 06/02/2022 09:07 MMC

Preservation Recheck (E200.8): N/A

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S36584.01	250ml Plastic H2SO4	<2			
S36584.02	250ml Plastic H2SO4	<2			
S36584.03	250ml Plastic H2SO4	<2			
S36584.05	250ml Plastic H2SO4	<2			
S36584.06	250ml Plastic H2SO4	<2			
S36584.07	250ml Plastic H2SO4	<2			
S36584.08	250ml Plastic H2SO4	<2			
S36584.09	250ml Plastic H2SO4	<2			
S36584.10	250ml Plastic H2SO4	<2			

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

145708

CHAIN OF CUSTODY RECORD

Plant 2

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO: 347 777 5215 FAX NO: P.O. NO:
E-MAIL ADDRESS: Kaitlyn Hunt QUOTE NO:

INVOICE TO

CONTACT NAME: ☑ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Donald Richard / Donald Richard

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. FOR LAB USE ONLY	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane	VOCs	Total P, TKN, Nitrate
36584.01	6/1/22	10:30	MW-14-61_060122	GW	5	X	X		X				X	X	X
.02	6/1/22	1230	MW-19-123_060122	GW	5	X	X		X				X		X
.03	6/1/22	1405	MW-19-121_060122	GW	5	X	X		X				X		X
.04	6/1/22	1550	MW-16-74_060122	GW	3		X						X		
.05	6/1/22	9:40	TW-14-02_060122	GW	5	X	X		X				X	X	X
.06	6/1/22	11:15	MW-20-128_060122	GW	5	X	X		X				X		X
.07	6/1/22	12:40	MW-20-127_060122	GW	5	X	X		X				X		X
.08	6/1/22	13:55	TW-15-12_060122	GW	5	X	X		X				X		X
.09	6/1/22	15:45	PW-14-02_060122	GW	5	X	X		X				X	X	X
.10	6/1/22	—	DUP-05_060122	GW	5	X	X		X				X		X
.11	6/1/22	1715	MW-15-72_060122	GW	3		X						X	X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION ☑ Sampler	Donald Richard / Arcadis	DATE 6/1/2022	TIME 1830
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 6/2/22	TIME 0815
RECEIVED BY: SIGNATURE/ORGANIZATION	M Abbott	DATE 6/2/22	TIME 0815

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 2.5

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S36639.01(01)+QC01
Generated on 06/07/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36639.01
Project: 30112892.0370A
Collected Date(s): 06/02/2022
Submitted Date/Time: 06/03/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0370A

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Maya Murshak
Technical Director

Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
SW3015A	SW 846 Method 3015A Revision 1 February 2007

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36639.01	MW-12-13_060222	Groundwater	06/02/22 10:55

Analytical Laboratory Report

Lab Sample ID: S36639.01
Sample Tag: MW-12-13_060222
Collected Date/Time: 06/02/2022 10:55
Matrix: Groundwater
COC Reference: 150993

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	06/07/22 11:00	CCM	

Metals

Method: E200.8, Run Date: 06/07/22 13:16, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	0.006	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Quality Control Report

Report ID: S36639.01(01)+QC01
Generated on 06/07/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36639.01
Project: 30112892.0370A
Submitted Date/Time: 06/03/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0370A

QC Report Sections

Cover Page (Page 7)
Analysis Summary (Page 8)
Prep Batch Summary (Page 9)
Batch QC Results (Pages 10-11)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S36639.01
Sample Tag: MW-12-13_060222
Collected Date/Time: 06/02/2022 10:55
Matrix: Groundwater
COC Reference: 150993

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic	E200.8	06/07/22 13:16	MT4-22-0607A	MTD-060722-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/07/22 13:16	MT4-22-0607A	MTD-060722-1	No	BLK/LCS/MS/MSD
Copper	E200.8	06/07/22 13:16	MT4-22-0607A	MTD-060722-1	No	BLK/LCS/MS/MSD
Lead	E200.8	06/07/22 13:16	MT4-22-0607A	MTD-060722-1	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/07/22 13:16	MT4-22-0607A	MTD-060722-1	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/07/22 13:16	MT4-22-0607A	MTD-060722-1	No	BLK/LCS/MS/MSD

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-060722-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36639.01	Arsenic	E200.8	06/07/22 13:16	MT4-22-0607A
S36639.01	Chromium	E200.8	06/07/22 13:16	MT4-22-0607A
S36639.01	Copper	E200.8	06/07/22 13:16	MT4-22-0607A
S36639.01	Lead	E200.8	06/07/22 13:16	MT4-22-0607A
S36639.01	Nickel	E200.8	06/07/22 13:16	MT4-22-0607A
S36639.01	Vanadium	E200.8	06/07/22 13:16	MT4-22-0607A

Metals, Prep Batch ID: MTD-060722-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-22-0607A.022.LRB

Run in Batch: MT4-22-0607A, Run Date: 06/07/2022 12:32, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Nickel		ND	0.001	mg/L
Vanadium		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-0607A.020.LCS

Run in Batch: MT4-22-0607A, Run Date: 06/07/2022 12:27, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		98	85	115
Chromium		101	85	115
Copper		101	85	115
Lead		101	85	115
Nickel		100	85	115
Vanadium		101	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-22-0607A.043.MS, Parent Sample ID: S36604.03

Run in Batch: MT4-22-0607A, Run Date: 06/07/2022 13:18, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		100	75	125
Chromium		101	75	125
Copper		98	75	125
Lead		96	75	125
Nickel		98	75	125
Vanadium		101	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-22-0607A.068.MS, Parent Sample ID: S36361.13

Run in Batch: MT4-22-0607A, Run Date: 06/07/2022 14:07, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		108	75	125
Chromium		102	75	125
Copper		96	75	125
Lead		93	75	125
Nickel		97	75	125
Vanadium		103	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0607A.044.MSD, Parent Sample ID: MT4-22-0607A.043.MS

Run in Batch: MT4-22-0607A, Run Date: 06/07/2022 13:20, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		100	75	125	0	20
Chromium		100	75	125	0	20

Metals, Prep Batch ID: MTD-060722-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: MT4-22-0607A.044.MSD, Parent Sample ID: MT4-22-0607A.043.MS

Run in Batch: MT4-22-0607A, Run Date: 06/07/2022 13:20, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Copper		95	75	125	3	20
Lead		96	75	125	0	20
Nickel		98	75	125	1	20
Vanadium		101	75	125	0	20

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0607A.069.MSD, Parent Sample ID: MT4-22-0607A.068.MS

Run in Batch: MT4-22-0607A, Run Date: 06/07/2022 14:09, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		112	75	125	4	20
Chromium		99	75	125	3	20
Copper		92	75	125	4	20
Lead		94	75	125	0	20
Nickel		94	75	125	2	20
Vanadium		101	75	125	2	20

Merit Laboratories Login Checklist

Lab Set ID: S36639
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0370A
Submitted: 06/03/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.7
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[X] Yes	[ ] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[X] Yes	[ ] No	[ ] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S36639 Submitted: 06/03/2022 08:15
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0370A

Initial Preservation Check: 06/03/2022 08:29 MMC
Preservation Recheck (E200.8): N/A

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S36639.01	125ml Plastic HNO3	<2			

Plant 6

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

150993

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 947-777-5215 | CELL NO. | P.O. NO.
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com | QUOTE NO.

INVOICE TO

CONTACT NAME | ☒ SAME
COMPANY
ADDRESS
CITY | STATE | ZIP CODE
PHONE NO. | E-MAIL ADDRESS

PROJECT NO./NAME: 30112892.0370A
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOC 8260B SIMS	1,4-dioxane 8260B SIMS	Total Select Metals (As, Ni, Pb, V, Cr, Cu) SW6020A	Dissolved Select Metals (As, Ni, Pb, V, Cr, Cu) SW6020A
36639.01	6/2/22	1055	mw-12-13_060222	GW	1			1							X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis ☒ Sampler — DATE 6/2/22 — TIME 1645
RECEIVED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis — DATE 6/2/22 — TIME 1645
RELINQUISHED BY: SIGNATURE/ORGANIZATION Merit Drop Box — DATE 6/3/22 — TIME 0815
RECEIVED BY: SIGNATURE/ORGANIZATION M Childs — DATE 6/3/22 — TIME 0815

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis — DATE 6/2/22 — TIME 1730
RECEIVED BY: SIGNATURE/ORGANIZATION — DATE — TIME

SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

NOTES: TEMP. ON ARRIVAL 4.7

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Analytical Laboratory Report

Revised Report

Report ID: S36640.01(02)+QC01
Generated on 06/24/2022
Replaces report S36640.01(01) generated on 06/10/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36640.01-S36640.14
Project: 30112892 Task 0470B / Racer Lansing
Collected Date(s): 06/02/2022
Submitted Date/Time: 06/03/2022 08:15
Sampled by: Donald Richmond
P.O. #: 30112892 TASK 0470B

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QC Report (Pages 28-80)

Maya Murshak
Technical Director

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Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

VOC pH check result corrected.

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
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M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
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MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (14 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36640.01	MW-16-79_060222	Groundwater	06/02/22 10:00
S36640.02	MW-16-78_060222	Groundwater	06/02/22 11:50
S36640.03	MW-16-81_060222	Groundwater	06/02/22 13:15
S36640.04	MW-16-81_060222 MS	Groundwater	06/02/22 13:15
S36640.05	MW-16-81_060222 MSD	Groundwater	06/02/22 13:15
S36640.06	MW-16-82_060222	Groundwater	06/02/22 14:50
S36640.07	MW-16-84_060222	Groundwater	06/02/22 16:00
S36640.08	MW-19-122_060222	Groundwater	06/02/22 10:00
S36640.09	MW-19-124_060222	Groundwater	06/02/22 11:25
S36640.10	MW-19-120_060222	Groundwater	06/02/22 12:55
S36640.11	MW-17-86_060222	Groundwater	06/02/22 14:00
S36640.12	MW-19-117_060222	Groundwater	06/02/22 15:05
S36640.13	TB-01_060222	Water	06/02/22 15:25
S36640.14	Dup-04_060222	Groundwater	06/02/22 00:01

Lab Sample ID: S36640.01
Sample Tag: MW-16-79_060222
Collected Date/Time: 06/02/2022 10:00
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 19:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36640.02
Sample Tag: MW-16-78_060222
Collected Date/Time: 06/02/2022 11:50
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 18:49, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36640.03
Sample Tag: MW-16-81_060222
Collected Date/Time: 06/02/2022 13:15
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 18:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	143	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 16:07, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36640.03 (continued)

Sample Tag: MW-16-81_060222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 16:07, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36640.04
Sample Tag: MW-16-81_060222 MS
Collected Date/Time: 06/02/2022 13:15
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 23:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	204	1		ug/L	1	123-91-1	1E

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 12:57, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	57	10		ug/L	1	60-29-7	1
Acetone	Not detected	50		ug/L	1	67-64-1	1
Methyl iodide	59	1		ug/L	1	74-88-4	1
Carbon disulfide	69	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	52	5		ug/L	1	1634-04-4	1
Acrylonitrile	50	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	38	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	56	5		ug/L	1	75-71-8	1
Chloromethane	59	5		ug/L	1	74-87-3	1
Vinyl chloride	60	1		ug/L	1	75-01-4	1
Bromomethane	61	5		ug/L	1	74-83-9	1
Chloroethane	59	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	60	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	53	1		ug/L	1	75-35-4	1
Methylene chloride	57	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	58	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	58	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	62	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	59	1		ug/L	1	67-66-3	1
Bromochloromethane	61	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	54	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
Carbon tetrachloride	51	1		ug/L	1	56-23-5	1
Benzene	57	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	48	1		ug/L	1	107-06-2	1
Trichloroethene	55	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	56	1		ug/L	1	78-87-5	1
Bromodichloromethane	53	1		ug/L	1	75-27-4	1
Dibromomethane	54	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	54	1		ug/L	1	10061-01-5	1

1-Spiked at 50ug/L E-Concentration exceeds calibration range

Lab Sample ID: S36640.04 (continued)
Sample Tag: MW-16-81_060222 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 12:57, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Toluene	55	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	50	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	51	1		ug/L	1	79-00-5	1
Tetrachloroethene	55	1		ug/L	1	127-18-4	1
trans-1,4-Dichloro-2-butene	46	1		ug/L	1	110-57-6	1
Dibromochloromethane	54	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	51	1		ug/L	1	106-93-4	1
Chlorobenzene	58	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	57	1		ug/L	1	630-20-6	1
Ethylbenzene	57	1		ug/L	1	100-41-4	1
p,m-Xylene*	119	2		ug/L	1		1
o-Xylene	58	1		ug/L	1	95-47-6	1
Styrene	60	1		ug/L	1	100-42-5	1
Isopropylbenzene	59	5		ug/L	1	98-82-8	1
Bromoform	52	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	49	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	48	1		ug/L	1	96-18-4	1
n-Propylbenzene	58	1		ug/L	1	103-65-1	1
Bromobenzene	60	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	62	1		ug/L	1	108-67-8	1
tert-Butylbenzene	57	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	62	1		ug/L	1	95-63-6	1
sec-Butylbenzene	55	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	58	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	58	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	59	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	59	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	57	1		ug/L	1	526-73-8	1
n-Butylbenzene	56	1		ug/L	1	104-51-8	1
Hexachloroethane	56	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	44	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	60	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	56	5		ug/L	1	87-61-6	1
Naphthalene	51	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	53	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L

Lab Sample ID: S36640.05
Sample Tag: MW-16-81_060222 MSD
Collected Date/Time: 06/02/2022 13:15
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 23:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	201	1		ug/L	1	123-91-1	1E

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 13:21, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	52	10		ug/L	1	60-29-7	1
Acetone	Not detected	50		ug/L	1	67-64-1	1
Methyl iodide	50	1		ug/L	1	74-88-4	1
Carbon disulfide	59	5		ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	48	5		ug/L	1	1634-04-4	1
Acrylonitrile	48	2		ug/L	1	107-13-1	1
2-Butanone (MEK)	39	25		ug/L	1	78-93-3	1
Dichlorodifluoromethane	50	5		ug/L	1	75-71-8	1
Chloromethane	53	5		ug/L	1	74-87-3	1
Vinyl chloride	52	1		ug/L	1	75-01-4	1
Bromomethane	53	5		ug/L	1	74-83-9	1
Chloroethane	52	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	52	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	46	1		ug/L	1	75-35-4	1
Methylene chloride	50	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	51	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	50	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	54	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	52	1		ug/L	1	67-66-3	1
Bromochloromethane	53	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	47	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
2-Hexanone	Not detected	50		ug/L	1	591-78-6	1
Carbon tetrachloride	44	1		ug/L	1	56-23-5	1
Benzene	49	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	43	1		ug/L	1	107-06-2	1
Trichloroethene	48	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	49	1		ug/L	1	78-87-5	1
Bromodichloromethane	48	1		ug/L	1	75-27-4	1
Dibromomethane	49	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	48	1		ug/L	1	10061-01-5	1

1-Spiked at 50ug/L E-Concentration exceeds calibration range

Lab Sample ID: S36640.05 (continued)
Sample Tag: MW-16-81_060222 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 13:21, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Toluene	48	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	45	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	47	1		ug/L	1	79-00-5	1
Tetrachloroethene	48	1		ug/L	1	127-18-4	1
trans-1,4-Dichloro-2-butene	44	1		ug/L	1	110-57-6	1
Dibromochloromethane	49	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	46	1		ug/L	1	106-93-4	1
Chlorobenzene	52	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	50	1		ug/L	1	630-20-6	1
Ethylbenzene	49	1		ug/L	1	100-41-4	1
p,m-Xylene*	102	2		ug/L	1		1
o-Xylene	50	1		ug/L	1	95-47-6	1
Styrene	52	1		ug/L	1	100-42-5	1
Isopropylbenzene	50	5		ug/L	1	98-82-8	1
Bromoform	47	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	47	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	44	1		ug/L	1	96-18-4	1
n-Propylbenzene	50	1		ug/L	1	103-65-1	1
Bromobenzene	53	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	53	1		ug/L	1	108-67-8	1
tert-Butylbenzene	49	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	54	1		ug/L	1	95-63-6	1
sec-Butylbenzene	47	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	49	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	50	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	51	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	51	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	50	1		ug/L	1	526-73-8	1
n-Butylbenzene	48	1		ug/L	1	104-51-8	1
Hexachloroethane	48	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	42	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	52	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	49	5		ug/L	1	87-61-6	1
Naphthalene	47	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	48	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L

Lab Sample ID: S36640.06
Sample Tag: MW-16-82_060222
Collected Date/Time: 06/02/2022 14:50
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 18:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Lab Sample ID: S36640.07
Sample Tag: MW-16-84_060222
Collected Date/Time: 06/02/2022 16:00
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 19:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	44	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 18:05, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36640.07 (continued)

Sample Tag: MW-16-84_060222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 18:05, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36640.08
Sample Tag: MW-19-122_060222
Collected Date/Time: 06/02/2022 10:00
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 19:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Lab Sample ID: S36640.09
Sample Tag: MW-19-124_060222
Collected Date/Time: 06/02/2022 11:25
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 20:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	90	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S36640.10
Sample Tag: MW-19-120_060222
Collected Date/Time: 06/02/2022 12:55
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 20:36, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	12	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 18:28, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36640.10 (continued)
Sample Tag: MW-19-120_060222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 18:28, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36640.11
Sample Tag: MW-17-86_060222
Collected Date/Time: 06/02/2022 14:00
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 20:58, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	27	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 18:52, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36640.11 (continued)

Sample Tag: MW-17-86_060222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 18:52, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36640.12
Sample Tag: MW-19-117_060222
Collected Date/Time: 06/02/2022 15:05
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 21:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Lab Sample ID: S36640.13
Sample Tag: TB-01_060222
Collected Date/Time: 06/02/2022 15:25
Matrix: Water
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 15:19, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	3	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36640.13 (continued)

Sample Tag: TB-01_060222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 15:19, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36640.14
Sample Tag: Dup-04_060222
Collected Date/Time: 06/02/2022 00:01
Matrix: Groundwater
COC Reference: 150992

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 10:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 21:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	44	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 19:16, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36640.14 (continued)

Sample Tag: Dup-04_060222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 19:16, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Quality Control Report

Report ID: S36640.01(02)+QC01
Generated on 06/10/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36640.01-S36640.14
Project: 30112892 Task 0470B / Racer Lansing
Submitted Date/Time: 06/03/2022 08:15
Sampled by: Donald Richmond
P.O. #: 30112892 TASK 0470B

QC Report Sections

Cover Page (Page 28)
Analysis Summary (Pages 29-42)
Prep Batch Summary (Page 43)
Surrogates per Lab Sample (Pages 44-49)
Surrogates per QC Sample (Pages 50-53)
Internal Standards per Lab Sample (Pages 54-65)
Internal Standards per QC Sample (Pages 66-69)
Batch QC Results (Pages 70-80)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S36640.01
Sample Tag: MW-16-79_060222
Collected Date/Time: 06/02/2022 10:00
Matrix: Groundwater
COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 19:50	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36640.02
Sample Tag: MW-16-78_060222
Collected Date/Time: 06/02/2022 11:50
Matrix: Groundwater
COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 18:49	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36640.03
Sample Tag: MW-16-81_060222
Collected Date/Time: 06/02/2022 13:15
Matrix: Groundwater
COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 18:07	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 16:07	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36640.04
Sample Tag: MW-16-81_060222 MS
Collected Date/Time: 06/02/2022 13:15
Matrix: Groundwater
COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 23:26	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 12:57	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36640.05

Sample Tag: MW-16-81_060222 MSD

Collected Date/Time: 06/02/2022 13:15

Matrix: Groundwater

COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 23:46	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 13:21	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36640.06
Sample Tag: MW-16-82_060222
Collected Date/Time: 06/02/2022 14:50
Matrix: Groundwater
COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 18:20	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36640.07

Sample Tag: MW-16-84_060222

Collected Date/Time: 06/02/2022 16:00

Matrix: Groundwater

COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 19:32	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 18:05	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36640.08

Sample Tag: MW-19-122_060222

Collected Date/Time: 06/02/2022 10:00

Matrix: Groundwater

COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 19:53	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36640.09

Sample Tag: MW-19-124_060222

Collected Date/Time: 06/02/2022 11:25

Matrix: Groundwater

COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 20:15	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36640.10

Sample Tag: MW-19-120_060222

Collected Date/Time: 06/02/2022 12:55

Matrix: Groundwater

COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 20:36	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 18:28	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36640.11

Sample Tag: MW-17-86_060222

Collected Date/Time: 06/02/2022 14:00

Matrix: Groundwater

COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 20:58	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 18:52	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36640.12
Sample Tag: MW-19-117_060222
Collected Date/Time: 06/02/2022 15:05
Matrix: Groundwater
COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 21:20	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36640.13
Sample Tag: TB-01_060222
Collected Date/Time: 06/02/2022 15:25
Matrix: Water
COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 15:19	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36640.14

Sample Tag: Dup-04_060222

Collected Date/Time: 06/02/2022 00:01

Matrix: Groundwater

COC Reference: 150992

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 21:41	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 19:16	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF220608W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36640.03	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 16:07	220608A7
S36640.04	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 12:57	220608A7
S36640.05	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 13:21	220608A7
S36640.07	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 18:05	220608A7
S36640.10	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 18:28	220608A7
S36640.11	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 18:52	220608A7
S36640.13	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 15:19	220608A7
S36640.14	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 19:16	220608A7

Organics - Volatiles, Prep Batch ID: VS220607W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36640.02	1,4-Dioxane	SW8260B - SIM	06/07/22 18:49	220607A9
S36640.03	1,4-Dioxane	SW8260B - SIM	06/07/22 18:07	220607A9
S36640.04	1,4-Dioxane	SW8260B - SIM	06/07/22 23:26	220607A9
S36640.05	1,4-Dioxane	SW8260B - SIM	06/07/22 23:46	220607A9
S36640.07	1,4-Dioxane	SW8260B - SIM	06/07/22 19:32	220607A9
S36640.08	1,4-Dioxane	SW8260B - SIM	06/07/22 19:53	220607A9
S36640.09	1,4-Dioxane	SW8260B - SIM	06/07/22 20:15	220607A9
S36640.10	1,4-Dioxane	SW8260B - SIM	06/07/22 20:36	220607A9
S36640.11	1,4-Dioxane	SW8260B - SIM	06/07/22 20:58	220607A9
S36640.12	1,4-Dioxane	SW8260B - SIM	06/07/22 21:20	220607A9
S36640.14	1,4-Dioxane	SW8260B - SIM	06/07/22 21:41	220607A9

Organics - Volatiles, Prep Batch ID: VS220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36640.01	1,4-Dioxane	SW8260B - SIM	06/09/22 19:50	220609A9

Organics - Volatiles, Prep Batch ID: VS220610W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36640.06	1,4-Dioxane	SW8260B - SIM	06/10/22 18:20	220610A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36640.03

Sample Tag: MW-16-81_060222

Collected Date/Time: 06/02/2022 13:15

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 16:07, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.7**	80.0	124.0
1,2-Dichloroethane-D4		**100.7**	72.0	125.0
Toluene-D8		**98.8**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36640.07

Sample Tag: MW-16-84_060222

Collected Date/Time: 06/02/2022 16:00

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 18:05, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.5**	80.0	124.0
1,2-Dichloroethane-D4		**94.5**	72.0	125.0
Toluene-D8		**98.8**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36640.10

Sample Tag: MW-19-120_060222

Collected Date/Time: 06/02/2022 12:55

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 18:28, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.9**	80.0	124.0
1,2-Dichloroethane-D4		**94.0**	72.0	125.0
Toluene-D8		**99.8**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36640.11

Sample Tag: MW-17-86_060222

Collected Date/Time: 06/02/2022 14:00

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 18:52, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.0**	80.0	124.0
1,2-Dichloroethane-D4		**99.5**	72.0	125.0
Toluene-D8		**98.5**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36640.13

Sample Tag: TB-01_060222

Collected Date/Time: 06/02/2022 15:25

Matrix: Water

COC Reference: 150992

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 15:19, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.6**	80.0	124.0
1,2-Dichloroethane-D4		**96.5**	72.0	125.0
Toluene-D8		**98.2**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36640.14

Sample Tag: Dup-04_060222

Collected Date/Time: 06/02/2022 00:01

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 19:16, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.5**	80.0	124.0
1,2-Dichloroethane-D4		**96.4**	72.0	125.0
Toluene-D8		**98.1**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220608W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.2**	80.0	124.0
1,2-Dichloroethane-D4		**96.4**	72.0	125.0
Toluene-D8		**97.9**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.5**	80.0	124.0
1,2-Dichloroethane-D4		**96.2**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.6**	80.0	124.0
1,2-Dichloroethane-D4		**97.7**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.8**	80.0	124.0
1,2-Dichloroethane-D4		**100.5**	72.0	125.0
Toluene-D8		**100.0**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**106.1**	80.0	124.0
1,2-Dichloroethane-D4		**102.7**	72.0	125.0
Toluene-D8		**100.1**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220607W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220607A9.BLKS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 15:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220607A9.LCSDS07A, Parent Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:16, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220607A9.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220607A9, Run Date: 06/07/2022 23:26, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220607A9.3664005N, Parent Sample ID: 220607A9.3664004M

Run in Batch: 220607A9, Run Date: 06/07/2022 23:46, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS220609W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220609A9.BLKW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 13:23, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 10:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A9.LCSDW09A, Parent Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 11:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674209M, Parent Sample ID: S36742.08

Run in Batch: 220609A9, Run Date: 06/09/2022 11:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674307M, Parent Sample ID: S36743.06

Run in Batch: 220609A9, Run Date: 06/09/2022 12:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674210N, Parent Sample ID: 220609A9.3674209M

Run in Batch: 220609A9, Run Date: 06/09/2022 11:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674308N, Parent Sample ID: 220609A9.3674307M

Run in Batch: 220609A9, Run Date: 06/09/2022 12:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220610W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220610A9.BLKW01A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 16:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220610A9.LCSDW10A, Parent Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:19, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.01

Sample Tag: MW-16-79_060222

Collected Date/Time: 06/02/2022 10:00

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 19:50, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.02

Sample Tag: MW-16-78_060222

Collected Date/Time: 06/02/2022 11:50

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 18:49, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**95.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.03

Sample Tag: MW-16-81_060222

Collected Date/Time: 06/02/2022 13:15

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 18:07, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**94.8**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 16:07, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.3**	50.0	200.0
1,4-Difluorobenzene		**98.5**	50.0	200.0
Chlorobenzene-D5		**100.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.06

Sample Tag: MW-16-82_060222

Collected Date/Time: 06/02/2022 14:50

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 18:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**93.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.07

Sample Tag: MW-16-84_060222

Collected Date/Time: 06/02/2022 16:00

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 19:32, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**99.8**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 18:05, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**97.2**	50.0	200.0
1,4-Difluorobenzene		**98.2**	50.0	200.0
Chlorobenzene-D5		**97.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**96.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.08

Sample Tag: MW-19-122_060222

Collected Date/Time: 06/02/2022 10:00

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 19:53, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.09

Sample Tag: MW-19-124_060222

Collected Date/Time: 06/02/2022 11:25

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 20:15, Matrix: WW, Dilution: 10

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**124.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.10

Sample Tag: MW-19-120_060222

Collected Date/Time: 06/02/2022 12:55

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 20:36, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**89.0**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 18:28, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**95.6**	50.0	200.0
1,4-Difluorobenzene		**94.4**	50.0	200.0
Chlorobenzene-D5		**94.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.3**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.11

Sample Tag: MW-17-86_060222

Collected Date/Time: 06/02/2022 14:00

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 20:58, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.1**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 18:52, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**98.8**	50.0	200.0
1,4-Difluorobenzene		**100.4**	50.0	200.0
Chlorobenzene-D5		**101.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**102.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.12

Sample Tag: MW-19-117_060222

Collected Date/Time: 06/02/2022 15:05

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 21:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**92.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.13

Sample Tag: TB-01_060222

Collected Date/Time: 06/02/2022 15:25

Matrix: Water

COC Reference: 150992

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 15:19, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**94.7**	50.0	200.0
1,4-Difluorobenzene		**95.0**	50.0	200.0
Chlorobenzene-D5		**94.8**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36640.14

Sample Tag: Dup-04_060222

Collected Date/Time: 06/02/2022 00:01

Matrix: Groundwater

COC Reference: 150992

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 21:41, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**104.3**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 19:16, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**99.3**	50.0	200.0
1,4-Difluorobenzene		**100.1**	50.0	200.0
Chlorobenzene-D5		**101.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.9**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220608W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**95.5**	50.0	200.0
1,4-Difluorobenzene		**96.3**	50.0	200.0
Chlorobenzene-D5		**94.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.1**	50.0	200.0
1,4-Difluorobenzene		**99.0**	50.0	200.0
Chlorobenzene-D5		**98.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**98.6**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**98.3**	50.0	200.0
1,4-Difluorobenzene		**97.1**	50.0	200.0
Chlorobenzene-D5		**97.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.9**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**97.9**	50.0	200.0
1,4-Difluorobenzene		**99.3**	50.0	200.0
Chlorobenzene-D5		**99.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.3**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**97.1**	50.0	200.0
1,4-Difluorobenzene		**99.1**	50.0	200.0
Chlorobenzene-D5		**100.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220607W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220607A9.BLKS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**92.5**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 15:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**113.6**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220607A9.LCSDS07A, Parent Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:16, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**95.3**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220607A9.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220607A9, Run Date: 06/07/2022 23:26, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.3**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220607A9.3664005N, Parent Sample ID: 220607A9.3664004M

Run in Batch: 220607A9, Run Date: 06/07/2022 23:46, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.9**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220609W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220609A9.BLKW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 13:23, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 10:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**106.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A9.LCSDW09A, Parent Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 11:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**128.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674209M, Parent Sample ID: S36742.08

Run in Batch: 220609A9, Run Date: 06/09/2022 11:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**100.4**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674307M, Parent Sample ID: S36743.06

Run in Batch: 220609A9, Run Date: 06/09/2022 12:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**100.0**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674210N, Parent Sample ID: 220609A9.3674209M

Run in Batch: 220609A9, Run Date: 06/09/2022 11:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**100.9**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674308N, Parent Sample ID: 220609A9.3674307M

Run in Batch: 220609A9, Run Date: 06/09/2022 12:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**106.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220610W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220610A9.BLKW01A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 16:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**83.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220610A9.LCSDW10A, Parent Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:19, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**99.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220608W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		105.3	67.4	121.2
Acetone		81.0	29.9	161.5
Methyl iodide		108.6	68.8	116.4
Carbon disulfide		128.4	63.8	137.4
tert-Methyl butyl ether (MTBE)		96.1	73.2	122.4
Acrylonitrile		93.4	69.9	128.9
2-Butanone (MEK)		79.4	44.0	134.4
Dichlorodifluoromethane		109.6	10.0	222.8
Chloromethane		115.0	23.8	166.5
Vinyl chloride		119.8	43.5	149.1
Bromomethane		120.5	56.8	151.3
Chloroethane		118.5	53.4	149.4
Trichlorofluoromethane		119.2	59.7	151.8
1,1-Dichloroethene		102.7	69.6	139.4
Methylene chloride		108.5	73.3	121.1
trans-1,2-Dichloroethene		112.9	73.6	129.3
1,1-Dichloroethane		110.8	71.5	126.2
cis-1,2-Dichloroethene		118.9	76.6	122.1
Tetrahydrofuran		84.8	59.0	117.9
Chloroform		112.9	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		115.6	78.2	120.8
1,1,1-Trichloroethane		104.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		76.8	71.6	125.2
2-Hexanone		72.4	55.4	136.9
Carbon tetrachloride		103.7	72.6	133.0
Benzene		112.2	79.9	124.9
1,2-Dichloroethane		93.2	76.0	126.3
Trichloroethene		109.5	79.7	124.2
1,2-Dichloropropane		109.1	78.6	126.4
Bromodichloromethane		104.4	80.4	128.2
Dibromomethane		102.3	76.9	122.1
cis-1,3-Dichloropropene		102.8	79.8	129.9
Toluene		109.1	79.8	124.5
trans-1,3-Dichloropropene		93.2	74.0	131.3
1,1,2-Trichloroethane		98.3	78.7	123.1
Tetrachloroethene		110.3	74.5	124.5
trans-1,4-Dichloro-2-butene		89.6	68.6	135.4
Dibromochloromethane		106.1	74.6	127.2
1,2-Dibromoethane		98.0	70.3	133.7
Chlorobenzene		115.5	79.2	122.7
1,1,1,2-Tetrachloroethane		113.7	80.3	128.2
Ethylbenzene		115.3	79.5	129.1
p,m-Xylene		119.1	79.4	132.2
o-Xylene		116.7	80.2	131.0
Styrene		118.7	69.5	126.7
Isopropylbenzene		119.5	74.4	121.5
Bromoform		101.2	69.4	128.0
1,1,2,2-Tetrachloroethane		94.8	79.8	126.3
1,2,3-Trichloropropane		92.4	78.3	138.8
n-Propylbenzene		119.3	82.0	130.7
Bromobenzene		118.3	78.7	124.6
1,3,5-Trimethylbenzene		123.8	81.3	128.9
tert-Butylbenzene		114.5	80.7	128.9
1,2,4-Trimethylbenzene		123.3	81.4	130.8
sec-Butylbenzene		110.6	77.4	129.8
p-Isopropyltoluene		114.8	79.8	137.5
1,3-Dichlorobenzene		114.9	77.0	131.3
1,4-Dichlorobenzene		115.6	20.7	137.7
1,2-Dichlorobenzene		113.0	10.0	166.2
1,2,3-Trimethylbenzene		110.9	76.3	124.2
n-Butylbenzene		114.6	80.0	133.3
Hexachloroethane		107.3	23.8	138.1
1,2-Dibromo-3-chloropropane		80.2	21.2	189.4
1,2,4-Trichlorobenzene		113.7	27.4	143.4
1,2,3-Trichlorobenzene		108.5	75.4	131.4
Naphthalene		94.8	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		98.3	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		110.7	67.4	121.2	5.0	30.0
Acetone		93.7	29.9	161.5	14.5	30.0
Methyl iodide		106.1	68.8	116.4	2.3	30.0
Carbon disulfide		126.0	63.8	137.4	1.8	30.0
tert-Methyl butyl ether (MTBE)		104.1	73.2	122.4	8.0	30.0
Acrylonitrile		105.7	69.9	128.9	12.3	30.0
2-Butanone (MEK)		93.1	44.0	134.4	15.8	30.0
Dichlorodifluoromethane		106.5	10.0	222.8	2.9	30.0
Chloromethane		108.7	23.8	166.5	5.7	30.0
Vinyl chloride		113.7	43.5	149.1	5.3	30.0
Bromomethane		114.6	56.8	151.3	5.0	30.0
Chloroethane		111.1	53.4	149.4	6.4	30.0
Trichlorofluoromethane		113.4	59.7	151.8	5.0	30.0
1,1-Dichloroethene		99.2	69.6	139.4	3.4	30.0
Methylene chloride		108.0	73.3	121.1	0.5	30.0
trans-1,2-Dichloroethene		109.8	73.6	129.3	2.8	30.0
1,1-Dichloroethane		109.2	71.5	126.2	1.5	30.0
cis-1,2-Dichloroethene		117.7	76.6	122.1	1.0	30.0
Tetrahydrofuran		100.3	59.0	117.9	16.8	30.0
Chloroform		111.7	78.4	124.0	1.1	30.0
Bromochloromethane		116.1	78.2	120.8	0.4	30.0
1,1,1-Trichloroethane		100.7	79.4	130.9	3.9	30.0
4-Methyl-2-pentanone (MIBK)		90.9	71.6	125.2	16.7	30.0
2-Hexanone		87.0	55.4	136.9	18.4	30.0
Carbon tetrachloride		98.6	72.6	133.0	5.0	30.0
Benzene		110.6	79.9	124.9	1.4	30.0
1,2-Dichloroethane		96.5	76.0	126.3	3.5	30.0
Trichloroethene		108.4	79.7	124.2	1.0	30.0
1,2-Dichloropropane		108.6	78.6	126.4	0.4	30.0
Bromodichloromethane		105.5	80.4	128.2	1.0	30.0
Dibromomethane		109.3	76.9	122.1	6.6	30.0
cis-1,3-Dichloropropene		105.6	79.8	129.9	2.7	30.0
Toluene		107.5	79.8	124.5	1.4	30.0
trans-1,3-Dichloropropene		99.0	74.0	131.3	6.1	30.0
1,1,2-Trichloroethane		104.6	78.7	123.1	6.2	30.0
Tetrachloroethene		107.5	74.5	124.5	2.6	30.0
trans-1,4-Dichloro-2-butene		100.0	68.6	135.4	10.9	30.0
Dibromochloromethane		109.1	74.6	127.2	2.8	30.0
1,2-Dibromoethane		103.5	70.3	133.7	5.5	30.0
Chlorobenzene		114.3	79.2	122.7	1.1	30.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		112.0	80.3	128.2	1.5	30.0
Ethylbenzene		112.5	79.5	129.1	2.4	30.0
p,m-Xylene		116.9	79.4	132.2	1.8	30.0
o-Xylene		114.9	80.2	131.0	1.5	30.0
Styrene		118.0	69.5	126.7	0.6	30.0
Isopropylbenzene		115.4	74.4	121.5	3.5	30.0
Bromoform		108.3	69.4	128.0	6.8	30.0
1,1,2,2-Tetrachloroethane		105.9	79.8	126.3	11.1	30.0
1,2,3-Trichloropropane		102.1	78.3	138.8	10.1	30.0
n-Propylbenzene		114.8	82.0	130.7	3.9	30.0
Bromobenzene		117.7	78.7	124.6	0.5	30.0
1,3,5-Trimethylbenzene		122.1	81.3	128.9	1.4	30.0
tert-Butylbenzene		112.7	80.7	128.9	1.6	30.0
1,2,4-Trimethylbenzene		122.3	81.4	130.8	0.8	30.0
sec-Butylbenzene		107.4	77.4	129.8	2.9	30.0
p-Isopropyltoluene		112.3	79.8	137.5	2.2	30.0
1,3-Dichlorobenzene		114.2	77.0	131.3	0.7	30.0
1,4-Dichlorobenzene		113.6	20.7	137.7	1.8	30.0
1,2-Dichlorobenzene		112.9	10.0	166.2	0.0	30.0
1,2,3-Trimethylbenzene		110.4	76.3	124.2	0.4	30.0
n-Butylbenzene		111.0	80.0	133.3	3.2	30.0
Hexachloroethane		108.2	23.8	138.1	0.9	30.0
1,2-Dibromo-3-chloropropane		95.5	21.2	189.4	17.5	30.0
1,2,4-Trichlorobenzene		117.7	27.4	143.4	3.5	30.0
1,2,3-Trichlorobenzene		113.6	75.4	131.4	4.6	30.0
Naphthalene		106.9	32.9	135.8	12.0	30.0
2-Methylnaphthalene		112.2	25.5	165.5	13.3	30.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		113.6	67.4	121.2
Acetone		82.8	29.9	161.5
Methyl iodide	*	118.7	68.8	116.4
Carbon disulfide		137.0	63.8	137.4
tert-Methyl butyl ether (MTBE)		104.3	73.2	122.4
Acrylonitrile		99.2	69.9	128.9
2-Butanone (MEK)		76.0	44.0	134.4
Dichlorodifluoromethane		112.6	10.0	222.8
Chloromethane		117.9	23.8	166.5
Vinyl chloride		121.0	43.5	149.1
Bromomethane		121.6	56.8	151.3
Chloroethane		118.4	53.4	149.4
Trichlorofluoromethane		119.9	59.7	151.8
1,1-Dichloroethene		106.2	69.6	139.4

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		113.7	73.3	121.1
trans-1,2-Dichloroethene		116.4	73.6	129.3
1,1-Dichloroethane		115.6	71.5	126.2
cis-1,2-Dichloroethene	*	124.9	76.6	122.1
Tetrahydrofuran		82.9	59.0	117.9
Chloroform		117.2	78.4	124.0
Bromochloromethane	*	121.0	78.2	120.8
1,1,1-Trichloroethane		107.6	79.4	130.9
4-Methyl-2-pentanone (MIBK)		80.9	71.6	125.2
2-Hexanone		74.8	55.4	136.9
Carbon tetrachloride		102.5	72.6	133.0
Benzene		113.4	79.9	124.9
1,2-Dichloroethane		96.9	76.0	126.3
Trichloroethene		109.6	79.7	124.2
1,2-Dichloropropane		111.5	78.6	126.4
Bromodichloromethane		106.6	80.4	128.2
Dibromomethane		107.7	76.9	122.1
cis-1,3-Dichloropropene		107.7	79.8	129.9
Toluene		110.2	79.8	124.5
trans-1,3-Dichloropropene		99.4	74.0	131.3
1,1,2-Trichloroethane		102.4	78.7	123.1
Tetrachloroethene		109.9	74.5	124.5
trans-1,4-Dichloro-2-butene		91.9	68.6	135.4
Dibromochloromethane		108.9	74.6	127.2
1,2-Dibromoethane		101.4	70.3	133.7
Chlorobenzene		116.4	79.2	122.7
1,1,1,2-Tetrachloroethane		114.6	80.3	128.2
Ethylbenzene		113.5	79.5	129.1
p,m-Xylene		118.6	79.4	132.2
o-Xylene		116.0	80.2	131.0
Styrene		119.4	69.5	126.7
Isopropylbenzene		117.1	74.4	121.5
Bromoform		103.4	69.4	128.0
1,1,2,2-Tetrachloroethane		98.6	79.8	126.3
1,2,3-Trichloropropane		96.5	78.3	138.8
n-Propylbenzene		115.8	82.0	130.7
Bromobenzene		119.7	78.7	124.6
1,3,5-Trimethylbenzene		123.6	81.3	128.9
tert-Butylbenzene		114.4	80.7	128.9
1,2,4-Trimethylbenzene		123.2	81.4	130.8
sec-Butylbenzene		110.2	77.4	129.8
p-Isopropyltoluene		115.5	79.8	137.5
1,3-Dichlorobenzene		115.6	77.0	131.3
1,4-Dichlorobenzene		117.0	20.7	137.7
1,2-Dichlorobenzene		117.2	10.0	166.2
1,2,3-Trimethylbenzene		113.9	76.3	124.2

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		112.6	80.0	133.3
Hexachloroethane		112.3	23.8	138.1
1,2-Dibromo-3-chloropropane		87.5	21.2	189.4
1,2,4-Trichlorobenzene		119.7	27.4	143.4
1,2,3-Trichlorobenzene		112.4	75.4	131.4
Naphthalene		102.4	32.9	135.8
2-Methylnaphthalene		105.7	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		104.9	67.4	121.2	8.0	30.0
Acetone		79.0	29.9	161.5	4.4	30.0
Methyl iodide		100.7	68.8	116.4	16.4	30.0
Carbon disulfide		118.5	63.8	137.4	14.5	30.0
tert-Methyl butyl ether (MTBE)		96.4	73.2	122.4	7.9	30.0
Acrylonitrile		96.0	69.9	128.9	3.3	30.0
2-Butanone (MEK)		78.0	44.0	134.4	2.6	30.0
Dichlorodifluoromethane		99.8	10.0	222.8	12.1	30.0
Chloromethane		105.2	23.8	166.5	11.4	30.0
Vinyl chloride		104.2	43.5	149.1	14.9	30.0
Bromomethane		106.6	56.8	151.3	13.1	30.0
Chloroethane		103.1	53.4	149.4	13.8	30.0
Trichlorofluoromethane		104.4	59.7	151.8	13.8	30.0
1,1-Dichloroethene		91.0	69.6	139.4	15.4	30.0
Methylene chloride		100.9	73.3	121.1	11.9	30.0
trans-1,2-Dichloroethene		101.6	73.6	129.3	13.6	30.0
1,1-Dichloroethane		101.0	71.5	126.2	13.5	30.0
cis-1,2-Dichloroethene		108.4	76.6	122.1	14.2	30.0
Tetrahydrofuran		85.5	59.0	117.9	3.0	30.0
Chloroform		103.7	78.4	124.0	12.2	30.0
Bromochloromethane		107.0	78.2	120.8	12.3	30.0
1,1,1-Trichloroethane		93.1	79.4	130.9	14.5	30.0
4-Methyl-2-pentanone (MIBK)		81.3	71.6	125.2	0.5	30.0
2-Hexanone		76.1	55.4	136.9	1.6	30.0
Carbon tetrachloride		87.6	72.6	133.0	15.6	30.0
Benzene		98.9	79.9	124.9	13.7	30.0
1,2-Dichloroethane		86.4	76.0	126.3	11.5	30.0
Trichloroethene		95.0	79.7	124.2	14.3	30.0
1,2-Dichloropropane		97.3	78.6	126.4	13.6	30.0
Bromodichloromethane		95.4	80.4	128.2	11.1	30.0
Dibromomethane		97.1	76.9	122.1	10.3	30.0
cis-1,3-Dichloropropene		95.6	79.8	129.9	11.9	30.0
Toluene		96.7	79.8	124.5	13.0	30.0
trans-1,3-Dichloropropene		90.1	74.0	131.3	9.8	30.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		93.9	78.7	123.1	8.6	30.0
Tetrachloroethene		96.1	74.5	124.5	13.4	30.0
trans-1,4-Dichloro-2-butene		87.8	68.6	135.4	4.6	30.0
Dibromochloromethane		98.0	74.6	127.2	10.5	30.0
1,2-Dibromoethane		93.0	70.3	133.7	8.7	30.0
Chlorobenzene		103.1	79.2	122.7	12.2	30.0
1,1,1,2-Tetrachloroethane		99.4	80.3	128.2	14.2	30.0
Ethylbenzene		99.0	79.5	129.1	13.6	30.0
p,m-Xylene		102.1	79.4	132.2	14.9	30.0
o-Xylene		100.2	80.2	131.0	14.7	30.0
Styrene		104.5	69.5	126.7	13.3	30.0
Isopropylbenzene		100.5	74.4	121.5	15.3	30.0
Bromoform		94.5	69.4	128.0	9.0	30.0
1,1,2,2-Tetrachloroethane		94.9	79.8	126.3	3.9	30.0
1,2,3-Trichloropropane		88.7	78.3	138.8	8.4	30.0
n-Propylbenzene		99.7	82.0	130.7	14.9	30.0
Bromobenzene		105.3	78.7	124.6	12.8	30.0
1,3,5-Trimethylbenzene		106.3	81.3	128.9	15.0	30.0
tert-Butylbenzene		98.3	80.7	128.9	15.2	30.0
1,2,4-Trimethylbenzene		107.1	81.4	130.8	14.0	30.0
sec-Butylbenzene		94.2	77.4	129.8	15.7	30.0
p-Isopropyltoluene		98.9	79.8	137.5	15.5	30.0
1,3-Dichlorobenzene		100.7	77.0	131.3	13.8	30.0
1,4-Dichlorobenzene		101.5	20.7	137.7	14.3	30.0
1,2-Dichlorobenzene		102.2	10.0	166.2	13.6	30.0
1,2,3-Trimethylbenzene		99.0	76.3	124.2	14.0	30.0
n-Butylbenzene		95.6	80.0	133.3	16.4	30.0
Hexachloroethane		95.7	23.8	138.1	16.0	30.0
1,2-Dibromo-3-chloropropane		83.7	21.2	189.4	4.4	30.0
1,2,4-Trichlorobenzene		103.3	27.4	143.4	14.7	30.0
1,2,3-Trichlorobenzene		98.6	75.4	131.4	13.1	30.0
Naphthalene		94.4	32.9	135.8	8.2	30.0
2-Methylnaphthalene		96.7	25.5	165.5	9.0	30.0

Organics - Volatiles, Prep Batch ID: VS220607W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220607A9.BLKS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.50	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 15:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		99.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220607A9.LCSDS07A, Parent Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:16, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		101.6	70.0	130.0	1.7	30.0

Matrix Spike (MS)

Lab Sample ID: 220607A9.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220607A9, Run Date: 06/07/2022 23:26, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		122.4	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220607A9.3664005N, Parent Sample ID: 220607A9.3664004M

Run in Batch: 220607A9, Run Date: 06/07/2022 23:46, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		116.6	70.0	130.0	1.4	30.0

Organics - Volatiles, Prep Batch ID: VS220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220609A9.BLKW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 13:23, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.38	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 10:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		95.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A9.LCSDW09A, Parent Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 11:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		97.1	70.0	130.0	1.9	30.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674209M, Parent Sample ID: S36742.08

Run in Batch: 220609A9, Run Date: 06/09/2022 11:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		103.1	70.0	130.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674307M, Parent Sample ID: S36743.06

Run in Batch: 220609A9, Run Date: 06/09/2022 12:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		116.0	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674210N, Parent Sample ID: 220609A9.3674209M

Run in Batch: 220609A9, Run Date: 06/09/2022 11:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.5	70.0	130.0	2.6	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674308N, Parent Sample ID: 220609A9.3674307M

Run in Batch: 220609A9, Run Date: 06/09/2022 12:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		107.7	70.0	130.0	3.0	30.0

Organics - Volatiles, Prep Batch ID: VS220610W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220610A9.BLKW01A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.35	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 16:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		119.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220610A9.LCSDW10A, Parent Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:19, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		98.6	70.0	130.0	19.0	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36640
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892 Task 0470B / Racer Lansing
Submitted: 06/03/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.7
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[X] Yes	[ ] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 01 150992

CHAIN OF CUSTODY RECORD

Plant 2

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 947 777 5215 CELL NO.: P.O. NO.:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO:

INVOICE TO

CONTACT NAME: ☑ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Donald Richard / Donald Richard

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG / IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4 Dioxane	VOCs	Special Instructions
36640.01	6/2/22	1000	MW-16-79_060222	GW	3		X						X		
.02	6/2/22	1150	MW-16-78_060222	GW	3		X						X		
.03/.04/.05	6/2/22	1315	MW-16-81_060222	GW	9		X						X	X	← MS/MSD Taken
.06	6/2/22	1450	MW-16-82_060222	GW	3		X						X		
.07	6/2/22	1600	MW-16-84_060222	GW	3		X						X	X	
.08	6/2/22	10:00	MW-19-122_060222	GW	3		X						X		
.09	6/2/22	11:25	MW-19-124_060222	GW	3		X						X		
.10	6/2/22	12:55	MW-19-120_060222	GW	3		X						X	X	
.11	6/2/22	14:00	MW-17-86_060222	GW	3		X						X	X	
.12	6/2/22	15:05	MW-19-117_060222	GW	3		X						X		
.13	6/2/22	15:25	TB-01_060222	W	2		X							X	
.14	6/2/22	—	Dup-04_060222	GW	3		X						X	X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☑ Sampler Donald Richard / Arcadis	DATE 6/2/22	TIME 1730
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 6/3/22	TIME 0815
RECEIVED BY: SIGNATURE/ORGANIZATION	M Pilcato	DATE 6/3/22	TIME 0915
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	

NOTES: TEMP. ON ARRIVAL 4.7

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Analytical Laboratory Report

Revised Report

Report ID: S36699.01(02)+QC02
Generated on 06/24/2022
Replaces report S36699.01(01) generated on 06/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36699.01-S36699.10
Project: 30112892.0470A / Racer Lansing
Collected Date(s): 06/03/2022
Submitted Date/Time: 06/06/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

Table of Contents

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

VOC pH check result corrected.

VOCs removed from samples .06 - .09 per client request

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (10 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36699.01	MW-14-67_060322	Groundwater	06/03/22 10:15
S36699.02	MW-14-66_060322	Groundwater	06/03/22 11:15
S36699.03	MWBP-12-UST1-4_060322	Groundwater	06/03/22 13:05
S36699.04	MWBP-11-UST1-4_060322	Groundwater	06/03/22 14:05
S36699.05	MWBP-10-UST5-6_060322	Groundwater	06/03/22 15:10
S36699.06	MW-04-06R_060322	Groundwater	06/03/22 11:00
S36699.07	Dup-16_060322	Groundwater	06/03/22 00:01
S36699.08	MW-04-04R_060322	Groundwater	06/03/22 13:35
S36699.09	MW-04-01(6)_060322	Groundwater	06/03/22 15:25
S36699.10	TB-02_060322	Groundwater	06/03/22 00:01

Lab Sample ID: S36699.01
Sample Tag: MW-14-67_060322
Collected Date/Time: 06/03/2022 10:15
Matrix: Groundwater
COC Reference: 150994

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Metals

Method: E200.8, Run Date: 06/20/22 17:04, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S36699.02
Sample Tag: MW-14-66_060322
Collected Date/Time: 06/03/2022 11:15
Matrix: Groundwater
COC Reference: 150994

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Metals

Method: E200.8, Run Date: 06/20/22 17:05, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.003	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S36699.03
Sample Tag: MWBP-12-UST1-4_060322
Collected Date/Time: 06/03/2022 13:05
Matrix: Groundwater
COC Reference: 150994

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	5.6	IR
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Metals

Method: E200.8, Run Date: 06/20/22 17:06, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.003	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 18:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	

Lab Sample ID: S36699.03 (continued)
Sample Tag: MWBP-12-UST1-4_060322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 18:46, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	1	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36699.04
Sample Tag: MWBP-11-UST1-4_060322
Collected Date/Time: 06/03/2022 14:05
Matrix: Groundwater
COC Reference: 150994

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	5.6	IR
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Metals

Method: E200.8, Run Date: 06/20/22 17:07, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.006	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 05:31, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	

Lab Sample ID: S36699.04 (continued)
Sample Tag: MWBP-11-UST1-4_060322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 05:31, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36699.05
Sample Tag: MWBP-10-UST5-6_060322
Collected Date/Time: 06/03/2022 15:10
Matrix: Groundwater
COC Reference: 150994

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	5.6	IR
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Metals

Method: E200.8, Run Date: 06/20/22 17:08, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.010	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 05:55, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	

Lab Sample ID: S36699.05 (continued)
Sample Tag: MWBP-10-UST5-6_060322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 05:55, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36699.06
Sample Tag: MW-04-06R_060322
Collected Date/Time: 06/03/2022 11:00
Matrix: Groundwater
COC Reference: 150994

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 18:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36699.07
Sample Tag: Dup-16_060322
Collected Date/Time: 06/03/2022 00:01
Matrix: Groundwater
COC Reference: 150994

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 14:34, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36699.08

Sample Tag: MW-04-04R_060322

Collected Date/Time: 06/03/2022 13:35

Matrix: Groundwater

COC Reference: 150994

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 14:55, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36699.09
Sample Tag: MW-04-01(6)_060322
Collected Date/Time: 06/03/2022 15:25
Matrix: Groundwater
COC Reference: 150994

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 15:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36699.10
Sample Tag: TB-02_060322
Collected Date/Time: 06/03/2022 00:01
Matrix: Groundwater
COC Reference: 150994

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 02:45, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36699.10 (continued)

Sample Tag: TB-02_060322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 02:45, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Quality Control Report

Report ID: S36699.01(02)+QC02
Generated on 06/24/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36699.01-S36699.10
Project: 30112892.0470A / Racer Lansing
Submitted Date/Time: 06/06/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

QC Report Sections

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Analysis Summary (Pages 21-30)
Prep Batch Summary (Page 31)
Surrogates per Lab Sample (Pages 32-35)
Surrogates per QC Sample (Pages 36-38)
Internal Standards per Lab Sample (Pages 39-46)
Internal Standards per QC Sample (Pages 47-49)
Batch QC Results (Pages 50-65)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S36699.01

Sample Tag: MW-14-67_060322

Collected Date/Time: 06/03/2022 10:15

Matrix: Groundwater

COC Reference: 150994

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic	E200.8	06/20/22 17:04	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:04	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:04	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:04	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:04	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:04	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD

Lab Sample ID: S36699.02

Sample Tag: MW-14-66_060322

Collected Date/Time: 06/03/2022 11:15

Matrix: Groundwater

COC Reference: 150994

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic	E200.8	06/20/22 17:05	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:05	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:05	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:05	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:05	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:05	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD

Lab Sample ID: S36699.03

Sample Tag: MWBP-12-UST1-4_060322

Collected Date/Time: 06/03/2022 13:05

Matrix: Groundwater

COC Reference: 150994

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic	E200.8	06/20/22 17:06	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:06	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:06	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:06	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:06	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:06	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 18:46	220609A7	VF220609W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36699.04

Sample Tag: MWBP-11-UST1-4_060322

Collected Date/Time: 06/03/2022 14:05

Matrix: Groundwater

COC Reference: 150994

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic	E200.8	06/20/22 17:07	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:07	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:07	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:07	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:07	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:07	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 05:31	220608B7	VF220608W4	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36699.05

Sample Tag: MWBP-10-UST5-6_060322

Collected Date/Time: 06/03/2022 15:10

Matrix: Groundwater

COC Reference: 150994

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic	E200.8	06/20/22 17:08	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:08	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:08	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:08	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:08	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:08	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 05:55	220608B7	VF220608W4	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36699.06

Sample Tag: MW-04-06R_060322

Collected Date/Time: 06/03/2022 11:00

Matrix: Groundwater

COC Reference: 150994

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 18:08	220608A9	VS220608W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36699.07

Sample Tag: Dup-16_060322

Collected Date/Time: 06/03/2022 00:01

Matrix: Groundwater

COC Reference: 150994

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 14:34	220608A9	VS220608W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36699.08

Sample Tag: MW-04-04R_060322

Collected Date/Time: 06/03/2022 13:35

Matrix: Groundwater

COC Reference: 150994

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 14:55	220608A9	VS220608W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36699.09

Sample Tag: MW-04-01(6)_060322

Collected Date/Time: 06/03/2022 15:25

Matrix: Groundwater

COC Reference: 150994

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 15:16	220608A9	VS220608W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36699.10

Sample Tag: TB-02_060322

Collected Date/Time: 06/03/2022 00:01

Matrix: Groundwater

COC Reference: 150994

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 02:45	220608B7	VF220608W4	Yes	BLK/LCS/LCSD/MS/MS

Metals, Prep Batch ID: MTD-062022-6

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36699.01	Arsenic	E200.8	06/20/22 17:04	MT4-22-0620C
S36699.01	Chromium	E200.8	06/20/22 17:04	MT4-22-0620C
S36699.01	Copper	E200.8	06/20/22 17:04	MT4-22-0620C
S36699.01	Lead	E200.8	06/20/22 17:04	MT4-22-0620C
S36699.01	Nickel	E200.8	06/20/22 17:04	MT4-22-0620C
S36699.01	Vanadium	E200.8	06/20/22 17:04	MT4-22-0620C
S36699.02	Arsenic	E200.8	06/20/22 17:05	MT4-22-0620C
S36699.02	Chromium	E200.8	06/20/22 17:05	MT4-22-0620C
S36699.02	Copper	E200.8	06/20/22 17:05	MT4-22-0620C
S36699.02	Lead	E200.8	06/20/22 17:05	MT4-22-0620C
S36699.02	Nickel	E200.8	06/20/22 17:05	MT4-22-0620C
S36699.02	Vanadium	E200.8	06/20/22 17:05	MT4-22-0620C
S36699.03	Arsenic	E200.8	06/20/22 17:06	MT4-22-0620C
S36699.03	Chromium	E200.8	06/20/22 17:06	MT4-22-0620C
S36699.03	Copper	E200.8	06/20/22 17:06	MT4-22-0620C
S36699.03	Lead	E200.8	06/20/22 17:06	MT4-22-0620C
S36699.03	Nickel	E200.8	06/20/22 17:06	MT4-22-0620C
S36699.03	Vanadium	E200.8	06/20/22 17:06	MT4-22-0620C
S36699.04	Arsenic	E200.8	06/20/22 17:07	MT4-22-0620C
S36699.04	Chromium	E200.8	06/20/22 17:07	MT4-22-0620C
S36699.04	Copper	E200.8	06/20/22 17:07	MT4-22-0620C
S36699.04	Lead	E200.8	06/20/22 17:07	MT4-22-0620C
S36699.04	Nickel	E200.8	06/20/22 17:07	MT4-22-0620C
S36699.04	Vanadium	E200.8	06/20/22 17:07	MT4-22-0620C
S36699.05	Arsenic	E200.8	06/20/22 17:08	MT4-22-0620C
S36699.05	Chromium	E200.8	06/20/22 17:08	MT4-22-0620C
S36699.05	Copper	E200.8	06/20/22 17:08	MT4-22-0620C
S36699.05	Lead	E200.8	06/20/22 17:08	MT4-22-0620C
S36699.05	Nickel	E200.8	06/20/22 17:08	MT4-22-0620C
S36699.05	Vanadium	E200.8	06/20/22 17:08	MT4-22-0620C

Organics - Volatiles, Prep Batch ID: VF220608W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36699.04	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 05:31	220608B7
S36699.05	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 05:55	220608B7
S36699.10	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 02:45	220608B7

Organics - Volatiles, Prep Batch ID: VF220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36699.03	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 18:46	220609A7

Organics - Volatiles, Prep Batch ID: VS220608W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36699.06	1,4-Dioxane	SW8260B - SIM	06/08/22 18:08	220608A9
S36699.07	1,4-Dioxane	SW8260B - SIM	06/08/22 14:34	220608A9
S36699.08	1,4-Dioxane	SW8260B - SIM	06/08/22 14:55	220608A9
S36699.09	1,4-Dioxane	SW8260B - SIM	06/08/22 15:16	220608A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36699.03

Sample Tag: MWBP-12-UST1-4_060322

Collected Date/Time: 06/03/2022 13:05

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609A7, Run Date: 06/09/2022 18:46, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.8**	80.0	124.0
1,2-Dichloroethane-D4		**86.8**	72.0	125.0
Toluene-D8		**97.5**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36699.04

Sample Tag: MWBP-11-UST1-4_060322

Collected Date/Time: 06/03/2022 14:05

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 05:31, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**106.2**	80.0	124.0
1,2-Dichloroethane-D4		**90.3**	72.0	125.0
Toluene-D8		**97.3**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36699.05

Sample Tag: MWBP-10-UST5-6_060322

Collected Date/Time: 06/03/2022 15:10

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 05:55, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.1**	80.0	124.0
1,2-Dichloroethane-D4		**88.2**	72.0	125.0
Toluene-D8		**99.0**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36699.10

Sample Tag: TB-02_060322

Collected Date/Time: 06/03/2022 00:01

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 02:45, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.1**	80.0	124.0
1,2-Dichloroethane-D4		**89.2**	72.0	125.0
Toluene-D8		**97.2**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220608W4

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608B7.BLKW08B

Run in Batch: 220608B7, Run Date: 06/09/2022 01:33, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.1**	80.0	124.0
1,2-Dichloroethane-D4		**86.9**	72.0	125.0
Toluene-D8		**97.3**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:11, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**102.5**	80.0	124.0
1,2-Dichloroethane-D4		**96.3**	72.0	125.0
Toluene-D8		**98.9**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608B7.LCSDW08B, Parent Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:35, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.9**	80.0	124.0
1,2-Dichloroethane-D4		**94.8**	72.0	125.0
Toluene-D8		**98.9**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220608B7.3655402M, Parent Sample ID: S36554.01

Run in Batch: 220608B7, Run Date: 06/08/2022 23:58, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.2**	80.0	124.0
1,2-Dichloroethane-D4		**93.7**	72.0	125.0
Toluene-D8		**98.5**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608B7.3655403N, Parent Sample ID: 220608B7.3655402M

Run in Batch: 220608B7, Run Date: 06/09/2022 00:22, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.9**	80.0	124.0
1,2-Dichloroethane-D4		**94.3**	72.0	125.0
Toluene-D8		**98.8**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220609W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.4**	80.0	124.0
1,2-Dichloroethane-D4		**85.3**	72.0	125.0
Toluene-D8		**97.4**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.0**	80.0	124.0
1,2-Dichloroethane-D4		**90.2**	72.0	125.0
Toluene-D8		**98.2**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**106.1**	80.0	124.0
1,2-Dichloroethane-D4		**93.2**	72.0	125.0
Toluene-D8		**98.8**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS220608W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220608A9.BLKS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:47, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 11:46, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A9.LCSDS08A, Parent Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:06, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36699.03

Sample Tag: MWBP-12-UST1-4_060322

Collected Date/Time: 06/03/2022 13:05

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609A7, Run Date: 06/09/2022 18:46, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**94.8**	50.0	200.0
1,4-Difluorobenzene		**93.2**	50.0	200.0
Chlorobenzene-D5		**91.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**91.2**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36699.04

Sample Tag: MWBP-11-UST1-4_060322

Collected Date/Time: 06/03/2022 14:05

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 05:31, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**97.4**	50.0	200.0
1,4-Difluorobenzene		**97.1**	50.0	200.0
Chlorobenzene-D5		**97.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36699.05

Sample Tag: MWBP-10-UST5-6_060322

Collected Date/Time: 06/03/2022 15:10

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 05:55, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**97.5**	50.0	200.0
1,4-Difluorobenzene		**95.6**	50.0	200.0
Chlorobenzene-D5		**96.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36699.06

Sample Tag: MW-04-06R_060322

Collected Date/Time: 06/03/2022 11:00

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 18:08, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**87.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36699.07

Sample Tag: Dup-16_060322

Collected Date/Time: 06/03/2022 00:01

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 14:34, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**77.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36699.08

Sample Tag: MW-04-04R_060322

Collected Date/Time: 06/03/2022 13:35

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 14:55, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36699.09

Sample Tag: MW-04-01(6)_060322

Collected Date/Time: 06/03/2022 15:25

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 15:16, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**81.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36699.10

Sample Tag: TB-02_060322

Collected Date/Time: 06/03/2022 00:01

Matrix: Groundwater

COC Reference: 150994

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 02:45, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**98.6**	50.0	200.0
1,4-Difluorobenzene		**96.1**	50.0	200.0
Chlorobenzene-D5		**95.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.1**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220608W4

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608B7.BLKW08B

Run in Batch: 220608B7, Run Date: 06/09/2022 01:33, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.6**	50.0	200.0
1,4-Difluorobenzene		**96.6**	50.0	200.0
Chlorobenzene-D5		**95.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.1**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:11, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.0**	50.0	200.0
1,4-Difluorobenzene		**103.0**	50.0	200.0
Chlorobenzene-D5		**104.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**103.2**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608B7.LCSDW08B, Parent Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:35, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**101.2**	50.0	200.0
1,4-Difluorobenzene		**100.9**	50.0	200.0
Chlorobenzene-D5		**100.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**101.5**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220608B7.3655402M, Parent Sample ID: S36554.01

Run in Batch: 220608B7, Run Date: 06/08/2022 23:58, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.3**	50.0	200.0
1,4-Difluorobenzene		**99.2**	50.0	200.0
Chlorobenzene-D5		**98.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.0**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608B7.3655403N, Parent Sample ID: 220608B7.3655402M

Run in Batch: 220608B7, Run Date: 06/09/2022 00:22, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.0**	50.0	200.0
1,4-Difluorobenzene		**97.8**	50.0	200.0
Chlorobenzene-D5		**99.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**101.0**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220609W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**96.8**	50.0	200.0
1,4-Difluorobenzene		**94.3**	50.0	200.0
Chlorobenzene-D5		**92.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**90.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.2**	50.0	200.0
1,4-Difluorobenzene		**97.8**	50.0	200.0
Chlorobenzene-D5		**96.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**97.9**	50.0	200.0
1,4-Difluorobenzene		**97.2**	50.0	200.0
Chlorobenzene-D5		**96.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.5**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220608W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220608A9.BLKS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:47, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**65.8**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 11:46, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**84.8**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A9.LCSDS08A, Parent Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:06, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**97.4**	50.0	200.0

Metals, Prep Batch ID: MTD-062022-6

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-22-0620C.018.LRB

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:00, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Nickel		ND	0.001	mg/L
Vanadium		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-0620C.017.LCS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 16:59, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	85	115
Chromium		105	85	115
Copper		103	85	115
Lead		101	85	115
Nickel		102	85	115
Vanadium		105	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-22-0620C.030.MS, Parent Sample ID: S36941.01

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:13, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	75	125
Chromium		102	75	125
Copper		100	75	125
Lead		102	75	125
Nickel		100	75	125
Vanadium		105	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-22-0620C.047.MS, Parent Sample ID: S36941.01

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:35, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Chromium		104	75	125
Copper		102	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0620C.031.MSD, Parent Sample ID: MT4-22-0620C.030.MS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:13, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		102	75	125	0	20
Chromium		104	75	125	2	20
Copper		100	75	125	0	20
Lead		100	75	125	1	20
Nickel		101	75	125	1	20
Vanadium		105	75	125	0	20

Metals, Prep Batch ID: MTD-062022-6 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0620C.048.MSD, Parent Sample ID: MT4-22-0620C.047.MS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:36, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chromium		109	75	125	5	20
Copper		107	75	125	5	20

Organics - Volatiles, Prep Batch ID: VF220608W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608B7.BLKW08B

Run in Batch: 220608B7, Run Date: 06/09/2022 01:33, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 220608B7.BLKW08B

Run in Batch: 220608B7, Run Date: 06/09/2022 01:33, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:11, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		101.8	67.4	121.2
Acetone		81.1	29.9	161.5
Methyl iodide		105.9	68.8	116.4
Carbon disulfide		120.3	63.8	137.4
tert-Methyl butyl ether (MTBE)		95.6	73.2	122.4
Acrylonitrile		93.1	69.9	128.9
2-Butanone (MEK)		75.4	44.0	134.4
Dichlorodifluoromethane		95.8	10.0	222.8
Chloromethane		103.1	23.8	166.5
Vinyl chloride		105.2	43.5	149.1
Bromomethane		108.4	56.8	151.3
Chloroethane		107.4	53.4	149.4
Trichlorofluoromethane		105.3	59.7	151.8
1,1-Dichloroethene		93.2	69.6	139.4
Methylene chloride		102.4	73.3	121.1
trans-1,2-Dichloroethene		103.3	73.6	129.3
1,1-Dichloroethane		103.9	71.5	126.2
cis-1,2-Dichloroethene		111.1	76.6	122.1
Tetrahydrofuran		85.1	59.0	117.9
Chloroform		104.6	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:11, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		108.7	78.2	120.8
1,1,1-Trichloroethane		95.3	79.4	130.9
4-Methyl-2-pentanone (MIBK)		80.5	71.6	125.2
2-Hexanone		76.4	55.4	136.9
Carbon tetrachloride		92.2	72.6	133.0
Benzene		105.6	79.9	124.9
1,2-Dichloroethane		88.6	76.0	126.3
Trichloroethene		102.0	79.7	124.2
1,2-Dichloropropane		103.7	78.6	126.4
Bromodichloromethane		97.8	80.4	128.2
Dibromomethane		99.9	76.9	122.1
cis-1,3-Dichloropropene		96.8	79.8	129.9
Toluene		102.2	79.8	124.5
trans-1,3-Dichloropropene		88.5	74.0	131.3
1,1,2-Trichloroethane		94.9	78.7	123.1
Tetrachloroethene		100.4	74.5	124.5
trans-1,4-Dichloro-2-butene		74.5	68.6	135.4
Dibromochloromethane		97.4	74.6	127.2
1,2-Dibromoethane		95.0	70.3	133.7
Chlorobenzene		107.1	79.2	122.7
1,1,1,2-Tetrachloroethane		103.2	80.3	128.2
Ethylbenzene		105.9	79.5	129.1
p,m-Xylene		110.1	79.4	132.2
o-Xylene		107.9	80.2	131.0
Styrene		110.0	69.5	126.7
Isopropylbenzene		109.6	74.4	121.5
Bromoform		94.1	69.4	128.0
1,1,2,2-Tetrachloroethane		95.7	79.8	126.3
1,2,3-Trichloropropane		90.8	78.3	138.8
n-Propylbenzene		107.2	82.0	130.7
Bromobenzene		110.7	78.7	124.6
1,3,5-Trimethylbenzene		114.0	81.3	128.9
tert-Butylbenzene		106.0	80.7	128.9
1,2,4-Trimethylbenzene		113.1	81.4	130.8
sec-Butylbenzene		104.2	77.4	129.8
p-Isopropyltoluene		107.3	79.8	137.5
1,3-Dichlorobenzene		107.6	77.0	131.3
1,4-Dichlorobenzene		107.5	20.7	137.7
1,2-Dichlorobenzene		107.4	10.0	166.2
1,2,3-Trimethylbenzene		105.2	76.3	124.2
n-Butylbenzene		104.0	80.0	133.3
Hexachloroethane		100.7	23.8	138.1
1,2-Dibromo-3-chloropropane		85.4	21.2	189.4
1,2,4-Trichlorobenzene		108.7	27.4	143.4
1,2,3-Trichlorobenzene		103.2	75.4	131.4
Naphthalene		96.7	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:11, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		98.4	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608B7.LCSDW08B, Parent Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:35, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		98.9	67.4	121.2	2.9	30.0
Acetone		84.1	29.9	161.5	3.7	30.0
Methyl iodide		99.5	68.8	116.4	6.2	30.0
Carbon disulfide		115.0	63.8	137.4	4.5	30.0
tert-Methyl butyl ether (MTBE)		93.2	73.2	122.4	2.5	30.0
Acrylonitrile		91.2	69.9	128.9	2.1	30.0
2-Butanone (MEK)		79.2	44.0	134.4	4.9	30.0
Dichlorodifluoromethane		96.7	10.0	222.8	0.9	30.0
Chloromethane		96.6	23.8	166.5	6.5	30.0
Vinyl chloride		99.8	43.5	149.1	5.3	30.0
Bromomethane		102.9	56.8	151.3	5.2	30.0
Chloroethane		101.8	53.4	149.4	5.4	30.0
Trichlorofluoromethane		99.0	59.7	151.8	6.2	30.0
1,1-Dichloroethene		88.6	69.6	139.4	5.1	30.0
Methylene chloride		97.5	73.3	121.1	4.9	30.0
trans-1,2-Dichloroethene		98.9	73.6	129.3	4.4	30.0
1,1-Dichloroethane		98.9	71.5	126.2	5.0	30.0
cis-1,2-Dichloroethene		107.1	76.6	122.1	3.6	30.0
Tetrahydrofuran		85.6	59.0	117.9	0.5	30.0
Chloroform		100.2	78.4	124.0	4.3	30.0
Bromochloromethane		104.5	78.2	120.8	3.9	30.0
1,1,1-Trichloroethane		90.7	79.4	130.9	4.9	30.0
4-Methyl-2-pentanone (MIBK)		79.1	71.6	125.2	1.7	30.0
2-Hexanone		76.5	55.4	136.9	0.1	30.0
Carbon tetrachloride		89.3	72.6	133.0	3.2	30.0
Benzene		101.8	79.9	124.9	3.6	30.0
1,2-Dichloroethane		87.7	76.0	126.3	1.1	30.0
Trichloroethene		98.3	79.7	124.2	3.6	30.0
1,2-Dichloropropane		100.0	78.6	126.4	3.6	30.0
Bromodichloromethane		95.5	80.4	128.2	2.4	30.0
Dibromomethane		99.1	76.9	122.1	0.7	30.0
cis-1,3-Dichloropropene		95.0	79.8	129.9	1.9	30.0
Toluene		99.5	79.8	124.5	2.7	30.0
trans-1,3-Dichloropropene		87.2	74.0	131.3	1.5	30.0
1,1,2-Trichloroethane		94.8	78.7	123.1	0.1	30.0
Tetrachloroethene		97.5	74.5	124.5	3.0	30.0
trans-1,4-Dichloro-2-butene		77.4	68.6	135.4	3.8	30.0
Dibromochloromethane		99.2	74.6	127.2	1.8	30.0
1,2-Dibromoethane		95.0	70.3	133.7	0.1	30.0
Chlorobenzene		105.3	79.2	122.7	1.7	30.0

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220608B7.LCSDW08B, Parent Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:35, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		102.7	80.3	128.2	0.5	30.0
Ethylbenzene		103.0	79.5	129.1	2.8	30.0
p,m-Xylene		107.1	79.4	132.2	2.8	30.0
o-Xylene		105.6	80.2	131.0	2.2	30.0
Styrene		108.4	69.5	126.7	1.4	30.0
Isopropylbenzene		106.7	74.4	121.5	2.7	30.0
Bromoform		95.1	69.4	128.0	1.0	30.0
1,1,2,2-Tetrachloroethane		96.6	79.8	126.3	1.0	30.0
1,2,3-Trichloropropane		90.0	78.3	138.8	1.0	30.0
n-Propylbenzene		105.0	82.0	130.7	2.1	30.0
Bromobenzene		107.3	78.7	124.6	3.1	30.0
1,3,5-Trimethylbenzene		111.7	81.3	128.9	2.0	30.0
tert-Butylbenzene		103.2	80.7	128.9	2.7	30.0
1,2,4-Trimethylbenzene		111.9	81.4	130.8	1.1	30.0
sec-Butylbenzene		100.0	77.4	129.8	4.1	30.0
p-Isopropyltoluene		102.6	79.8	137.5	4.5	30.0
1,3-Dichlorobenzene		103.6	77.0	131.3	3.8	30.0
1,4-Dichlorobenzene		103.7	20.7	137.7	3.6	30.0
1,2-Dichlorobenzene		105.1	10.0	166.2	2.2	30.0
1,2,3-Trimethylbenzene		102.2	76.3	124.2	2.9	30.0
n-Butylbenzene		99.2	80.0	133.3	4.7	30.0
Hexachloroethane		98.3	23.8	138.1	2.4	30.0
1,2-Dibromo-3-chloropropane		86.2	21.2	189.4	1.0	30.0
1,2,4-Trichlorobenzene		107.9	27.4	143.4	0.7	30.0
1,2,3-Trichlorobenzene		103.0	75.4	131.4	0.2	30.0
Naphthalene		95.6	32.9	135.8	1.1	30.0
2-Methylnaphthalene		100.6	25.5	165.5	2.2	30.0

Matrix Spike (MS)

Lab Sample ID: 220608B7.3655402M, Parent Sample ID: S36554.01

Run in Batch: 220608B7, Run Date: 06/08/2022 23:58, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		98.1	67.4	121.2
Acetone		79.8	29.9	161.5
Methyl iodide		105.8	68.8	116.4
Carbon disulfide		121.6	63.8	137.4
tert-Methyl butyl ether (MTBE)		94.3	73.2	122.4
Acrylonitrile		88.8	69.9	128.9
2-Butanone (MEK)		71.9	44.0	134.4
Dichlorodifluoromethane		99.2	10.0	222.8
Chloromethane		104.3	23.8	166.5
Vinyl chloride		105.0	43.5	149.1
Bromomethane		104.5	56.8	151.3
Chloroethane		102.7	53.4	149.4
Trichlorofluoromethane		101.6	59.7	151.8
1,1-Dichloroethene		98.3	69.6	139.4

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608B7.3655402M, Parent Sample ID: S36554.01

Run in Batch: 220608B7, Run Date: 06/08/2022 23:58, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		101.4	73.3	121.1
trans-1,2-Dichloroethene		104.5	73.6	129.3
1,1-Dichloroethane		102.8	71.5	126.2
cis-1,2-Dichloroethene		108.0	76.6	122.1
Tetrahydrofuran		83.9	59.0	117.9
Chloroform		104.7	78.4	124.0
Bromochloromethane		107.8	78.2	120.8
1,1,1-Trichloroethane		93.8	79.4	130.9
4-Methyl-2-pentanone (MIBK)		77.9	71.6	125.2
2-Hexanone		75.8	55.4	136.9
Carbon tetrachloride		94.1	72.6	133.0
Benzene		106.2	79.9	124.9
1,2-Dichloroethane		89.6	76.0	126.3
Trichloroethene		101.7	79.7	124.2
1,2-Dichloropropane		104.0	78.6	126.4
Bromodichloromethane		98.9	80.4	128.2
Dibromomethane		99.2	76.9	122.1
cis-1,3-Dichloropropene		97.6	79.8	129.9
Toluene		103.2	79.8	124.5
trans-1,3-Dichloropropene		90.0	74.0	131.3
1,1,2-Trichloroethane		95.0	78.7	123.1
Tetrachloroethene		100.9	74.5	124.5
trans-1,4-Dichloro-2-butene		78.2	68.6	135.4
Dibromochloromethane		101.1	74.6	127.2
1,2-Dibromoethane		96.4	70.3	133.7
Chlorobenzene		109.8	79.2	122.7
1,1,1,2-Tetrachloroethane		106.9	80.3	128.2
Ethylbenzene		107.7	79.5	129.1
p,m-Xylene		111.2	79.4	132.2
o-Xylene		109.9	80.2	131.0
Styrene		112.1	69.5	126.7
Isopropylbenzene		110.2	74.4	121.5
Bromoform		96.6	69.4	128.0
1,1,2,2-Tetrachloroethane		95.7	79.8	126.3
1,2,3-Trichloropropane		89.8	78.3	138.8
n-Propylbenzene		107.9	82.0	130.7
Bromobenzene		111.6	78.7	124.6
1,3,5-Trimethylbenzene		115.8	81.3	128.9
tert-Butylbenzene		108.6	80.7	128.9
1,2,4-Trimethylbenzene		116.7	81.4	130.8
sec-Butylbenzene		104.0	77.4	129.8
p-Isopropyltoluene		107.9	79.8	137.5
1,3-Dichlorobenzene		108.4	77.0	131.3
1,4-Dichlorobenzene		108.5	20.7	137.7
1,2-Dichlorobenzene		108.7	10.0	166.2
1,2,3-Trimethylbenzene		107.2	76.3	124.2

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608B7.3655402M, Parent Sample ID: S36554.01

Run in Batch: 220608B7, Run Date: 06/08/2022 23:58, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		104.3	80.0	133.3
Hexachloroethane		104.0	23.8	138.1
1,2-Dibromo-3-chloropropane		86.9	21.2	189.4
1,2,4-Trichlorobenzene		112.5	27.4	143.4
1,2,3-Trichlorobenzene		108.4	75.4	131.4
Naphthalene		99.2	32.9	135.8
2-Methylnaphthalene		105.7	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608B7.3655403N, Parent Sample ID: 220608B7.3655402M

Run in Batch: 220608B7, Run Date: 06/09/2022 00:22, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		100.6	67.4	121.2	2.5	30.0
Acetone		78.0	29.9	161.5	2.2	30.0
Methyl iodide		101.6	68.8	116.4	4.1	30.0
Carbon disulfide		120.0	63.8	137.4	1.3	30.0
tert-Methyl butyl ether (MTBE)		97.7	73.2	122.4	3.5	30.0
Acrylonitrile		93.0	69.9	128.9	4.6	30.0
2-Butanone (MEK)		75.3	44.0	134.4	4.6	30.0
Dichlorodifluoromethane		97.2	10.0	222.8	2.1	30.0
Chloromethane		102.0	23.8	166.5	2.3	30.0
Vinyl chloride		105.1	43.5	149.1	0.1	30.0
Bromomethane		105.3	56.8	151.3	0.7	30.0
Chloroethane		106.3	53.4	149.4	3.4	30.0
Trichlorofluoromethane		101.7	59.7	151.8	0.1	30.0
1,1-Dichloroethene		92.1	69.6	139.4	6.5	30.0
Methylene chloride		101.9	73.3	121.1	0.5	30.0
trans-1,2-Dichloroethene		102.8	73.6	129.3	1.7	30.0
1,1-Dichloroethane		101.2	71.5	126.2	1.4	30.0
cis-1,2-Dichloroethene		106.6	76.6	122.1	1.0	30.0
Tetrahydrofuran		85.9	59.0	117.9	2.3	30.0
Chloroform		103.3	78.4	124.0	1.4	30.0
Bromochloromethane		107.9	78.2	120.8	0.1	30.0
1,1,1-Trichloroethane		93.4	79.4	130.9	0.4	30.0
4-Methyl-2-pentanone (MIBK)		83.9	71.6	125.2	7.4	30.0
2-Hexanone		80.8	55.4	136.9	6.3	30.0
Carbon tetrachloride		92.9	72.6	133.0	1.3	30.0
Benzene		105.5	79.9	124.9	0.7	30.0
1,2-Dichloroethane		90.4	76.0	126.3	0.9	30.0
Trichloroethene		101.9	79.7	124.2	0.2	30.0
1,2-Dichloropropane		104.8	78.6	126.4	0.7	30.0
Bromodichloromethane		100.7	80.4	128.2	1.8	30.0
Dibromomethane		101.0	76.9	122.1	1.8	30.0
cis-1,3-Dichloropropene		99.7	79.8	129.9	2.1	30.0
Toluene		103.2	79.8	124.5	0.0	30.0
trans-1,3-Dichloropropene		93.0	74.0	131.3	3.3	30.0

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220608B7.3655403N, Parent Sample ID: 220608B7.3655402M

Run in Batch: 220608B7, Run Date: 06/09/2022 00:22, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		98.0	78.7	123.1	3.1	30.0
Tetrachloroethene		100.1	74.5	124.5	0.8	30.0
trans-1,4-Dichloro-2-butene		79.6	68.6	135.4	1.8	30.0
Dibromochloromethane		103.1	74.6	127.2	1.9	30.0
1,2-Dibromoethane		97.7	70.3	133.7	1.3	30.0
Chlorobenzene		108.2	79.2	122.7	1.5	30.0
1,1,1,2-Tetrachloroethane		106.4	80.3	128.2	0.5	30.0
Ethylbenzene		105.7	79.5	129.1	1.9	30.0
p,m-Xylene		109.1	79.4	132.2	1.9	30.0
o-Xylene		108.3	80.2	131.0	1.5	30.0
Styrene		111.5	69.5	126.7	0.6	30.0
Isopropylbenzene		108.5	74.4	121.5	1.6	30.0
Bromoform		99.0	69.4	128.0	2.5	30.0
1,1,2,2-Tetrachloroethane		99.4	79.8	126.3	3.8	30.0
1,2,3-Trichloropropane		95.5	78.3	138.8	6.1	30.0
n-Propylbenzene		106.5	82.0	130.7	1.3	30.0
Bromobenzene		111.9	78.7	124.6	0.2	30.0
1,3,5-Trimethylbenzene		114.5	81.3	128.9	1.1	30.0
tert-Butylbenzene		105.6	80.7	128.9	2.7	30.0
1,2,4-Trimethylbenzene		114.7	81.4	130.8	1.7	30.0
sec-Butylbenzene		100.7	77.4	129.8	3.2	30.0
p-Isopropyltoluene		104.6	79.8	137.5	3.1	30.0
1,3-Dichlorobenzene		106.5	77.0	131.3	1.8	30.0
1,4-Dichlorobenzene		105.9	20.7	137.7	2.4	30.0
1,2-Dichlorobenzene		107.5	10.0	166.2	1.1	30.0
1,2,3-Trimethylbenzene		104.1	76.3	124.2	2.9	30.0
n-Butylbenzene		99.8	80.0	133.3	4.4	30.0
Hexachloroethane		102.1	23.8	138.1	1.8	30.0
1,2-Dibromo-3-chloropropane		88.7	21.2	189.4	2.0	30.0
1,2,4-Trichlorobenzene		108.8	27.4	143.4	3.4	30.0
1,2,3-Trichlorobenzene		105.5	75.4	131.4	2.7	30.0
Naphthalene		97.5	32.9	135.8	1.7	30.0
2-Methylnaphthalene		102.1	25.5	165.5	3.4	30.0

Organics - Volatiles, Prep Batch ID: VF220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		97.8	67.4	121.2
Acetone		77.3	29.9	161.5
Methyl iodide		112.0	68.8	116.4
Carbon disulfide		130.6	63.8	137.4
tert-Methyl butyl ether (MTBE)		95.3	73.2	122.4
Acrylonitrile		92.1	69.9	128.9
2-Butanone (MEK)		72.2	44.0	134.4
Dichlorodifluoromethane		104.6	10.0	222.8
Chloromethane		110.0	23.8	166.5
Vinyl chloride		109.1	43.5	149.1
Bromomethane		105.1	56.8	151.3
Chloroethane		104.3	53.4	149.4
Trichlorofluoromethane		106.7	59.7	151.8
1,1-Dichloroethene		106.4	69.6	139.4
Methylene chloride		107.7	73.3	121.1
trans-1,2-Dichloroethene		109.7	73.6	129.3
1,1-Dichloroethane		108.8	71.5	126.2
cis-1,2-Dichloroethene		117.5	76.6	122.1
Tetrahydrofuran		85.6	59.0	117.9
Chloroform		109.1	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		113.5	78.2	120.8
1,1,1-Trichloroethane		100.8	79.4	130.9
4-Methyl-2-pentanone (MIBK)		77.6	71.6	125.2
2-Hexanone		74.0	55.4	136.9
Carbon tetrachloride		101.2	72.6	133.0
Benzene		113.8	79.9	124.9
1,2-Dichloroethane		92.7	76.0	126.3
Trichloroethene		111.3	79.7	124.2
1,2-Dichloropropane		110.8	78.6	126.4
Bromodichloromethane		103.5	80.4	128.2
Dibromomethane		105.0	76.9	122.1
cis-1,3-Dichloropropene		106.3	79.8	129.9
Toluene		110.6	79.8	124.5
trans-1,3-Dichloropropene		95.6	74.0	131.3
1,1,2-Trichloroethane		100.6	78.7	123.1
Tetrachloroethene		113.4	74.5	124.5
trans-1,4-Dichloro-2-butene	*	60.0	68.6	135.4
Dibromochloromethane		104.7	74.6	127.2
1,2-Dibromoethane		100.7	70.3	133.7
Chlorobenzene		117.5	79.2	122.7
1,1,1,2-Tetrachloroethane		112.2	80.3	128.2
Ethylbenzene		116.3	79.5	129.1
p,m-Xylene		119.7	79.4	132.2
o-Xylene		117.5	80.2	131.0
Styrene		121.1	69.5	126.7
Isopropylbenzene		119.7	74.4	121.5
Bromoform		97.7	69.4	128.0
1,1,2,2-Tetrachloroethane		101.0	79.8	126.3
1,2,3-Trichloropropane		93.3	78.3	138.8
n-Propylbenzene		118.3	82.0	130.7
Bromobenzene		119.9	78.7	124.6
1,3,5-Trimethylbenzene		125.7	81.3	128.9
tert-Butylbenzene		115.8	80.7	128.9
1,2,4-Trimethylbenzene		124.3	81.4	130.8
sec-Butylbenzene		113.5	77.4	129.8
p-Isopropyltoluene		116.4	79.8	137.5
1,3-Dichlorobenzene		113.4	77.0	131.3
1,4-Dichlorobenzene		115.3	20.7	137.7
1,2-Dichlorobenzene		114.9	10.0	166.2
1,2,3-Trimethylbenzene		111.4	76.3	124.2
n-Butylbenzene		115.6	80.0	133.3
Hexachloroethane		106.9	23.8	138.1
1,2-Dibromo-3-chloropropane		86.4	21.2	189.4
1,2,4-Trichlorobenzene		122.3	27.4	143.4
1,2,3-Trichlorobenzene		116.4	75.4	131.4
Naphthalene		104.3	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		108.6	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		102.5	67.4	121.2	4.6	30.0
Acetone		72.2	29.9	161.5	6.8	30.0
Methyl iodide		98.4	68.8	116.4	12.9	30.0
Carbon disulfide		116.6	63.8	137.4	11.3	30.0
tert-Methyl butyl ether (MTBE)		97.0	73.2	122.4	1.7	30.0
Acrylonitrile		97.3	69.9	128.9	5.4	30.0
2-Butanone (MEK)		83.5	44.0	134.4	14.6	30.0
Dichlorodifluoromethane		98.4	10.0	222.8	6.1	30.0
Chloromethane		106.6	23.8	166.5	3.1	30.0
Vinyl chloride		104.0	43.5	149.1	4.7	30.0
Bromomethane		105.2	56.8	151.3	0.2	30.0
Chloroethane		104.7	53.4	149.4	0.4	30.0
Trichlorofluoromethane		102.8	59.7	151.8	3.8	30.0
1,1-Dichloroethene		91.6	69.6	139.4	15.0	30.0
Methylene chloride		105.5	73.3	121.1	2.1	30.0
trans-1,2-Dichloroethene		104.6	73.6	129.3	4.8	30.0
1,1-Dichloroethane		105.3	71.5	126.2	3.3	30.0
cis-1,2-Dichloroethene		113.9	76.6	122.1	3.1	30.0
Tetrahydrofuran		91.8	59.0	117.9	7.0	30.0
Chloroform		105.5	78.4	124.0	3.4	30.0
Bromochloromethane		112.4	78.2	120.8	0.9	30.0
1,1,1-Trichloroethane		95.9	79.4	130.9	5.0	30.0
4-Methyl-2-pentanone (MIBK)		85.3	71.6	125.2	9.4	30.0
2-Hexanone		81.2	55.4	136.9	9.3	30.0
Carbon tetrachloride		96.2	72.6	133.0	5.0	30.0
Benzene		110.0	79.9	124.9	3.4	30.0
1,2-Dichloroethane		91.4	76.0	126.3	1.4	30.0
Trichloroethene		104.7	79.7	124.2	6.1	30.0
1,2-Dichloropropane		108.2	78.6	126.4	2.4	30.0
Bromodichloromethane		101.6	80.4	128.2	1.9	30.0
Dibromomethane		104.9	76.9	122.1	0.2	30.0
cis-1,3-Dichloropropene		102.9	79.8	129.9	3.2	30.0
Toluene		106.4	79.8	124.5	3.9	30.0
trans-1,3-Dichloropropene		95.3	74.0	131.3	0.3	30.0
1,1,2-Trichloroethane		101.6	78.7	123.1	1.0	30.0
Tetrachloroethene		108.0	74.5	124.5	4.9	30.0
trans-1,4-Dichloro-2-butene	*	62.3	68.6	135.4	3.8	30.0
Dibromochloromethane		103.4	74.6	127.2	1.2	30.0
1,2-Dibromoethane		101.6	70.3	133.7	0.9	30.0
Chlorobenzene		112.2	79.2	122.7	4.7	30.0

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		109.4	80.3	128.2	2.5	30.0
Ethylbenzene		110.6	79.5	129.1	5.0	30.0
p,m-Xylene		114.7	79.4	132.2	4.3	30.0
o-Xylene		112.2	80.2	131.0	4.6	30.0
Styrene		115.3	69.5	126.7	4.9	30.0
Isopropylbenzene		114.4	74.4	121.5	4.5	30.0
Bromoform		98.5	69.4	128.0	0.8	30.0
1,1,2,2-Tetrachloroethane		103.4	79.8	126.3	2.3	30.0
1,2,3-Trichloropropane		98.1	78.3	138.8	5.0	30.0
n-Propylbenzene		113.3	82.0	130.7	4.3	30.0
Bromobenzene		115.8	78.7	124.6	3.5	30.0
1,3,5-Trimethylbenzene		119.3	81.3	128.9	5.2	30.0
tert-Butylbenzene		108.6	80.7	128.9	6.4	30.0
1,2,4-Trimethylbenzene		119.1	81.4	130.8	4.3	30.0
sec-Butylbenzene		107.6	77.4	129.8	5.3	30.0
p-Isopropyltoluene		111.5	79.8	137.5	4.3	30.0
1,3-Dichlorobenzene		111.1	77.0	131.3	2.0	30.0
1,4-Dichlorobenzene		111.7	20.7	137.7	3.2	30.0
1,2-Dichlorobenzene		113.0	10.0	166.2	1.7	30.0
1,2,3-Trimethylbenzene		108.0	76.3	124.2	3.2	30.0
n-Butylbenzene		109.9	80.0	133.3	5.1	30.0
Hexachloroethane		100.8	23.8	138.1	5.8	30.0
1,2-Dibromo-3-chloropropane		91.4	21.2	189.4	5.7	30.0
1,2,4-Trichlorobenzene		116.0	27.4	143.4	5.3	30.0
1,2,3-Trichlorobenzene		111.2	75.4	131.4	4.6	30.0
Naphthalene		102.7	32.9	135.8	1.5	30.0
2-Methylnaphthalene		105.9	25.5	165.5	2.5	30.0

Organics - Volatiles, Prep Batch ID: VS220608W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220608A9.BLKS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:47, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.45	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 11:46, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		96.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A9.LCSDS08A, Parent Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:06, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		94.2	70.0	130.0	2.5	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36699
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470A / Racer Lansing
Submitted: 06/06/2022 08:15 Login User: PFD

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 5.6
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[X] Yes	[ ] No	[ ] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S36699 Submitted: 06/06/2022 08:15

Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30112892.0470A / Racer Lansing

Initial Preservation Check: 06/06/2022 09:22 PFD

Preservation Recheck (E200.8): N/A

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S36699.01	125ml Plastic HNO3	<2			
S36699.02	125ml Plastic HNO3	<2			
S36699.03	125ml Plastic HNO3	<2			
S36699.04	125ml Plastic HNO3	<2			
S36699.05	125ml Plastic HNO3	<2			

Plant 6

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

150994

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 947-777-5215 CELL NO: PO NO:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO:

INVOICE TO

CONTACT NAME: ☒SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.0470A / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / AnLeWnC

TURNAROUND TIME REQUIRED ☐1 DAY ☐2 DAYS ☐3 DAYS ☒STANDARD ☐OTHER

DELIVERABLES REQUIRED ☐STD ☐LEVEL II ☐LEVEL III ☐LEVEL IV ☐EDD ☐OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260B SIMS	1,4-Dioxane 8260B SIMS	6Total Select Metals (As,Ni,Pb,V,Cr_T,Cu) SW6020A	Dissolved Select Metals (As,Ni,Pb,V,Cr_T,Cu) SW6020A
366901	6/3/22	1015	MW-14-67_060322	GW	1			1							X	
.02	6/3/22	1115	MW-14-66_060322	GW	1			1							X	
.03	6/3/22	1305	MWBP-12-UST1-4_060322	GW	4		3	1					X		X	
.04	6/3/22	1405	MWBP-11-UST1-4_060322	GW	4		3	1					X		X	
.05	6/3/22	1510	MWBP-10-UST 5-6_060322	GW	4		3	1					X		X	
.06	6/3/22	1100	MW-04-06R_060322	GW	3		3							X		
.07	6/3/22	——	Dup-16_060322	GW	3		3							X		
.08	6/3/22	1335	MW-04-04R_060322	GW	3		3							X		
.09	6/3/22	1525	MW-04-01(6)_060322	GW	3		3							X		
.10	6/3/22	——	TB-02_060322	GW	1		1						X			

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
AnLeWnC / Arcadis ☒Sampler	6/3/22	
RECEIVED BY: Merit Drop Box	6/3/22	
RELINQUISHED BY: Merit Fridge	6/6/22	0815
RECEIVED BY: Patrick	6/6/22	0815

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
Merit Drop Box	6/3/22	1700
RECEIVED BY: Merit Fridge	6/3/22	1700

SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS
SEAL NO SEAL INTACT YES☐ NO☐ INITIALS

NOTES: TEMP. ON ARRIVAL 5.6

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Analytical Laboratory Report

Report ID: S36700.01(01)+QC01
Generated on 06/10/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36700.01-S36700.04
Project: 30112892 Task 0470B / Racer Lansing
Collected Date(s): 06/03/2022
Submitted Date/Time: 06/06/2022 08:15
Sampled by: Donald Richmond
P.O. #: 30112892 TASK 0470B

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Analytical Laboratory Report

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36700.01	MW-20-126_060322	Groundwater	06/03/22 11:25
S36700.02	MW-19-116_060322	Groundwater	06/03/22 12:45
S36700.03	MW-19-115_060322	Groundwater	06/03/22 13:50
S36700.04	MW-20-129_060322	Groundwater	06/03/22 15:10

Lab Sample ID: S36700.01
Sample Tag: MW-20-126_060322
Collected Date/Time: 06/03/2022 11:25
Matrix: Groundwater
COC Reference: 150964

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 22:02, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	120	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S36700.02
Sample Tag: MW-19-116_060322
Collected Date/Time: 06/03/2022 12:45
Matrix: Groundwater
COC Reference: 150964

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/08/22 14:40	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 22:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	69	1		ug/L	1	123-91-1	

Lab Sample ID: S36700.03
Sample Tag: MW-19-115_060322
Collected Date/Time: 06/03/2022 13:50
Matrix: Groundwater
COC Reference: 150964

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	06/08/22 09:20	JKJ	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 22:44, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	7	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S36700.04
Sample Tag: MW-20-129_060322
Collected Date/Time: 06/03/2022 15:10
Matrix: Groundwater
COC Reference: 150964

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	>2	N/A	06/08/22 09:20	JKJ	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/07/22 23:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	80	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S36700.01(01)+QC01
Generated on 06/10/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36700.01-S36700.04
Project: 30112892 Task 0470B / Racer Lansing
Submitted Date/Time: 06/06/2022 08:15
Sampled by: Donald Richmond
P.O. #: 30112892 TASK 0470B

QC Report Sections

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Analysis Summary (Pages 11-14)
Prep Batch Summary (Page 15)
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Internal Standards per Lab Sample (Pages 17-20)
Internal Standards per QC Sample (Page 21)
Batch QC Results (Page 22)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S36700.01
Sample Tag: MW-20-126_060322
Collected Date/Time: 06/03/2022 11:25
Matrix: Groundwater
COC Reference: 150964

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 22:02	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36700.02
Sample Tag: MW-19-116_060322
Collected Date/Time: 06/03/2022 12:45
Matrix: Groundwater
COC Reference: 150964

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 22:23	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36700.03
Sample Tag: MW-19-115_060322
Collected Date/Time: 06/03/2022 13:50
Matrix: Groundwater
COC Reference: 150964

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 22:44	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36700.04
Sample Tag: MW-20-129_060322
Collected Date/Time: 06/03/2022 15:10
Matrix: Groundwater
COC Reference: 150964

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/07/22 23:06	220607A9	VS220607W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS220607W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36700.01	1,4-Dioxane	SW8260B - SIM	06/07/22 22:02	220607A9
S36700.02	1,4-Dioxane	SW8260B - SIM	06/07/22 22:23	220607A9
S36700.03	1,4-Dioxane	SW8260B - SIM	06/07/22 22:44	220607A9
S36700.04	1,4-Dioxane	SW8260B - SIM	06/07/22 23:06	220607A9

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220607W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220607A9.BLKS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 15:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220607A9.LCSDS07A, Parent Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:16, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220607A9.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220607A9, Run Date: 06/07/2022 23:26, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220607A9.3664005N, Parent Sample ID: 220607A9.3664004M

Run in Batch: 220607A9, Run Date: 06/07/2022 23:46, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36700.01

Sample Tag: MW-20-126_060322

Collected Date/Time: 06/03/2022 11:25

Matrix: Groundwater

COC Reference: 150964

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 22:02, Matrix: WW, Dilution: 10

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**97.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36700.02

Sample Tag: MW-19-116_060322

Collected Date/Time: 06/03/2022 12:45

Matrix: Groundwater

COC Reference: 150964

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 22:23, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**104.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36700.03

Sample Tag: MW-19-115_060322

Collected Date/Time: 06/03/2022 13:50

Matrix: Groundwater

COC Reference: 150964

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 22:44, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**96.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36700.04

Sample Tag: MW-20-129_060322

Collected Date/Time: 06/03/2022 15:10

Matrix: Groundwater

COC Reference: 150964

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220607A9, Run Date: 06/07/2022 23:06, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220607W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220607A9.BLKS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**92.5**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 15:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**113.6**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220607A9.LCSDS07A, Parent Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:16, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.3**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220607A9.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220607A9, Run Date: 06/07/2022 23:26, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**106.3**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220607A9.3664005N, Parent Sample ID: 220607A9.3664004M

Run in Batch: 220607A9, Run Date: 06/07/2022 23:46, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**100.9**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220607W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220607A9.BLKS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.50	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 15:56, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		99.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220607A9.LCSDS07A, Parent Sample ID: 220607A9.LCSS07A

Run in Batch: 220607A9, Run Date: 06/07/2022 16:16, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		101.6	70.0	130.0	1.7	30.0

Matrix Spike (MS)

Lab Sample ID: 220607A9.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220607A9, Run Date: 06/07/2022 23:26, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		122.4	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220607A9.3664005N, Parent Sample ID: 220607A9.3664004M

Run in Batch: 220607A9, Run Date: 06/07/2022 23:46, Prep Date: 06/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		116.6	70.0	130.0	1.4	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36700
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892 Task 0470B / Racer Lansing
Submitted: 06/06/2022 08:15 Login User: PFD

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 5.6
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1 150964

CHAIN OF CUSTODY RECORD

Plant 2

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO: 947 777 5215 CELL NO: PO NO:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO:

INVOICE TO

CONTACT NAME: ☑ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: [redacted] 30112892 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Donald Richmond / Donald Richmond

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4 Dioxane
36700.01	6/3/22	1125	MW-20-126-060322	GW	3		X						X
.02	6/3/22	1245	MW-19-116-060322	GW	3		X						X
.03	6/3/22	1350	MW-19-115-060322	GW	3		X						X
.04	6/3/22	1510	MW-20-129-060322	GW	3		X						X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Austin Westhuis / Sampler	DATE 6/3/22	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 6/3/22	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	Merit Fridge	DATE 6/6/22	TIME 0815
RECEIVED BY: SIGNATURE/ORGANIZATION	Patrick Ch	DATE 6/6/22	TIME 0815

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 6/3/22	TIME 1700
RECEIVED BY: SIGNATURE/ORGANIZATION	Merit Fridge	DATE 6/3/22	TIME 1700

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 5.6

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev 1 26 22

Analytical Laboratory Report

Revised Report

Report ID: S36741.01(02)+QC01
Generated on 06/24/2022
Replaces report S36741.01(01) generated on 06/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36741.01-S36741.13
Project: 30112892.0470A / Racer Lansing
Collected Date(s): 06/04/2022 - 06/06/2022
Submitted Date/Time: 06/07/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

VOC pH check result corrected.

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (13 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36741.01	P2-MW-04_060422	Groundwater	06/04/22 09:05
S36741.02	Dup-02_060422	Groundwater	06/04/22 00:01
S36741.03	MW-22-153_060422	Groundwater	06/04/22 10:00
S36741.04	MW-14-54_060422	Groundwater	06/04/22 10:55
S36741.05	MW-14-55_060422	Groundwater	06/04/22 11:50
S36741.06	MW-14-57_060422	Groundwater	06/04/22 13:00
S36741.07	MW-12-09_060422	Groundwater	06/04/22 14:00
S36741.08	MW-12-18_060422	Groundwater	06/04/22 14:50
S36741.09	Dup-01_060422	Groundwater	06/04/22 00:01
S36741.10	MW-01(2)_060422	Groundwater	06/04/22 16:10
S36741.11	TB-03_060422	Water	06/04/22 00:01
S36741.12	MW-16-85_060622	Groundwater	06/06/22 14:55
S36741.13	MW-16-83_060622	Groundwater	06/06/22 16:00

Lab Sample ID: S36741.01
Sample Tag: P2-MW-04_060422
Collected Date/Time: 06/04/2022 09:05
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 15:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	25	1		ug/L	1	123-91-1	

Lab Sample ID: S36741.02
Sample Tag: Dup-02_060422
Collected Date/Time: 06/04/2022 00:01
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 16:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	25	1		ug/L	1	123-91-1	

Lab Sample ID: S36741.03
Sample Tag: MW-22-153_060422
Collected Date/Time: 06/04/2022 10:00
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 16:21, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	91	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 19:39, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	1	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	10	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	3	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36741.03 (continued)

Sample Tag: MW-22-153_060422

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 19:39, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36741.04
Sample Tag: MW-14-54_060422
Collected Date/Time: 06/04/2022 10:55
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 16:24, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100		ug/L	10	60-29-7	Y
Acetone	Not detected	500		ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10		ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50		ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50		ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20		ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250		ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50		ug/L	10	75-71-8	Y
Chloromethane	Not detected	50		ug/L	10	74-87-3	Y
Vinyl chloride	Not detected	10		ug/L	10	75-01-4	Y
Bromomethane	Not detected	50		ug/L	10	74-83-9	Y
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	Not detected	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	Not detected	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	820	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	270	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	Not detected	10		ug/L	10	127-18-4	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S36741.04 (continued)

Sample Tag: MW-14-54_060422

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 16:24, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	1,110	10		ug/L	10	100-41-4	Y
p,m-Xylene*	1,610	20		ug/L	10		Y
o-Xylene	200	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	50	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	150	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	20	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	540	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	160	10		ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	150	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S36741.05
Sample Tag: MW-14-55_060422
Collected Date/Time: 06/04/2022 11:50
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 16:01, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	1	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36741.05 (continued)

Sample Tag: MW-14-55_060422

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 16:01, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36741.06
Sample Tag: MW-14-57_060422
Collected Date/Time: 06/04/2022 13:00
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 20:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Lab Sample ID: S36741.07
Sample Tag: MW-12-09_060422
Collected Date/Time: 06/04/2022 14:00
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 17:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 20:50, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36741.07 (continued)

Sample Tag: MW-12-09_060422

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 20:50, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36741.08
Sample Tag: MW-12-18_060422
Collected Date/Time: 06/04/2022 14:50
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 21:14, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36741.08 (continued)

Sample Tag: MW-12-18_060422

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 21:14, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36741.09
Sample Tag: Dup-01_060422
Collected Date/Time: 06/04/2022 00:01
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 21:38, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	1	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36741.09 (continued)

Sample Tag: Dup-01_060422

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 21:38, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36741.10
Sample Tag: MW-01(2)_060422
Collected Date/Time: 06/04/2022 16:10
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 22:01, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	8	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36741.10 (continued)

Sample Tag: MW-01(2)_060422

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 22:01, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36741.11
Sample Tag: TB-03_060422
Collected Date/Time: 06/04/2022 00:01
Matrix: Water
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 14:56, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36741.11 (continued)

Sample Tag: TB-03_060422

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 14:56, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36741.12
Sample Tag: MW-16-85_060622
Collected Date/Time: 06/06/2022 14:55
Matrix: Groundwater
COC Reference: 124309

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 17:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	8	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 18:22, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36741.12 (continued)

Sample Tag: MW-16-85_060622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 18:22, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36741.13
Sample Tag: MW-16-83_060622
Collected Date/Time: 06/06/2022 16:00
Matrix: Groundwater
COC Reference: 137974

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/08/22 17:47, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S36741.01(02)+QC01
Generated on 06/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36741.01-S36741.13
Project: 30112892.0470A / Racer Lansing
Submitted Date/Time: 06/07/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

QC Report Sections

Cover Page (Page 28)
Analysis Summary (Pages 29-41)
Prep Batch Summary (Page 42)
Surrogates per Lab Sample (Pages 43-51)
Surrogates per QC Sample (Pages 52-55)
Internal Standards per Lab Sample (Pages 56-68)
Internal Standards per QC Sample (Pages 69-72)
Batch QC Results (Pages 73-87)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S36741.01
Sample Tag: P2-MW-04_060422
Collected Date/Time: 06/04/2022 09:05
Matrix: Groundwater
COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 15:38	220608A9	VS220608W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36741.02

Sample Tag: Dup-02_060422

Collected Date/Time: 06/04/2022 00:01

Matrix: Groundwater

COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 16:00	220608A9	VS220608W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36741.03

Sample Tag: MW-22-153_060422

Collected Date/Time: 06/04/2022 10:00

Matrix: Groundwater

COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 16:21	220608A9	VS220608W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 19:39	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36741.04

Sample Tag: MW-14-54_060422

Collected Date/Time: 06/04/2022 10:55

Matrix: Groundwater

COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 16:24	220609A7	VF220609W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36741.05

Sample Tag: MW-14-55_060422

Collected Date/Time: 06/04/2022 11:50

Matrix: Groundwater

COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 16:01	220609A7	VF220609W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36741.06

Sample Tag: MW-14-57_060422

Collected Date/Time: 06/04/2022 13:00

Matrix: Groundwater

COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 20:04	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36741.07

Sample Tag: MW-12-09_060422

Collected Date/Time: 06/04/2022 14:00

Matrix: Groundwater

COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 17:04	220608A9	VS220608W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 20:50	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36741.08

Sample Tag: MW-12-18_060422

Collected Date/Time: 06/04/2022 14:50

Matrix: Groundwater

COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 21:14	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36741.09

Sample Tag: Dup-01_060422

Collected Date/Time: 06/04/2022 00:01

Matrix: Groundwater

COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 21:38	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36741.10

Sample Tag: MW-01(2)_060422

Collected Date/Time: 06/04/2022 16:10

Matrix: Groundwater

COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 22:01	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36741.11

Sample Tag: TB-03_060422

Collected Date/Time: 06/04/2022 00:01

Matrix: Water

COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 14:56	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36741.12
Sample Tag: MW-16-85_060622
Collected Date/Time: 06/06/2022 14:55
Matrix: Groundwater
COC Reference: 124309

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 17:25	220608A9	VS220608W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 18:22	220609A7	VF220609W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36741.13
Sample Tag: MW-16-83_060622
Collected Date/Time: 06/06/2022 16:00
Matrix: Groundwater
COC Reference: 137974

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/08/22 17:47	220608A9	VS220608W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF220608W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36741.03	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 19:39	220608A7
S36741.07	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 20:50	220608A7
S36741.08	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 21:14	220608A7
S36741.09	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 21:38	220608A7
S36741.10	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 22:01	220608A7
S36741.11	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 14:56	220608A7

Organics - Volatiles, Prep Batch ID: VF220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36741.04	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 16:24	220609A7
S36741.05	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 16:01	220609A7
S36741.12	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 18:22	220609A7

Organics - Volatiles, Prep Batch ID: VS220608W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36741.01	1,4-Dioxane	SW8260B - SIM	06/08/22 15:38	220608A9
S36741.02	1,4-Dioxane	SW8260B - SIM	06/08/22 16:00	220608A9
S36741.03	1,4-Dioxane	SW8260B - SIM	06/08/22 16:21	220608A9
S36741.07	1,4-Dioxane	SW8260B - SIM	06/08/22 17:04	220608A9
S36741.12	1,4-Dioxane	SW8260B - SIM	06/08/22 17:25	220608A9
S36741.13	1,4-Dioxane	SW8260B - SIM	06/08/22 17:47	220608A9

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36741.06	1,4-Dioxane	SW8260B - SIM	06/13/22 20:04	220613A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36741.03

Sample Tag: MW-22-153_060422

Collected Date/Time: 06/04/2022 10:00

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 19:39, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.3**	80.0	124.0
1,2-Dichloroethane-D4		**93.5**	72.0	125.0
Toluene-D8		**99.3**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36741.04

Sample Tag: MW-14-54_060422

Collected Date/Time: 06/04/2022 10:55

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609A7, Run Date: 06/09/2022 16:24, Matrix: WW, Dilution: 10

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.0**	80.0	124.0
1,2-Dichloroethane-D4		**84.5**	72.0	125.0
Toluene-D8		**98.1**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36741.05

Sample Tag: MW-14-55_060422

Collected Date/Time: 06/04/2022 11:50

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609A7, Run Date: 06/09/2022 16:01, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.3**	80.0	124.0
1,2-Dichloroethane-D4		**84.8**	72.0	125.0
Toluene-D8		**98.4**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36741.07

Sample Tag: MW-12-09_060422

Collected Date/Time: 06/04/2022 14:00

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 20:50, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.1**	80.0	124.0
1,2-Dichloroethane-D4		**91.6**	72.0	125.0
Toluene-D8		**97.8**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36741.08

Sample Tag: MW-12-18_060422

Collected Date/Time: 06/04/2022 14:50

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 21:14, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.7**	80.0	124.0
1,2-Dichloroethane-D4		**91.0**	72.0	125.0
Toluene-D8		**98.1**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36741.09

Sample Tag: Dup-01_060422

Collected Date/Time: 06/04/2022 00:01

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 21:38, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.9**	80.0	124.0
1,2-Dichloroethane-D4		**91.2**	72.0	125.0
Toluene-D8		**97.9**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36741.10

Sample Tag: MW-01(2)_060422

Collected Date/Time: 06/04/2022 16:10

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 22:01, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.6**	80.0	124.0
1,2-Dichloroethane-D4		**93.9**	72.0	125.0
Toluene-D8		**98.2**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36741.11

Sample Tag: TB-03_060422

Collected Date/Time: 06/04/2022 00:01

Matrix: Water

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 14:56, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.4**	80.0	124.0
1,2-Dichloroethane-D4		**94.0**	72.0	125.0
Toluene-D8		**98.2**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36741.12

Sample Tag: MW-16-85_060622

Collected Date/Time: 06/06/2022 14:55

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609A7, Run Date: 06/09/2022 18:22, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.8**	80.0	124.0
1,2-Dichloroethane-D4		**90.0**	72.0	125.0
Toluene-D8		**98.0**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220608W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.2**	80.0	124.0
1,2-Dichloroethane-D4		**96.4**	72.0	125.0
Toluene-D8		**97.9**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.5**	80.0	124.0
1,2-Dichloroethane-D4		**96.2**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.6**	80.0	124.0
1,2-Dichloroethane-D4		**97.7**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.8**	80.0	124.0
1,2-Dichloroethane-D4		**100.5**	72.0	125.0
Toluene-D8		**100.0**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**106.1**	80.0	124.0
1,2-Dichloroethane-D4		**102.7**	72.0	125.0
Toluene-D8		**100.1**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220609W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.4**	80.0	124.0
1,2-Dichloroethane-D4		**85.3**	72.0	125.0
Toluene-D8		**97.4**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.0**	80.0	124.0
1,2-Dichloroethane-D4		**90.2**	72.0	125.0
Toluene-D8		**98.2**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**106.1**	80.0	124.0
1,2-Dichloroethane-D4		**93.2**	72.0	125.0
Toluene-D8		**98.8**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS220608W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220608A9.BLKS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:47, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 11:46, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A9.LCSDS08A, Parent Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:06, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.01

Sample Tag: P2-MW-04_060422

Collected Date/Time: 06/04/2022 09:05

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 15:38, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**76.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.02

Sample Tag: Dup-02_060422

Collected Date/Time: 06/04/2022 00:01

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 16:00, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**79.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.03

Sample Tag: MW-22-153_060422

Collected Date/Time: 06/04/2022 10:00

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 16:21, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**80.3**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 19:39, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**94.0**	50.0	200.0
1,4-Difluorobenzene		**93.9**	50.0	200.0
Chlorobenzene-D5		**94.4**	50.0	200.0
1,4-Dichlorobenzene-D4		**93.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.04

Sample Tag: MW-14-54_060422

Collected Date/Time: 06/04/2022 10:55

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609A7, Run Date: 06/09/2022 16:24, Matrix: WW, Dilution: 10

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**100.1**	50.0	200.0
1,4-Difluorobenzene		**97.3**	50.0	200.0
Chlorobenzene-D5		**96.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.05

Sample Tag: MW-14-55_060422

Collected Date/Time: 06/04/2022 11:50

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609A7, Run Date: 06/09/2022 16:01, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**94.4**	50.0	200.0
1,4-Difluorobenzene		**92.4**	50.0	200.0
Chlorobenzene-D5		**91.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**90.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.06

Sample Tag: MW-14-57_060422

Collected Date/Time: 06/04/2022 13:00

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 20:04, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.07

Sample Tag: MW-12-09_060422

Collected Date/Time: 06/04/2022 14:00

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 17:04, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**80.4**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 20:50, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**100.7**	50.0	200.0
1,4-Difluorobenzene		**98.8**	50.0	200.0
Chlorobenzene-D5		**97.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.2**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.08

Sample Tag: MW-12-18_060422

Collected Date/Time: 06/04/2022 14:50

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 21:14, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**97.4**	50.0	200.0
1,4-Difluorobenzene		**96.0**	50.0	200.0
Chlorobenzene-D5		**94.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.09

Sample Tag: Dup-01_060422

Collected Date/Time: 06/04/2022 00:01

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 21:38, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**99.7**	50.0	200.0
1,4-Difluorobenzene		**97.5**	50.0	200.0
Chlorobenzene-D5		**95.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**96.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.10

Sample Tag: MW-01(2)_060422

Collected Date/Time: 06/04/2022 16:10

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 22:01, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**104.4**	50.0	200.0
1,4-Difluorobenzene		**101.7**	50.0	200.0
Chlorobenzene-D5		**102.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**103.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.11

Sample Tag: TB-03_060422

Collected Date/Time: 06/04/2022 00:01

Matrix: Water

COC Reference: 124309

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 14:56, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.9**	50.0	200.0
1,4-Difluorobenzene		**96.2**	50.0	200.0
Chlorobenzene-D5		**95.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.2**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.12

Sample Tag: MW-16-85_060622

Collected Date/Time: 06/06/2022 14:55

Matrix: Groundwater

COC Reference: 124309

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 17:25, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**81.3**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609A7, Run Date: 06/09/2022 18:22, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**94.7**	50.0	200.0
1,4-Difluorobenzene		**95.5**	50.0	200.0
Chlorobenzene-D5		**95.4**	50.0	200.0
1,4-Dichlorobenzene-D4		**96.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36741.13

Sample Tag: MW-16-83_060622

Collected Date/Time: 06/06/2022 16:00

Matrix: Groundwater

COC Reference: 137974

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220608A9, Run Date: 06/08/2022 17:47, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**75.2**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220608W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**95.5**	50.0	200.0
1,4-Difluorobenzene		**96.3**	50.0	200.0
Chlorobenzene-D5		**94.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.1**	50.0	200.0
1,4-Difluorobenzene		**99.0**	50.0	200.0
Chlorobenzene-D5		**98.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**98.6**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**98.3**	50.0	200.0
1,4-Difluorobenzene		**97.1**	50.0	200.0
Chlorobenzene-D5		**97.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.9**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**97.9**	50.0	200.0
1,4-Difluorobenzene		**99.3**	50.0	200.0
Chlorobenzene-D5		**99.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.3**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**97.1**	50.0	200.0
1,4-Difluorobenzene		**99.1**	50.0	200.0
Chlorobenzene-D5		**100.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220609W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.8**	50.0	200.0
1,4-Difluorobenzene		**94.3**	50.0	200.0
Chlorobenzene-D5		**92.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**90.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**99.2**	50.0	200.0
1,4-Difluorobenzene		**97.8**	50.0	200.0
Chlorobenzene-D5		**96.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**97.9**	50.0	200.0
1,4-Difluorobenzene		**97.2**	50.0	200.0
Chlorobenzene-D5		**96.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.5**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220608W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220608A9.BLKS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:47, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**65.8**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 11:46, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**84.8**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A9.LCSDS08A, Parent Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:06, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.4**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.1**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**118.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**122.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**123.2**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.6**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220608W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		105.3	67.4	121.2
Acetone		81.0	29.9	161.5
Methyl iodide		108.6	68.8	116.4
Carbon disulfide		128.4	63.8	137.4
tert-Methyl butyl ether (MTBE)		96.1	73.2	122.4
Acrylonitrile		93.4	69.9	128.9
2-Butanone (MEK)		79.4	44.0	134.4
Dichlorodifluoromethane		109.6	10.0	222.8
Chloromethane		115.0	23.8	166.5
Vinyl chloride		119.8	43.5	149.1
Bromomethane		120.5	56.8	151.3
Chloroethane		118.5	53.4	149.4
Trichlorofluoromethane		119.2	59.7	151.8
1,1-Dichloroethene		102.7	69.6	139.4
Methylene chloride		108.5	73.3	121.1
trans-1,2-Dichloroethene		112.9	73.6	129.3
1,1-Dichloroethane		110.8	71.5	126.2
cis-1,2-Dichloroethene		118.9	76.6	122.1
Tetrahydrofuran		84.8	59.0	117.9
Chloroform		112.9	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		115.6	78.2	120.8
1,1,1-Trichloroethane		104.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		76.8	71.6	125.2
2-Hexanone		72.4	55.4	136.9
Carbon tetrachloride		103.7	72.6	133.0
Benzene		112.2	79.9	124.9
1,2-Dichloroethane		93.2	76.0	126.3
Trichloroethene		109.5	79.7	124.2
1,2-Dichloropropane		109.1	78.6	126.4
Bromodichloromethane		104.4	80.4	128.2
Dibromomethane		102.3	76.9	122.1
cis-1,3-Dichloropropene		102.8	79.8	129.9
Toluene		109.1	79.8	124.5
trans-1,3-Dichloropropene		93.2	74.0	131.3
1,1,2-Trichloroethane		98.3	78.7	123.1
Tetrachloroethene		110.3	74.5	124.5
trans-1,4-Dichloro-2-butene		89.6	68.6	135.4
Dibromochloromethane		106.1	74.6	127.2
1,2-Dibromoethane		98.0	70.3	133.7
Chlorobenzene		115.5	79.2	122.7
1,1,1,2-Tetrachloroethane		113.7	80.3	128.2
Ethylbenzene		115.3	79.5	129.1
p,m-Xylene		119.1	79.4	132.2
o-Xylene		116.7	80.2	131.0
Styrene		118.7	69.5	126.7
Isopropylbenzene		119.5	74.4	121.5
Bromoform		101.2	69.4	128.0
1,1,2,2-Tetrachloroethane		94.8	79.8	126.3
1,2,3-Trichloropropane		92.4	78.3	138.8
n-Propylbenzene		119.3	82.0	130.7
Bromobenzene		118.3	78.7	124.6
1,3,5-Trimethylbenzene		123.8	81.3	128.9
tert-Butylbenzene		114.5	80.7	128.9
1,2,4-Trimethylbenzene		123.3	81.4	130.8
sec-Butylbenzene		110.6	77.4	129.8
p-Isopropyltoluene		114.8	79.8	137.5
1,3-Dichlorobenzene		114.9	77.0	131.3
1,4-Dichlorobenzene		115.6	20.7	137.7
1,2-Dichlorobenzene		113.0	10.0	166.2
1,2,3-Trimethylbenzene		110.9	76.3	124.2
n-Butylbenzene		114.6	80.0	133.3
Hexachloroethane		107.3	23.8	138.1
1,2-Dibromo-3-chloropropane		80.2	21.2	189.4
1,2,4-Trichlorobenzene		113.7	27.4	143.4
1,2,3-Trichlorobenzene		108.5	75.4	131.4
Naphthalene		94.8	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		98.3	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		110.7	67.4	121.2	5.0	30.0
Acetone		93.7	29.9	161.5	14.5	30.0
Methyl iodide		106.1	68.8	116.4	2.3	30.0
Carbon disulfide		126.0	63.8	137.4	1.8	30.0
tert-Methyl butyl ether (MTBE)		104.1	73.2	122.4	8.0	30.0
Acrylonitrile		105.7	69.9	128.9	12.3	30.0
2-Butanone (MEK)		93.1	44.0	134.4	15.8	30.0
Dichlorodifluoromethane		106.5	10.0	222.8	2.9	30.0
Chloromethane		108.7	23.8	166.5	5.7	30.0
Vinyl chloride		113.7	43.5	149.1	5.3	30.0
Bromomethane		114.6	56.8	151.3	5.0	30.0
Chloroethane		111.1	53.4	149.4	6.4	30.0
Trichlorofluoromethane		113.4	59.7	151.8	5.0	30.0
1,1-Dichloroethene		99.2	69.6	139.4	3.4	30.0
Methylene chloride		108.0	73.3	121.1	0.5	30.0
trans-1,2-Dichloroethene		109.8	73.6	129.3	2.8	30.0
1,1-Dichloroethane		109.2	71.5	126.2	1.5	30.0
cis-1,2-Dichloroethene		117.7	76.6	122.1	1.0	30.0
Tetrahydrofuran		100.3	59.0	117.9	16.8	30.0
Chloroform		111.7	78.4	124.0	1.1	30.0
Bromochloromethane		116.1	78.2	120.8	0.4	30.0
1,1,1-Trichloroethane		100.7	79.4	130.9	3.9	30.0
4-Methyl-2-pentanone (MIBK)		90.9	71.6	125.2	16.7	30.0
2-Hexanone		87.0	55.4	136.9	18.4	30.0
Carbon tetrachloride		98.6	72.6	133.0	5.0	30.0
Benzene		110.6	79.9	124.9	1.4	30.0
1,2-Dichloroethane		96.5	76.0	126.3	3.5	30.0
Trichloroethene		108.4	79.7	124.2	1.0	30.0
1,2-Dichloropropane		108.6	78.6	126.4	0.4	30.0
Bromodichloromethane		105.5	80.4	128.2	1.0	30.0
Dibromomethane		109.3	76.9	122.1	6.6	30.0
cis-1,3-Dichloropropene		105.6	79.8	129.9	2.7	30.0
Toluene		107.5	79.8	124.5	1.4	30.0
trans-1,3-Dichloropropene		99.0	74.0	131.3	6.1	30.0
1,1,2-Trichloroethane		104.6	78.7	123.1	6.2	30.0
Tetrachloroethene		107.5	74.5	124.5	2.6	30.0
trans-1,4-Dichloro-2-butene		100.0	68.6	135.4	10.9	30.0
Dibromochloromethane		109.1	74.6	127.2	2.8	30.0
1,2-Dibromoethane		103.5	70.3	133.7	5.5	30.0
Chlorobenzene		114.3	79.2	122.7	1.1	30.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		112.0	80.3	128.2	1.5	30.0
Ethylbenzene		112.5	79.5	129.1	2.4	30.0
p,m-Xylene		116.9	79.4	132.2	1.8	30.0
o-Xylene		114.9	80.2	131.0	1.5	30.0
Styrene		118.0	69.5	126.7	0.6	30.0
Isopropylbenzene		115.4	74.4	121.5	3.5	30.0
Bromoform		108.3	69.4	128.0	6.8	30.0
1,1,2,2-Tetrachloroethane		105.9	79.8	126.3	11.1	30.0
1,2,3-Trichloropropane		102.1	78.3	138.8	10.1	30.0
n-Propylbenzene		114.8	82.0	130.7	3.9	30.0
Bromobenzene		117.7	78.7	124.6	0.5	30.0
1,3,5-Trimethylbenzene		122.1	81.3	128.9	1.4	30.0
tert-Butylbenzene		112.7	80.7	128.9	1.6	30.0
1,2,4-Trimethylbenzene		122.3	81.4	130.8	0.8	30.0
sec-Butylbenzene		107.4	77.4	129.8	2.9	30.0
p-Isopropyltoluene		112.3	79.8	137.5	2.2	30.0
1,3-Dichlorobenzene		114.2	77.0	131.3	0.7	30.0
1,4-Dichlorobenzene		113.6	20.7	137.7	1.8	30.0
1,2-Dichlorobenzene		112.9	10.0	166.2	0.0	30.0
1,2,3-Trimethylbenzene		110.4	76.3	124.2	0.4	30.0
n-Butylbenzene		111.0	80.0	133.3	3.2	30.0
Hexachloroethane		108.2	23.8	138.1	0.9	30.0
1,2-Dibromo-3-chloropropane		95.5	21.2	189.4	17.5	30.0
1,2,4-Trichlorobenzene		117.7	27.4	143.4	3.5	30.0
1,2,3-Trichlorobenzene		113.6	75.4	131.4	4.6	30.0
Naphthalene		106.9	32.9	135.8	12.0	30.0
2-Methylnaphthalene		112.2	25.5	165.5	13.3	30.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		113.6	67.4	121.2
Acetone		82.8	29.9	161.5
Methyl iodide	*	118.7	68.8	116.4
Carbon disulfide		137.0	63.8	137.4
tert-Methyl butyl ether (MTBE)		104.3	73.2	122.4
Acrylonitrile		99.2	69.9	128.9
2-Butanone (MEK)		76.0	44.0	134.4
Dichlorodifluoromethane		112.6	10.0	222.8
Chloromethane		117.9	23.8	166.5
Vinyl chloride		121.0	43.5	149.1
Bromomethane		121.6	56.8	151.3
Chloroethane		118.4	53.4	149.4
Trichlorofluoromethane		119.9	59.7	151.8
1,1-Dichloroethene		106.2	69.6	139.4

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		113.7	73.3	121.1
trans-1,2-Dichloroethene		116.4	73.6	129.3
1,1-Dichloroethane		115.6	71.5	126.2
cis-1,2-Dichloroethene	*	124.9	76.6	122.1
Tetrahydrofuran		82.9	59.0	117.9
Chloroform		117.2	78.4	124.0
Bromochloromethane	*	121.0	78.2	120.8
1,1,1-Trichloroethane		107.6	79.4	130.9
4-Methyl-2-pentanone (MIBK)		80.9	71.6	125.2
2-Hexanone		74.8	55.4	136.9
Carbon tetrachloride		102.5	72.6	133.0
Benzene		113.4	79.9	124.9
1,2-Dichloroethane		96.9	76.0	126.3
Trichloroethene		109.6	79.7	124.2
1,2-Dichloropropane		111.5	78.6	126.4
Bromodichloromethane		106.6	80.4	128.2
Dibromomethane		107.7	76.9	122.1
cis-1,3-Dichloropropene		107.7	79.8	129.9
Toluene		110.2	79.8	124.5
trans-1,3-Dichloropropene		99.4	74.0	131.3
1,1,2-Trichloroethane		102.4	78.7	123.1
Tetrachloroethene		109.9	74.5	124.5
trans-1,4-Dichloro-2-butene		91.9	68.6	135.4
Dibromochloromethane		108.9	74.6	127.2
1,2-Dibromoethane		101.4	70.3	133.7
Chlorobenzene		116.4	79.2	122.7
1,1,1,2-Tetrachloroethane		114.6	80.3	128.2
Ethylbenzene		113.5	79.5	129.1
p,m-Xylene		118.6	79.4	132.2
o-Xylene		116.0	80.2	131.0
Styrene		119.4	69.5	126.7
Isopropylbenzene		117.1	74.4	121.5
Bromoform		103.4	69.4	128.0
1,1,2,2-Tetrachloroethane		98.6	79.8	126.3
1,2,3-Trichloropropane		96.5	78.3	138.8
n-Propylbenzene		115.8	82.0	130.7
Bromobenzene		119.7	78.7	124.6
1,3,5-Trimethylbenzene		123.6	81.3	128.9
tert-Butylbenzene		114.4	80.7	128.9
1,2,4-Trimethylbenzene		123.2	81.4	130.8
sec-Butylbenzene		110.2	77.4	129.8
p-Isopropyltoluene		115.5	79.8	137.5
1,3-Dichlorobenzene		115.6	77.0	131.3
1,4-Dichlorobenzene		117.0	20.7	137.7
1,2-Dichlorobenzene		117.2	10.0	166.2
1,2,3-Trimethylbenzene		113.9	76.3	124.2

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		112.6	80.0	133.3
Hexachloroethane		112.3	23.8	138.1
1,2-Dibromo-3-chloropropane		87.5	21.2	189.4
1,2,4-Trichlorobenzene		119.7	27.4	143.4
1,2,3-Trichlorobenzene		112.4	75.4	131.4
Naphthalene		102.4	32.9	135.8
2-Methylnaphthalene		105.7	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		104.9	67.4	121.2	8.0	30.0
Acetone		79.0	29.9	161.5	4.4	30.0
Methyl iodide		100.7	68.8	116.4	16.4	30.0
Carbon disulfide		118.5	63.8	137.4	14.5	30.0
tert-Methyl butyl ether (MTBE)		96.4	73.2	122.4	7.9	30.0
Acrylonitrile		96.0	69.9	128.9	3.3	30.0
2-Butanone (MEK)		78.0	44.0	134.4	2.6	30.0
Dichlorodifluoromethane		99.8	10.0	222.8	12.1	30.0
Chloromethane		105.2	23.8	166.5	11.4	30.0
Vinyl chloride		104.2	43.5	149.1	14.9	30.0
Bromomethane		106.6	56.8	151.3	13.1	30.0
Chloroethane		103.1	53.4	149.4	13.8	30.0
Trichlorofluoromethane		104.4	59.7	151.8	13.8	30.0
1,1-Dichloroethene		91.0	69.6	139.4	15.4	30.0
Methylene chloride		100.9	73.3	121.1	11.9	30.0
trans-1,2-Dichloroethene		101.6	73.6	129.3	13.6	30.0
1,1-Dichloroethane		101.0	71.5	126.2	13.5	30.0
cis-1,2-Dichloroethene		108.4	76.6	122.1	14.2	30.0
Tetrahydrofuran		85.5	59.0	117.9	3.0	30.0
Chloroform		103.7	78.4	124.0	12.2	30.0
Bromochloromethane		107.0	78.2	120.8	12.3	30.0
1,1,1-Trichloroethane		93.1	79.4	130.9	14.5	30.0
4-Methyl-2-pentanone (MIBK)		81.3	71.6	125.2	0.5	30.0
2-Hexanone		76.1	55.4	136.9	1.6	30.0
Carbon tetrachloride		87.6	72.6	133.0	15.6	30.0
Benzene		98.9	79.9	124.9	13.7	30.0
1,2-Dichloroethane		86.4	76.0	126.3	11.5	30.0
Trichloroethene		95.0	79.7	124.2	14.3	30.0
1,2-Dichloropropane		97.3	78.6	126.4	13.6	30.0
Bromodichloromethane		95.4	80.4	128.2	11.1	30.0
Dibromomethane		97.1	76.9	122.1	10.3	30.0
cis-1,3-Dichloropropene		95.6	79.8	129.9	11.9	30.0
Toluene		96.7	79.8	124.5	13.0	30.0
trans-1,3-Dichloropropene		90.1	74.0	131.3	9.8	30.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		93.9	78.7	123.1	8.6	30.0
Tetrachloroethene		96.1	74.5	124.5	13.4	30.0
trans-1,4-Dichloro-2-butene		87.8	68.6	135.4	4.6	30.0
Dibromochloromethane		98.0	74.6	127.2	10.5	30.0
1,2-Dibromoethane		93.0	70.3	133.7	8.7	30.0
Chlorobenzene		103.1	79.2	122.7	12.2	30.0
1,1,1,2-Tetrachloroethane		99.4	80.3	128.2	14.2	30.0
Ethylbenzene		99.0	79.5	129.1	13.6	30.0
p,m-Xylene		102.1	79.4	132.2	14.9	30.0
o-Xylene		100.2	80.2	131.0	14.7	30.0
Styrene		104.5	69.5	126.7	13.3	30.0
Isopropylbenzene		100.5	74.4	121.5	15.3	30.0
Bromoform		94.5	69.4	128.0	9.0	30.0
1,1,2,2-Tetrachloroethane		94.9	79.8	126.3	3.9	30.0
1,2,3-Trichloropropane		88.7	78.3	138.8	8.4	30.0
n-Propylbenzene		99.7	82.0	130.7	14.9	30.0
Bromobenzene		105.3	78.7	124.6	12.8	30.0
1,3,5-Trimethylbenzene		106.3	81.3	128.9	15.0	30.0
tert-Butylbenzene		98.3	80.7	128.9	15.2	30.0
1,2,4-Trimethylbenzene		107.1	81.4	130.8	14.0	30.0
sec-Butylbenzene		94.2	77.4	129.8	15.7	30.0
p-Isopropyltoluene		98.9	79.8	137.5	15.5	30.0
1,3-Dichlorobenzene		100.7	77.0	131.3	13.8	30.0
1,4-Dichlorobenzene		101.5	20.7	137.7	14.3	30.0
1,2-Dichlorobenzene		102.2	10.0	166.2	13.6	30.0
1,2,3-Trimethylbenzene		99.0	76.3	124.2	14.0	30.0
n-Butylbenzene		95.6	80.0	133.3	16.4	30.0
Hexachloroethane		95.7	23.8	138.1	16.0	30.0
1,2-Dibromo-3-chloropropane		83.7	21.2	189.4	4.4	30.0
1,2,4-Trichlorobenzene		103.3	27.4	143.4	14.7	30.0
1,2,3-Trichlorobenzene		98.6	75.4	131.4	13.1	30.0
Naphthalene		94.4	32.9	135.8	8.2	30.0
2-Methylnaphthalene		96.7	25.5	165.5	9.0	30.0

Organics - Volatiles, Prep Batch ID: VF220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		97.8	67.4	121.2
Acetone		77.3	29.9	161.5
Methyl iodide		112.0	68.8	116.4
Carbon disulfide		130.6	63.8	137.4
tert-Methyl butyl ether (MTBE)		95.3	73.2	122.4
Acrylonitrile		92.1	69.9	128.9
2-Butanone (MEK)		72.2	44.0	134.4
Dichlorodifluoromethane		104.6	10.0	222.8
Chloromethane		110.0	23.8	166.5
Vinyl chloride		109.1	43.5	149.1
Bromomethane		105.1	56.8	151.3
Chloroethane		104.3	53.4	149.4
Trichlorofluoromethane		106.7	59.7	151.8
1,1-Dichloroethene		106.4	69.6	139.4
Methylene chloride		107.7	73.3	121.1
trans-1,2-Dichloroethene		109.7	73.6	129.3
1,1-Dichloroethane		108.8	71.5	126.2
cis-1,2-Dichloroethene		117.5	76.6	122.1
Tetrahydrofuran		85.6	59.0	117.9
Chloroform		109.1	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		113.5	78.2	120.8
1,1,1-Trichloroethane		100.8	79.4	130.9
4-Methyl-2-pentanone (MIBK)		77.6	71.6	125.2
2-Hexanone		74.0	55.4	136.9
Carbon tetrachloride		101.2	72.6	133.0
Benzene		113.8	79.9	124.9
1,2-Dichloroethane		92.7	76.0	126.3
Trichloroethene		111.3	79.7	124.2
1,2-Dichloropropane		110.8	78.6	126.4
Bromodichloromethane		103.5	80.4	128.2
Dibromomethane		105.0	76.9	122.1
cis-1,3-Dichloropropene		106.3	79.8	129.9
Toluene		110.6	79.8	124.5
trans-1,3-Dichloropropene		95.6	74.0	131.3
1,1,2-Trichloroethane		100.6	78.7	123.1
Tetrachloroethene		113.4	74.5	124.5
trans-1,4-Dichloro-2-butene	*	60.0	68.6	135.4
Dibromochloromethane		104.7	74.6	127.2
1,2-Dibromoethane		100.7	70.3	133.7
Chlorobenzene		117.5	79.2	122.7
1,1,1,2-Tetrachloroethane		112.2	80.3	128.2
Ethylbenzene		116.3	79.5	129.1
p,m-Xylene		119.7	79.4	132.2
o-Xylene		117.5	80.2	131.0
Styrene		121.1	69.5	126.7
Isopropylbenzene		119.7	74.4	121.5
Bromoform		97.7	69.4	128.0
1,1,2,2-Tetrachloroethane		101.0	79.8	126.3
1,2,3-Trichloropropane		93.3	78.3	138.8
n-Propylbenzene		118.3	82.0	130.7
Bromobenzene		119.9	78.7	124.6
1,3,5-Trimethylbenzene		125.7	81.3	128.9
tert-Butylbenzene		115.8	80.7	128.9
1,2,4-Trimethylbenzene		124.3	81.4	130.8
sec-Butylbenzene		113.5	77.4	129.8
p-Isopropyltoluene		116.4	79.8	137.5
1,3-Dichlorobenzene		113.4	77.0	131.3
1,4-Dichlorobenzene		115.3	20.7	137.7
1,2-Dichlorobenzene		114.9	10.0	166.2
1,2,3-Trimethylbenzene		111.4	76.3	124.2
n-Butylbenzene		115.6	80.0	133.3
Hexachloroethane		106.9	23.8	138.1
1,2-Dibromo-3-chloropropane		86.4	21.2	189.4
1,2,4-Trichlorobenzene		122.3	27.4	143.4
1,2,3-Trichlorobenzene		116.4	75.4	131.4
Naphthalene		104.3	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		108.6	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		102.5	67.4	121.2	4.6	30.0
Acetone		72.2	29.9	161.5	6.8	30.0
Methyl iodide		98.4	68.8	116.4	12.9	30.0
Carbon disulfide		116.6	63.8	137.4	11.3	30.0
tert-Methyl butyl ether (MTBE)		97.0	73.2	122.4	1.7	30.0
Acrylonitrile		97.3	69.9	128.9	5.4	30.0
2-Butanone (MEK)		83.5	44.0	134.4	14.6	30.0
Dichlorodifluoromethane		98.4	10.0	222.8	6.1	30.0
Chloromethane		106.6	23.8	166.5	3.1	30.0
Vinyl chloride		104.0	43.5	149.1	4.7	30.0
Bromomethane		105.2	56.8	151.3	0.2	30.0
Chloroethane		104.7	53.4	149.4	0.4	30.0
Trichlorofluoromethane		102.8	59.7	151.8	3.8	30.0
1,1-Dichloroethene		91.6	69.6	139.4	15.0	30.0
Methylene chloride		105.5	73.3	121.1	2.1	30.0
trans-1,2-Dichloroethene		104.6	73.6	129.3	4.8	30.0
1,1-Dichloroethane		105.3	71.5	126.2	3.3	30.0
cis-1,2-Dichloroethene		113.9	76.6	122.1	3.1	30.0
Tetrahydrofuran		91.8	59.0	117.9	7.0	30.0
Chloroform		105.5	78.4	124.0	3.4	30.0
Bromochloromethane		112.4	78.2	120.8	0.9	30.0
1,1,1-Trichloroethane		95.9	79.4	130.9	5.0	30.0
4-Methyl-2-pentanone (MIBK)		85.3	71.6	125.2	9.4	30.0
2-Hexanone		81.2	55.4	136.9	9.3	30.0
Carbon tetrachloride		96.2	72.6	133.0	5.0	30.0
Benzene		110.0	79.9	124.9	3.4	30.0
1,2-Dichloroethane		91.4	76.0	126.3	1.4	30.0
Trichloroethene		104.7	79.7	124.2	6.1	30.0
1,2-Dichloropropane		108.2	78.6	126.4	2.4	30.0
Bromodichloromethane		101.6	80.4	128.2	1.9	30.0
Dibromomethane		104.9	76.9	122.1	0.2	30.0
cis-1,3-Dichloropropene		102.9	79.8	129.9	3.2	30.0
Toluene		106.4	79.8	124.5	3.9	30.0
trans-1,3-Dichloropropene		95.3	74.0	131.3	0.3	30.0
1,1,2-Trichloroethane		101.6	78.7	123.1	1.0	30.0
Tetrachloroethene		108.0	74.5	124.5	4.9	30.0
trans-1,4-Dichloro-2-butene	*	62.3	68.6	135.4	3.8	30.0
Dibromochloromethane		103.4	74.6	127.2	1.2	30.0
1,2-Dibromoethane		101.6	70.3	133.7	0.9	30.0
Chlorobenzene		112.2	79.2	122.7	4.7	30.0

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		109.4	80.3	128.2	2.5	30.0
Ethylbenzene		110.6	79.5	129.1	5.0	30.0
p,m-Xylene		114.7	79.4	132.2	4.3	30.0
o-Xylene		112.2	80.2	131.0	4.6	30.0
Styrene		115.3	69.5	126.7	4.9	30.0
Isopropylbenzene		114.4	74.4	121.5	4.5	30.0
Bromoform		98.5	69.4	128.0	0.8	30.0
1,1,2,2-Tetrachloroethane		103.4	79.8	126.3	2.3	30.0
1,2,3-Trichloropropane		98.1	78.3	138.8	5.0	30.0
n-Propylbenzene		113.3	82.0	130.7	4.3	30.0
Bromobenzene		115.8	78.7	124.6	3.5	30.0
1,3,5-Trimethylbenzene		119.3	81.3	128.9	5.2	30.0
tert-Butylbenzene		108.6	80.7	128.9	6.4	30.0
1,2,4-Trimethylbenzene		119.1	81.4	130.8	4.3	30.0
sec-Butylbenzene		107.6	77.4	129.8	5.3	30.0
p-Isopropyltoluene		111.5	79.8	137.5	4.3	30.0
1,3-Dichlorobenzene		111.1	77.0	131.3	2.0	30.0
1,4-Dichlorobenzene		111.7	20.7	137.7	3.2	30.0
1,2-Dichlorobenzene		113.0	10.0	166.2	1.7	30.0
1,2,3-Trimethylbenzene		108.0	76.3	124.2	3.2	30.0
n-Butylbenzene		109.9	80.0	133.3	5.1	30.0
Hexachloroethane		100.8	23.8	138.1	5.8	30.0
1,2-Dibromo-3-chloropropane		91.4	21.2	189.4	5.7	30.0
1,2,4-Trichlorobenzene		116.0	27.4	143.4	5.3	30.0
1,2,3-Trichlorobenzene		111.2	75.4	131.4	4.6	30.0
Naphthalene		102.7	32.9	135.8	1.5	30.0
2-Methylnaphthalene		105.9	25.5	165.5	2.5	30.0

Organics - Volatiles, Prep Batch ID: VS220608W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220608A9.BLKS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:47, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.45	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 11:46, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		96.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A9.LCSDS08A, Parent Sample ID: 220608A9.LCSS08A

Run in Batch: 220608A9, Run Date: 06/08/2022 12:06, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		94.2	70.0	130.0	2.5	30.0

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.34	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		97.4	70.0	130.0	1.0	30.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.6	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.0	70.0	130.0	1.4	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36741
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470A / Racer Lansing
Submitted: 06/07/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.4
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Plant 2

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 2

124309

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 947-777-5715 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: X SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30118892.0470A / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260B SIMS	1,4-Dioxane 8260B SIMS
36741.01	6/4/22	0905	P2-MW-04_060422	GW	3		3							X
.02	6/4/22	—	Dup-02_060422	GW	3		3							X
.03	6/4/22	1000	MW-22-153_060422	GW	3		3						X	X
.04	6/4/22	1055	MW-14-54_060422	GW	3		3						X	
.05	6/4/22	1150	MW-14-55_060422	GW	3		3						X	
.06	6/4/22	1300	MW-14-57_060422	GW	3		3							X
.07	6/4/22	1400	MW-12-09_060422	GW	3		3						X	X
.08	6/4/22	1450	MW-12-18_060422	GW	3		3						X	
.09	6/4/22	—	Dup-01_060422	GW	3		3						X	
.10	6/4/22	1610	MW-01(2)_060422	GW	3		3						X	
.11	6/4/22	—	TB-03_060422	GW	1		1						X	
.12	6/6/22	1455	MW-16-85_060622	GW	3		3						X	X

		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	[signature] / Arcadis (X Sampler)	6/7/22	0730
RECEIVED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	6/7/22	0730
RELINQUISHED BY: SIGNATURE/ORGANIZATION			
RECEIVED BY: SIGNATURE/ORGANIZATION			

		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	6/7/22	0815
RECEIVED BY: SIGNATURE/ORGANIZATION	M Alcala	6/7/22	0815

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES TEMP. ON ARRIVAL 3.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Plant 2

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 2 OF 2

137974

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 947-777-5215 | FAX NO. | P.O. NO. | QUOTE NO.
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com

INVOICE TO

CONTACT NAME | ☒ SAME
COMPANY
ADDRESS
CITY | STATE | ZIP CODE
PHONE NO. | E-MAIL ADDRESS

PROJECT NO./NAME: 30112892.0470A/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis/[signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260B SIMS	1,4-Dioxane 8260B SIMS
36741.13	6/6/22	1600	MW-16-83_060622	GW	3		3							X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
[signature] / Arcadis ☒ Sampler	6/7/22	0730
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
Merit Drop Box	6/7/22	0730
RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
Merit Drop Box	6/7/22	0815
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
[signature]	6/7/22	0815

SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

NOTES | TEMP. ON ARRIVAL 3.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Revised Report

Report ID: S36742.01(02)+QC01
Generated on 06/24/2022
Replaces report S36742.01(01) generated on 06/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36742.01-S36742.12
Project: 30112892.0470A / Racer Lansing
Collected Date(s): 06/06/2022
Submitted Date/Time: 06/07/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

VOC pH check result corrected.

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (12 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36742.01	MW-03-05_060622	Groundwater	06/06/22 11:20
S36742.02	MW-03-06_060622	Groundwater	06/06/22 12:20
S36742.03	Dup-14_060622	Groundwater	06/06/22 00:01
S36742.04	MW-13-36R_060622	Groundwater	06/06/22 13:25
S36742.05	MW-13-53_060622	Groundwater	06/06/22 11:00
S36742.06	MW-13-50_060622	Groundwater	06/06/22 12:40
S36742.07	MW-13-52_060622	Groundwater	06/06/22 13:55
S36742.08	MW-21-141_060622	Groundwater	06/06/22 16:10
S36742.09	MW-21-141_060622 MS	Groundwater	06/06/22 16:10
S36742.10	MW-21-141_060622 MSD	Groundwater	06/06/22 16:10
S36742.11	MW-02-02(6)_060622	Groundwater	06/06/22 17:00
S36742.12	TB-04_060622	Water	06/06/22 00:01

Lab Sample ID: S36742.01
Sample Tag: MW-03-05_060622
Collected Date/Time: 06/06/2022 11:20
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 15:31, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 07:53, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36742.01 (continued)

Sample Tag: MW-03-05_060622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 07:53, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36742.02
Sample Tag: MW-03-06_060622
Collected Date/Time: 06/06/2022 12:20
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 14:48, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	5	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 08:17, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	11	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36742.02 (continued)

Sample Tag: MW-03-06_060622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 08:17, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36742.03
Sample Tag: Dup-14_060622
Collected Date/Time: 06/06/2022 00:01
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 15:10, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	5	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 08:41, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	11	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36742.03 (continued)

Sample Tag: Dup-14_060622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 08:41, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36742.04
Sample Tag: MW-13-36R_060622
Collected Date/Time: 06/06/2022 13:25
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Metals

Method: E200.8, Run Date: 06/20/22 17:23, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S36742.05
Sample Tag: MW-13-53_060622
Collected Date/Time: 06/06/2022 11:00
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 16:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36742.06
Sample Tag: MW-13-50_060622
Collected Date/Time: 06/06/2022 12:40
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 16:36, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36742.07
Sample Tag: MW-13-52_060622
Collected Date/Time: 06/06/2022 13:55
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 16:58, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36742.08
Sample Tag: MW-21-141_060622
Collected Date/Time: 06/06/2022 16:10
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 13:44, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36742.09
Sample Tag: MW-21-141_060622 MS
Collected Date/Time: 06/06/2022 16:10
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 11:21, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	52	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S36742.10
Sample Tag: MW-21-141_060622 MSD
Collected Date/Time: 06/06/2022 16:10
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 11:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	51	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S36742.11
Sample Tag: MW-02-02(6)_060622
Collected Date/Time: 06/06/2022 17:00
Matrix: Groundwater
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 17:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	11	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 09:05, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36742.11 (continued)

Sample Tag: MW-02-02(6)_060622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 09:05, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36742.12
Sample Tag: TB-04_060622
Collected Date/Time: 06/06/2022 00:01
Matrix: Water
COC Reference: 124308

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 01:57, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36742.12 (continued)

Sample Tag: TB-04_060622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 01:57, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Quality Control Report

Report ID: S36742.01(02)+QC01
Generated on 06/20/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36742.01-S36742.12
Project: 30112892.0470A / Racer Lansing
Submitted Date/Time: 06/07/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

QC Report Sections

Cover Page (Page 23)
Analysis Summary (Pages 24-35)
Prep Batch Summary (Page 36)
Surrogates per Lab Sample (Pages 37-41)
Surrogates per QC Sample (Pages 42-43)
Internal Standards per Lab Sample (Pages 44-52)
Internal Standards per QC Sample (Pages 53-54)
Batch QC Results (Pages 55-65)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S36742.01
Sample Tag: MW-03-05_060622
Collected Date/Time: 06/06/2022 11:20
Matrix: Groundwater
COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 15:31	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 07:53	220608B7	VF220608W4	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36742.02

Sample Tag: MW-03-06_060622

Collected Date/Time: 06/06/2022 12:20

Matrix: Groundwater

COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 14:48	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 08:17	220608B7	VF220608W4	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36742.03

Sample Tag: Dup-14_060622

Collected Date/Time: 06/06/2022 00:01

Matrix: Groundwater

COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 15:10	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 08:41	220608B7	VF220608W4	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36742.04

Sample Tag: MW-13-36R_060622

Collected Date/Time: 06/06/2022 13:25

Matrix: Groundwater

COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic	E200.8	06/20/22 17:23	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:23	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:23	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:23	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:23	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:23	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD

Lab Sample ID: S36742.05

Sample Tag: MW-13-53_060622

Collected Date/Time: 06/06/2022 11:00

Matrix: Groundwater

COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 16:15	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36742.06

Sample Tag: MW-13-50_060622

Collected Date/Time: 06/06/2022 12:40

Matrix: Groundwater

COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 16:36	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36742.07

Sample Tag: MW-13-52_060622

Collected Date/Time: 06/06/2022 13:55

Matrix: Groundwater

COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 16:58	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36742.08

Sample Tag: MW-21-141_060622

Collected Date/Time: 06/06/2022 16:10

Matrix: Groundwater

COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 13:44	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36742.09

Sample Tag: MW-21-141_060622 MS

Collected Date/Time: 06/06/2022 16:10

Matrix: Groundwater

COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 11:21	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36742.10

Sample Tag: MW-21-141_060622 MSD

Collected Date/Time: 06/06/2022 16:10

Matrix: Groundwater

COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 11:41	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36742.11

Sample Tag: MW-02-02(6)_060622

Collected Date/Time: 06/06/2022 17:00

Matrix: Groundwater

COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 17:20	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 09:05	220608B7	VF220608W4	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36742.12
Sample Tag: TB-04_060622
Collected Date/Time: 06/06/2022 00:01
Matrix: Water
COC Reference: 124308

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 01:57	220608B7	VF220608W4	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-062022-6

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36742.04	Arsenic	E200.8	06/20/22 17:23	MT4-22-0620C
S36742.04	Chromium	E200.8	06/20/22 17:23	MT4-22-0620C
S36742.04	Copper	E200.8	06/20/22 17:23	MT4-22-0620C
S36742.04	Lead	E200.8	06/20/22 17:23	MT4-22-0620C
S36742.04	Nickel	E200.8	06/20/22 17:23	MT4-22-0620C
S36742.04	Vanadium	E200.8	06/20/22 17:23	MT4-22-0620C

Organics - Volatiles, Prep Batch ID: VF220608W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36742.01	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 07:53	220608B7
S36742.02	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 08:17	220608B7
S36742.03	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 08:41	220608B7
S36742.11	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 09:05	220608B7
S36742.12	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 01:57	220608B7

Organics - Volatiles, Prep Batch ID: VS220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36742.01	1,4-Dioxane	SW8260B - SIM	06/09/22 15:31	220609A9
S36742.02	1,4-Dioxane	SW8260B - SIM	06/09/22 14:48	220609A9
S36742.03	1,4-Dioxane	SW8260B - SIM	06/09/22 15:10	220609A9
S36742.05	1,4-Dioxane	SW8260B - SIM	06/09/22 16:15	220609A9
S36742.06	1,4-Dioxane	SW8260B - SIM	06/09/22 16:36	220609A9
S36742.07	1,4-Dioxane	SW8260B - SIM	06/09/22 16:58	220609A9
S36742.08	1,4-Dioxane	SW8260B - SIM	06/09/22 13:44	220609A9
S36742.09	1,4-Dioxane	SW8260B - SIM	06/09/22 11:21	220609A9
S36742.10	1,4-Dioxane	SW8260B - SIM	06/09/22 11:41	220609A9
S36742.11	1,4-Dioxane	SW8260B - SIM	06/09/22 17:20	220609A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36742.01

Sample Tag: MW-03-05_060622

Collected Date/Time: 06/06/2022 11:20

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 07:53, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.9**	80.0	124.0
1,2-Dichloroethane-D4		**88.5**	72.0	125.0
Toluene-D8		**97.9**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36742.02

Sample Tag: MW-03-06_060622

Collected Date/Time: 06/06/2022 12:20

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 08:17, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.8**	80.0	124.0
1,2-Dichloroethane-D4		**86.2**	72.0	125.0
Toluene-D8		**98.2**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36742.03

Sample Tag: Dup-14_060622

Collected Date/Time: 06/06/2022 00:01

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 08:41, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.5**	80.0	124.0
1,2-Dichloroethane-D4		**88.3**	72.0	125.0
Toluene-D8		**97.7**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36742.11

Sample Tag: MW-02-02(6)_060622

Collected Date/Time: 06/06/2022 17:00

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 09:05, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**102.8**	80.0	124.0
1,2-Dichloroethane-D4		**83.3**	72.0	125.0
Toluene-D8		**97.5**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36742.12

Sample Tag: TB-04_060622

Collected Date/Time: 06/06/2022 00:01

Matrix: Water

COC Reference: 124308

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 01:57, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**103.6**	80.0	124.0
1,2-Dichloroethane-D4		**86.6**	72.0	125.0
Toluene-D8		**96.9**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220608W4

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608B7.BLKW08B

Run in Batch: 220608B7, Run Date: 06/09/2022 01:33, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.1**	80.0	124.0
1,2-Dichloroethane-D4		**86.9**	72.0	125.0
Toluene-D8		**97.3**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:11, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**102.5**	80.0	124.0
1,2-Dichloroethane-D4		**96.3**	72.0	125.0
Toluene-D8		**98.9**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608B7.LCSDW08B, Parent Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:35, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.9**	80.0	124.0
1,2-Dichloroethane-D4		**94.8**	72.0	125.0
Toluene-D8		**98.9**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220608B7.3655402M, Parent Sample ID: S36554.01

Run in Batch: 220608B7, Run Date: 06/08/2022 23:58, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.2**	80.0	124.0
1,2-Dichloroethane-D4		**93.7**	72.0	125.0
Toluene-D8		**98.5**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608B7.3655403N, Parent Sample ID: 220608B7.3655402M

Run in Batch: 220608B7, Run Date: 06/09/2022 00:22, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.9**	80.0	124.0
1,2-Dichloroethane-D4		**94.3**	72.0	125.0
Toluene-D8		**98.8**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220609W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220609A9.BLKW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 13:23, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 10:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A9.LCSDW09A, Parent Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 11:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674209M, Parent Sample ID: S36742.08

Run in Batch: 220609A9, Run Date: 06/09/2022 11:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674307M, Parent Sample ID: S36743.06

Run in Batch: 220609A9, Run Date: 06/09/2022 12:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674210N, Parent Sample ID: 220609A9.3674209M

Run in Batch: 220609A9, Run Date: 06/09/2022 11:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674308N, Parent Sample ID: 220609A9.3674307M

Run in Batch: 220609A9, Run Date: 06/09/2022 12:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36742.01

Sample Tag: MW-03-05_060622

Collected Date/Time: 06/06/2022 11:20

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 15:31, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**104.3**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 07:53, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**93.5**	50.0	200.0
1,4-Difluorobenzene		**92.5**	50.0	200.0
Chlorobenzene-D5		**92.8**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.2**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36742.02

Sample Tag: MW-03-06_060622

Collected Date/Time: 06/06/2022 12:20

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 14:48, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**112.2**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 08:17, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**93.5**	50.0	200.0
1,4-Difluorobenzene		**91.8**	50.0	200.0
Chlorobenzene-D5		**92.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**93.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36742.03

Sample Tag: Dup-14_060622

Collected Date/Time: 06/06/2022 00:01

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 15:10, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**134.5**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 08:41, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**91.5**	50.0	200.0
1,4-Difluorobenzene		**90.5**	50.0	200.0
Chlorobenzene-D5		**92.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**93.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36742.05

Sample Tag: MW-13-53_060622

Collected Date/Time: 06/06/2022 11:00

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 16:15, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**138.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36742.06

Sample Tag: MW-13-50_060622

Collected Date/Time: 06/06/2022 12:40

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 16:36, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**111.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36742.07

Sample Tag: MW-13-52_060622

Collected Date/Time: 06/06/2022 13:55

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 16:58, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**111.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36742.08

Sample Tag: MW-21-141_060622

Collected Date/Time: 06/06/2022 16:10

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 13:44, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**96.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36742.11

Sample Tag: MW-02-02(6)_060622

Collected Date/Time: 06/06/2022 17:00

Matrix: Groundwater

COC Reference: 124308

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 17:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**104.6**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 09:05, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.7**	50.0	200.0
1,4-Difluorobenzene		**94.0**	50.0	200.0
Chlorobenzene-D5		**93.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**93.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36742.12

Sample Tag: TB-04_060622

Collected Date/Time: 06/06/2022 00:01

Matrix: Water

COC Reference: 124308

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608B7, Run Date: 06/09/2022 01:57, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**102.5**	50.0	200.0
1,4-Difluorobenzene		**99.0**	50.0	200.0
Chlorobenzene-D5		**98.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**96.9**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220608W4

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608B7.BLKW08B

Run in Batch: 220608B7, Run Date: 06/09/2022 01:33, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.6**	50.0	200.0
1,4-Difluorobenzene		**96.6**	50.0	200.0
Chlorobenzene-D5		**95.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.1**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:11, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.0**	50.0	200.0
1,4-Difluorobenzene		**103.0**	50.0	200.0
Chlorobenzene-D5		**104.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**103.2**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608B7.LCSDW08B, Parent Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:35, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**101.2**	50.0	200.0
1,4-Difluorobenzene		**100.9**	50.0	200.0
Chlorobenzene-D5		**100.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**101.5**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220608B7.3655402M, Parent Sample ID: S36554.01

Run in Batch: 220608B7, Run Date: 06/08/2022 23:58, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.3**	50.0	200.0
1,4-Difluorobenzene		**99.2**	50.0	200.0
Chlorobenzene-D5		**98.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.0**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608B7.3655403N, Parent Sample ID: 220608B7.3655402M

Run in Batch: 220608B7, Run Date: 06/09/2022 00:22, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.0**	50.0	200.0
1,4-Difluorobenzene		**97.8**	50.0	200.0
Chlorobenzene-D5		**99.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**101.0**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220609W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220609A9.BLKW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 13:23, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 10:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A9.LCSDW09A, Parent Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 11:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**128.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674209M, Parent Sample ID: S36742.08

Run in Batch: 220609A9, Run Date: 06/09/2022 11:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.4**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674307M, Parent Sample ID: S36743.06

Run in Batch: 220609A9, Run Date: 06/09/2022 12:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.0**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674210N, Parent Sample ID: 220609A9.3674209M

Run in Batch: 220609A9, Run Date: 06/09/2022 11:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.9**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674308N, Parent Sample ID: 220609A9.3674307M

Run in Batch: 220609A9, Run Date: 06/09/2022 12:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.3**	50.0	200.0

Metals, Prep Batch ID: MTD-062022-6

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-22-0620C.018.LRB

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:00, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Nickel		ND	0.001	mg/L
Vanadium		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-0620C.017.LCS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 16:59, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	85	115
Chromium		105	85	115
Copper		103	85	115
Lead		101	85	115
Nickel		102	85	115
Vanadium		105	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-22-0620C.030.MS, Parent Sample ID: S36941.01

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:13, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	75	125
Chromium		102	75	125
Copper		100	75	125
Lead		102	75	125
Nickel		100	75	125
Vanadium		105	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-22-0620C.047.MS, Parent Sample ID: S36941.01

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:35, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Chromium		104	75	125
Copper		102	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0620C.031.MSD, Parent Sample ID: MT4-22-0620C.030.MS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:13, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		102	75	125	0	20
Chromium		104	75	125	2	20
Copper		100	75	125	0	20
Lead		100	75	125	1	20
Nickel		101	75	125	1	20
Vanadium		105	75	125	0	20

Metals, Prep Batch ID: MTD-062022-6 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0620C.048.MSD, Parent Sample ID: MT4-22-0620C.047.MS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:36, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chromium		109	75	125	5	20
Copper		107	75	125	5	20

Organics - Volatiles, Prep Batch ID: VF220608W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608B7.BLKW08B

Run in Batch: 220608B7, Run Date: 06/09/2022 01:33, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 220608B7.BLKW08B

Run in Batch: 220608B7, Run Date: 06/09/2022 01:33, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:11, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		101.8	67.4	121.2
Acetone		81.1	29.9	161.5
Methyl iodide		105.9	68.8	116.4
Carbon disulfide		120.3	63.8	137.4
tert-Methyl butyl ether (MTBE)		95.6	73.2	122.4
Acrylonitrile		93.1	69.9	128.9
2-Butanone (MEK)		75.4	44.0	134.4
Dichlorodifluoromethane		95.8	10.0	222.8
Chloromethane		103.1	23.8	166.5
Vinyl chloride		105.2	43.5	149.1
Bromomethane		108.4	56.8	151.3
Chloroethane		107.4	53.4	149.4
Trichlorofluoromethane		105.3	59.7	151.8
1,1-Dichloroethene		93.2	69.6	139.4
Methylene chloride		102.4	73.3	121.1
trans-1,2-Dichloroethene		103.3	73.6	129.3
1,1-Dichloroethane		103.9	71.5	126.2
cis-1,2-Dichloroethene		111.1	76.6	122.1
Tetrahydrofuran		85.1	59.0	117.9
Chloroform		104.6	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:11, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		108.7	78.2	120.8
1,1,1-Trichloroethane		95.3	79.4	130.9
4-Methyl-2-pentanone (MIBK)		80.5	71.6	125.2
2-Hexanone		76.4	55.4	136.9
Carbon tetrachloride		92.2	72.6	133.0
Benzene		105.6	79.9	124.9
1,2-Dichloroethane		88.6	76.0	126.3
Trichloroethene		102.0	79.7	124.2
1,2-Dichloropropane		103.7	78.6	126.4
Bromodichloromethane		97.8	80.4	128.2
Dibromomethane		99.9	76.9	122.1
cis-1,3-Dichloropropene		96.8	79.8	129.9
Toluene		102.2	79.8	124.5
trans-1,3-Dichloropropene		88.5	74.0	131.3
1,1,2-Trichloroethane		94.9	78.7	123.1
Tetrachloroethene		100.4	74.5	124.5
trans-1,4-Dichloro-2-butene		74.5	68.6	135.4
Dibromochloromethane		97.4	74.6	127.2
1,2-Dibromoethane		95.0	70.3	133.7
Chlorobenzene		107.1	79.2	122.7
1,1,1,2-Tetrachloroethane		103.2	80.3	128.2
Ethylbenzene		105.9	79.5	129.1
p,m-Xylene		110.1	79.4	132.2
o-Xylene		107.9	80.2	131.0
Styrene		110.0	69.5	126.7
Isopropylbenzene		109.6	74.4	121.5
Bromoform		94.1	69.4	128.0
1,1,2,2-Tetrachloroethane		95.7	79.8	126.3
1,2,3-Trichloropropane		90.8	78.3	138.8
n-Propylbenzene		107.2	82.0	130.7
Bromobenzene		110.7	78.7	124.6
1,3,5-Trimethylbenzene		114.0	81.3	128.9
tert-Butylbenzene		106.0	80.7	128.9
1,2,4-Trimethylbenzene		113.1	81.4	130.8
sec-Butylbenzene		104.2	77.4	129.8
p-Isopropyltoluene		107.3	79.8	137.5
1,3-Dichlorobenzene		107.6	77.0	131.3
1,4-Dichlorobenzene		107.5	20.7	137.7
1,2-Dichlorobenzene		107.4	10.0	166.2
1,2,3-Trimethylbenzene		105.2	76.3	124.2
n-Butylbenzene		104.0	80.0	133.3
Hexachloroethane		100.7	23.8	138.1
1,2-Dibromo-3-chloropropane		85.4	21.2	189.4
1,2,4-Trichlorobenzene		108.7	27.4	143.4
1,2,3-Trichlorobenzene		103.2	75.4	131.4
Naphthalene		96.7	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:11, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		98.4	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608B7.LCSDW08B, Parent Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:35, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		98.9	67.4	121.2	2.9	30.0
Acetone		84.1	29.9	161.5	3.7	30.0
Methyl iodide		99.5	68.8	116.4	6.2	30.0
Carbon disulfide		115.0	63.8	137.4	4.5	30.0
tert-Methyl butyl ether (MTBE)		93.2	73.2	122.4	2.5	30.0
Acrylonitrile		91.2	69.9	128.9	2.1	30.0
2-Butanone (MEK)		79.2	44.0	134.4	4.9	30.0
Dichlorodifluoromethane		96.7	10.0	222.8	0.9	30.0
Chloromethane		96.6	23.8	166.5	6.5	30.0
Vinyl chloride		99.8	43.5	149.1	5.3	30.0
Bromomethane		102.9	56.8	151.3	5.2	30.0
Chloroethane		101.8	53.4	149.4	5.4	30.0
Trichlorofluoromethane		99.0	59.7	151.8	6.2	30.0
1,1-Dichloroethene		88.6	69.6	139.4	5.1	30.0
Methylene chloride		97.5	73.3	121.1	4.9	30.0
trans-1,2-Dichloroethene		98.9	73.6	129.3	4.4	30.0
1,1-Dichloroethane		98.9	71.5	126.2	5.0	30.0
cis-1,2-Dichloroethene		107.1	76.6	122.1	3.6	30.0
Tetrahydrofuran		85.6	59.0	117.9	0.5	30.0
Chloroform		100.2	78.4	124.0	4.3	30.0
Bromochloromethane		104.5	78.2	120.8	3.9	30.0
1,1,1-Trichloroethane		90.7	79.4	130.9	4.9	30.0
4-Methyl-2-pentanone (MIBK)		79.1	71.6	125.2	1.7	30.0
2-Hexanone		76.5	55.4	136.9	0.1	30.0
Carbon tetrachloride		89.3	72.6	133.0	3.2	30.0
Benzene		101.8	79.9	124.9	3.6	30.0
1,2-Dichloroethane		87.7	76.0	126.3	1.1	30.0
Trichloroethene		98.3	79.7	124.2	3.6	30.0
1,2-Dichloropropane		100.0	78.6	126.4	3.6	30.0
Bromodichloromethane		95.5	80.4	128.2	2.4	30.0
Dibromomethane		99.1	76.9	122.1	0.7	30.0
cis-1,3-Dichloropropene		95.0	79.8	129.9	1.9	30.0
Toluene		99.5	79.8	124.5	2.7	30.0
trans-1,3-Dichloropropene		87.2	74.0	131.3	1.5	30.0
1,1,2-Trichloroethane		94.8	78.7	123.1	0.1	30.0
Tetrachloroethene		97.5	74.5	124.5	3.0	30.0
trans-1,4-Dichloro-2-butene		77.4	68.6	135.4	3.8	30.0
Dibromochloromethane		99.2	74.6	127.2	1.8	30.0
1,2-Dibromoethane		95.0	70.3	133.7	0.1	30.0
Chlorobenzene		105.3	79.2	122.7	1.7	30.0

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220608B7.LCSDW08B, Parent Sample ID: 220608B7.LCSW08B

Run in Batch: 220608B7, Run Date: 06/08/2022 23:35, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		102.7	80.3	128.2	0.5	30.0
Ethylbenzene		103.0	79.5	129.1	2.8	30.0
p,m-Xylene		107.1	79.4	132.2	2.8	30.0
o-Xylene		105.6	80.2	131.0	2.2	30.0
Styrene		108.4	69.5	126.7	1.4	30.0
Isopropylbenzene		106.7	74.4	121.5	2.7	30.0
Bromoform		95.1	69.4	128.0	1.0	30.0
1,1,2,2-Tetrachloroethane		96.6	79.8	126.3	1.0	30.0
1,2,3-Trichloropropane		90.0	78.3	138.8	1.0	30.0
n-Propylbenzene		105.0	82.0	130.7	2.1	30.0
Bromobenzene		107.3	78.7	124.6	3.1	30.0
1,3,5-Trimethylbenzene		111.7	81.3	128.9	2.0	30.0
tert-Butylbenzene		103.2	80.7	128.9	2.7	30.0
1,2,4-Trimethylbenzene		111.9	81.4	130.8	1.1	30.0
sec-Butylbenzene		100.0	77.4	129.8	4.1	30.0
p-Isopropyltoluene		102.6	79.8	137.5	4.5	30.0
1,3-Dichlorobenzene		103.6	77.0	131.3	3.8	30.0
1,4-Dichlorobenzene		103.7	20.7	137.7	3.6	30.0
1,2-Dichlorobenzene		105.1	10.0	166.2	2.2	30.0
1,2,3-Trimethylbenzene		102.2	76.3	124.2	2.9	30.0
n-Butylbenzene		99.2	80.0	133.3	4.7	30.0
Hexachloroethane		98.3	23.8	138.1	2.4	30.0
1,2-Dibromo-3-chloropropane		86.2	21.2	189.4	1.0	30.0
1,2,4-Trichlorobenzene		107.9	27.4	143.4	0.7	30.0
1,2,3-Trichlorobenzene		103.0	75.4	131.4	0.2	30.0
Naphthalene		95.6	32.9	135.8	1.1	30.0
2-Methylnaphthalene		100.6	25.5	165.5	2.2	30.0

Matrix Spike (MS)

Lab Sample ID: 220608B7.3655402M, Parent Sample ID: S36554.01

Run in Batch: 220608B7, Run Date: 06/08/2022 23:58, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		98.1	67.4	121.2
Acetone		79.8	29.9	161.5
Methyl iodide		105.8	68.8	116.4
Carbon disulfide		121.6	63.8	137.4
tert-Methyl butyl ether (MTBE)		94.3	73.2	122.4
Acrylonitrile		88.8	69.9	128.9
2-Butanone (MEK)		71.9	44.0	134.4
Dichlorodifluoromethane		99.2	10.0	222.8
Chloromethane		104.3	23.8	166.5
Vinyl chloride		105.0	43.5	149.1
Bromomethane		104.5	56.8	151.3
Chloroethane		102.7	53.4	149.4
Trichlorofluoromethane		101.6	59.7	151.8
1,1-Dichloroethene		98.3	69.6	139.4

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608B7.3655402M, Parent Sample ID: S36554.01

Run in Batch: 220608B7, Run Date: 06/08/2022 23:58, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		101.4	73.3	121.1
trans-1,2-Dichloroethene		104.5	73.6	129.3
1,1-Dichloroethane		102.8	71.5	126.2
cis-1,2-Dichloroethene		108.0	76.6	122.1
Tetrahydrofuran		83.9	59.0	117.9
Chloroform		104.7	78.4	124.0
Bromochloromethane		107.8	78.2	120.8
1,1,1-Trichloroethane		93.8	79.4	130.9
4-Methyl-2-pentanone (MIBK)		77.9	71.6	125.2
2-Hexanone		75.8	55.4	136.9
Carbon tetrachloride		94.1	72.6	133.0
Benzene		106.2	79.9	124.9
1,2-Dichloroethane		89.6	76.0	126.3
Trichloroethene		101.7	79.7	124.2
1,2-Dichloropropane		104.0	78.6	126.4
Bromodichloromethane		98.9	80.4	128.2
Dibromomethane		99.2	76.9	122.1
cis-1,3-Dichloropropene		97.6	79.8	129.9
Toluene		103.2	79.8	124.5
trans-1,3-Dichloropropene		90.0	74.0	131.3
1,1,2-Trichloroethane		95.0	78.7	123.1
Tetrachloroethene		100.9	74.5	124.5
trans-1,4-Dichloro-2-butene		78.2	68.6	135.4
Dibromochloromethane		101.1	74.6	127.2
1,2-Dibromoethane		96.4	70.3	133.7
Chlorobenzene		109.8	79.2	122.7
1,1,1,2-Tetrachloroethane		106.9	80.3	128.2
Ethylbenzene		107.7	79.5	129.1
p,m-Xylene		111.2	79.4	132.2
o-Xylene		109.9	80.2	131.0
Styrene		112.1	69.5	126.7
Isopropylbenzene		110.2	74.4	121.5
Bromoform		96.6	69.4	128.0
1,1,2,2-Tetrachloroethane		95.7	79.8	126.3
1,2,3-Trichloropropane		89.8	78.3	138.8
n-Propylbenzene		107.9	82.0	130.7
Bromobenzene		111.6	78.7	124.6
1,3,5-Trimethylbenzene		115.8	81.3	128.9
tert-Butylbenzene		108.6	80.7	128.9
1,2,4-Trimethylbenzene		116.7	81.4	130.8
sec-Butylbenzene		104.0	77.4	129.8
p-Isopropyltoluene		107.9	79.8	137.5
1,3-Dichlorobenzene		108.4	77.0	131.3
1,4-Dichlorobenzene		108.5	20.7	137.7
1,2-Dichlorobenzene		108.7	10.0	166.2
1,2,3-Trimethylbenzene		107.2	76.3	124.2

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608B7.3655402M, Parent Sample ID: S36554.01

Run in Batch: 220608B7, Run Date: 06/08/2022 23:58, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		104.3	80.0	133.3
Hexachloroethane		104.0	23.8	138.1
1,2-Dibromo-3-chloropropane		86.9	21.2	189.4
1,2,4-Trichlorobenzene		112.5	27.4	143.4
1,2,3-Trichlorobenzene		108.4	75.4	131.4
Naphthalene		99.2	32.9	135.8
2-Methylnaphthalene		105.7	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608B7.3655403N, Parent Sample ID: 220608B7.3655402M

Run in Batch: 220608B7, Run Date: 06/09/2022 00:22, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		100.6	67.4	121.2	2.5	30.0
Acetone		78.0	29.9	161.5	2.2	30.0
Methyl iodide		101.6	68.8	116.4	4.1	30.0
Carbon disulfide		120.0	63.8	137.4	1.3	30.0
tert-Methyl butyl ether (MTBE)		97.7	73.2	122.4	3.5	30.0
Acrylonitrile		93.0	69.9	128.9	4.6	30.0
2-Butanone (MEK)		75.3	44.0	134.4	4.6	30.0
Dichlorodifluoromethane		97.2	10.0	222.8	2.1	30.0
Chloromethane		102.0	23.8	166.5	2.3	30.0
Vinyl chloride		105.1	43.5	149.1	0.1	30.0
Bromomethane		105.3	56.8	151.3	0.7	30.0
Chloroethane		106.3	53.4	149.4	3.4	30.0
Trichlorofluoromethane		101.7	59.7	151.8	0.1	30.0
1,1-Dichloroethene		92.1	69.6	139.4	6.5	30.0
Methylene chloride		101.9	73.3	121.1	0.5	30.0
trans-1,2-Dichloroethene		102.8	73.6	129.3	1.7	30.0
1,1-Dichloroethane		101.2	71.5	126.2	1.4	30.0
cis-1,2-Dichloroethene		106.6	76.6	122.1	1.0	30.0
Tetrahydrofuran		85.9	59.0	117.9	2.3	30.0
Chloroform		103.3	78.4	124.0	1.4	30.0
Bromochloromethane		107.9	78.2	120.8	0.1	30.0
1,1,1-Trichloroethane		93.4	79.4	130.9	0.4	30.0
4-Methyl-2-pentanone (MIBK)		83.9	71.6	125.2	7.4	30.0
2-Hexanone		80.8	55.4	136.9	6.3	30.0
Carbon tetrachloride		92.9	72.6	133.0	1.3	30.0
Benzene		105.5	79.9	124.9	0.7	30.0
1,2-Dichloroethane		90.4	76.0	126.3	0.9	30.0
Trichloroethene		101.9	79.7	124.2	0.2	30.0
1,2-Dichloropropane		104.8	78.6	126.4	0.7	30.0
Bromodichloromethane		100.7	80.4	128.2	1.8	30.0
Dibromomethane		101.0	76.9	122.1	1.8	30.0
cis-1,3-Dichloropropene		99.7	79.8	129.9	2.1	30.0
Toluene		103.2	79.8	124.5	0.0	30.0
trans-1,3-Dichloropropene		93.0	74.0	131.3	3.3	30.0

Organics - Volatiles, Prep Batch ID: VF220608W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220608B7.3655403N, Parent Sample ID: 220608B7.3655402M

Run in Batch: 220608B7, Run Date: 06/09/2022 00:22, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		98.0	78.7	123.1	3.1	30.0
Tetrachloroethene		100.1	74.5	124.5	0.8	30.0
trans-1,4-Dichloro-2-butene		79.6	68.6	135.4	1.8	30.0
Dibromochloromethane		103.1	74.6	127.2	1.9	30.0
1,2-Dibromoethane		97.7	70.3	133.7	1.3	30.0
Chlorobenzene		108.2	79.2	122.7	1.5	30.0
1,1,1,2-Tetrachloroethane		106.4	80.3	128.2	0.5	30.0
Ethylbenzene		105.7	79.5	129.1	1.9	30.0
p,m-Xylene		109.1	79.4	132.2	1.9	30.0
o-Xylene		108.3	80.2	131.0	1.5	30.0
Styrene		111.5	69.5	126.7	0.6	30.0
Isopropylbenzene		108.5	74.4	121.5	1.6	30.0
Bromoform		99.0	69.4	128.0	2.5	30.0
1,1,2,2-Tetrachloroethane		99.4	79.8	126.3	3.8	30.0
1,2,3-Trichloropropane		95.5	78.3	138.8	6.1	30.0
n-Propylbenzene		106.5	82.0	130.7	1.3	30.0
Bromobenzene		111.9	78.7	124.6	0.2	30.0
1,3,5-Trimethylbenzene		114.5	81.3	128.9	1.1	30.0
tert-Butylbenzene		105.6	80.7	128.9	2.7	30.0
1,2,4-Trimethylbenzene		114.7	81.4	130.8	1.7	30.0
sec-Butylbenzene		100.7	77.4	129.8	3.2	30.0
p-Isopropyltoluene		104.6	79.8	137.5	3.1	30.0
1,3-Dichlorobenzene		106.5	77.0	131.3	1.8	30.0
1,4-Dichlorobenzene		105.9	20.7	137.7	2.4	30.0
1,2-Dichlorobenzene		107.5	10.0	166.2	1.1	30.0
1,2,3-Trimethylbenzene		104.1	76.3	124.2	2.9	30.0
n-Butylbenzene		99.8	80.0	133.3	4.4	30.0
Hexachloroethane		102.1	23.8	138.1	1.8	30.0
1,2-Dibromo-3-chloropropane		88.7	21.2	189.4	2.0	30.0
1,2,4-Trichlorobenzene		108.8	27.4	143.4	3.4	30.0
1,2,3-Trichlorobenzene		105.5	75.4	131.4	2.7	30.0
Naphthalene		97.5	32.9	135.8	1.7	30.0
2-Methylnaphthalene		102.1	25.5	165.5	3.4	30.0

Organics - Volatiles, Prep Batch ID: VS220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220609A9.BLKW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 13:23, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.38	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 10:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		95.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A9.LCSDW09A, Parent Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 11:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		97.1	70.0	130.0	1.9	30.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674209M, Parent Sample ID: S36742.08

Run in Batch: 220609A9, Run Date: 06/09/2022 11:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		103.1	70.0	130.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674307M, Parent Sample ID: S36743.06

Run in Batch: 220609A9, Run Date: 06/09/2022 12:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		116.0	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674210N, Parent Sample ID: 220609A9.3674209M

Run in Batch: 220609A9, Run Date: 06/09/2022 11:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.5	70.0	130.0	2.6	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674308N, Parent Sample ID: 220609A9.3674307M

Run in Batch: 220609A9, Run Date: 06/09/2022 12:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		107.7	70.0	130.0	3.0	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36742
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470A / Racer Lansing
Submitted: 06/07/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.4
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S36742 Submitted: 06/07/2022 08:15

Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30112892.0470A / Racer Lansing

Initial Preservation Check: 06/07/2022 08:51 MMC

Preservation Recheck (E200.8): N/A

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S36742.04	125ml Plastic HNO3	<2			

Plant 6

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

124308

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO: 947-777-5215 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ~~SAME~~
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.0470A / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260B sims	1,4-Dioxane 8260B SIMS	Total Select Metals (As, Ni, Pb, V, Cr, Ca) SW6020A	Special Instructions
36742.01	6/6/22	1120	mw-03-05_060622	GW	3		3						X	X		
.02	6/6/22	1220	mw-03-06_060622	GW	3		3						X	X		
.03	6/6/22	—	Dup-14_060622	GW	3		3						X	X		
.04	6/6/22	1325	mw-13-36R_060622	GW	1			1							X	
.05	6/6/22	1100	mw-13-53_060622	GW	3		3							X		
.06	6/6/22	1240	mw-13-50_060622	GW	3		3							X		
.07	6/6/22	1355	mw-13-52_060622	GW	3		3							X		
.08/09/.10	6/6/22	1610	mw-21-141_060622	GW	9		9							X		MS/MSD
.11	6/6/22	1700	mw-02-02 (6)_060622										X	X		
.12	6/6/22	—	TB-04_060622	GW	1		1						X			

RELINQUISHED BY: SIGNATURE/ORGANIZATION: [signature] / Arcadis (Sampler)	DATE: 6/7/22	TIME: 0730	
RECEIVED BY: SIGNATURE/ORGANIZATION: Merit Drop Box	DATE: 6/7/22	TIME: 0730	
RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box	DATE: 6/7/22	TIME: 0815	
RECEIVED BY: SIGNATURE/ORGANIZATION: [signature]	DATE: 6/7/22	TIME: 0815	
RELINQUISHED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	
RECEIVED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 3.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Revised Report

Report ID: S36743.01(02)+QC01
Generated on 06/24/2022
Replaces report S36743.01(01) generated on 06/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36743.01-S36743.10
Project: 30112892 Task 0470B / Racer Lansing
Collected Date(s): 06/06/2022
Submitted Date/Time: 06/07/2022 08:15
Sampled by: Donald Richmond
P.O. #: 30112892 TASK 0470B

Table of Contents

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

VOC pH check result corrected.

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E300.0	EPA Method 300.0 Revision 2.1 (1993)
N/A	Not Applicable
SM4500-N(org)/NH	Standard Method 4500 N(org)B / NH3D 2011
SM4500-PE	Standard Method 4500 P E 2011 / 4500 P B(5) 2011
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (10 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36743.01	TW-14-06_060622	Groundwater	06/06/22 10:10
S36743.02	PW-14-03_060622	Groundwater	06/06/22 11:25
S36743.03	TW-15-11_060622	Groundwater	06/06/22 12:35
S36743.04	MW-13-22_060622	Groundwater	06/06/22 14:30
S36743.05	MW-13-29_060622	Groundwater	06/06/22 15:45
S36743.06	MW-13-34_060622	Groundwater	06/06/22 17:40
S36743.07	MW-13-34_060622 MS	Groundwater	06/06/22 17:40
S36743.08	MW-13-34_060622 MSD	Groundwater	06/06/22 17:40
S36743.09	TB-05_060622	Water	06/06/22 00:01
S36743.10	Dup-12_060622	Groundwater	06/06/22 00:01

Lab Sample ID: S36743.01
Sample Tag: TW-14-06_060622
Collected Date/Time: 06/06/2022 10:10
Matrix: Groundwater
COC Reference: 140979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR
1	125ml Plastic	None	Yes	3.4	IR
1	250ml Plastic	H2SO4	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Inorganics

Method: E300.0, Run Date: 06/07/22 14:36, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 06/09/22 19:31, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	4.3	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 06/08/22 16:21, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	1.5	0.3	0.2	mg/L	25	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 17:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Lab Sample ID: S36743.02
Sample Tag: PW-14-03_060622
Collected Date/Time: 06/06/2022 11:25
Matrix: Groundwater
COC Reference: 140979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 18:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Lab Sample ID: S36743.03
Sample Tag: TW-15-11_060622
Collected Date/Time: 06/06/2022 12:35
Matrix: Groundwater
COC Reference: 140979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 18:24, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	5	1		ug/L	1	123-91-1	

Lab Sample ID: S36743.04
Sample Tag: MW-13-22_060622
Collected Date/Time: 06/06/2022 14:30
Matrix: Groundwater
COC Reference: 140979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 18:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	109	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 15:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36743.04 (continued)

Sample Tag: MW-13-22_060622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/09/22 15:13, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36743.05
Sample Tag: MW-13-29_060622
Collected Date/Time: 06/06/2022 15:45
Matrix: Groundwater
COC Reference: 140979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 20:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	8	1		ug/L	1	123-91-1	

Lab Sample ID: S36743.06
Sample Tag: MW-13-34_060622
Collected Date/Time: 06/06/2022 17:40
Matrix: Groundwater
COC Reference: 140979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 14:05, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	80	1		ug/L	1	123-91-1	

Lab Sample ID: S36743.07
Sample Tag: MW-13-34_060622 MS
Collected Date/Time: 06/06/2022 17:40
Matrix: Groundwater
COC Reference: 140979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 12:01, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	138	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S36743.08
Sample Tag: MW-13-34_060622 MSD
Collected Date/Time: 06/06/2022 17:40
Matrix: Groundwater
COC Reference: 140979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 12:21, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	134	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S36743.09
Sample Tag: TB-05_060622
Collected Date/Time: 06/06/2022 00:01
Matrix: Water
COC Reference: 140979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/09/22 09:00	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 15:43, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36743.09 (continued)

Sample Tag: TB-05_060622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/08/22 15:43, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36743.10
Sample Tag: Dup-12_060622
Collected Date/Time: 06/06/2022 00:01
Matrix: Groundwater
COC Reference: 140979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/09/22 19:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S36743.01(02)+QC01
Generated on 06/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36743.01-S36743.10
Project: 30112892 Task 0470B / Racer Lansing
Submitted Date/Time: 06/07/2022 08:15
Sampled by: Donald Richmond
P.O. #: 30112892 TASK 0470B

QC Report Sections

Cover Page (Page 18)
Analysis Summary (Pages 19-28)
Prep Batch Summary (Page 29)
Surrogates per Lab Sample (Pages 30-31)
Surrogates per QC Sample (Pages 32-35)
Internal Standards per Lab Sample (Pages 36-43)
Internal Standards per QC Sample (Pages 44-47)
Batch QC Results (Pages 48-65)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S36743.01
Sample Tag: TW-14-06_060622
Collected Date/Time: 06/06/2022 10:10
Matrix: Groundwater
COC Reference: 140979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	06/07/22 14:36	NTRA220607-W1-B	NTRA220607-W1-B	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/09/22 19:31	TKN220609QC	TKN220609QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	06/08/22 16:21	PHS220608QC	PHS220608QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 17:41	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36743.02

Sample Tag: PW-14-03_060622

Collected Date/Time: 06/06/2022 11:25

Matrix: Groundwater

COC Reference: 140979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 18:03	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36743.03
Sample Tag: TW-15-11_060622
Collected Date/Time: 06/06/2022 12:35
Matrix: Groundwater
COC Reference: 140979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 18:24	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S36743.04
Sample Tag: MW-13-22_060622
Collected Date/Time: 06/06/2022 14:30
Matrix: Groundwater
COC Reference: 140979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 18:45	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 15:13	220609A7	VF220609W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S36743.05
Sample Tag: MW-13-29_060622
Collected Date/Time: 06/06/2022 15:45
Matrix: Groundwater
COC Reference: 140979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 20:25	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36743.06
Sample Tag: MW-13-34_060622
Collected Date/Time: 06/06/2022 17:40
Matrix: Groundwater
COC Reference: 140979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 14:05	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36743.07

Sample Tag: MW-13-34_060622 MS

Collected Date/Time: 06/06/2022 17:40

Matrix: Groundwater

COC Reference: 140979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 12:01	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36743.08

Sample Tag: MW-13-34_060622 MSD

Collected Date/Time: 06/06/2022 17:40

Matrix: Groundwater

COC Reference: 140979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 12:21	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36743.09

Sample Tag: TB-05_060622

Collected Date/Time: 06/06/2022 00:01

Matrix: Water

COC Reference: 140979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 15:43	220608A7	VF220608W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36743.10

Sample Tag: Dup-12_060622

Collected Date/Time: 06/06/2022 00:01

Matrix: Groundwater

COC Reference: 140979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/09/22 19:28	220609A9	VS220609W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: NTRA220607-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36743.01	Nitrate-N	E300.0	06/07/22 14:36	NTRA220607-W1-B

Inorganics, Prep Batch ID: PHS220608QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36743.01	Total Phosphorus	SM4500-PE	06/08/22 16:21	PHS220608QC

Inorganics, Prep Batch ID: TKN220609QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36743.01	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	06/09/22 19:31	TKN220609QC

Organics - Volatiles, Prep Batch ID: VF220608W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36743.09	Volatile Organics - DEQ List	SW5030C/8260C	06/08/22 15:43	220608A7

Organics - Volatiles, Prep Batch ID: VF220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36743.04	Volatile Organics - DEQ List	SW5030C/8260C	06/09/22 15:13	220609A7

Organics - Volatiles, Prep Batch ID: VS220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36743.01	1,4-Dioxane	SW8260B - SIM	06/09/22 17:41	220609A9
S36743.02	1,4-Dioxane	SW8260B - SIM	06/09/22 18:03	220609A9
S36743.03	1,4-Dioxane	SW8260B - SIM	06/09/22 18:24	220609A9
S36743.04	1,4-Dioxane	SW8260B - SIM	06/09/22 18:45	220609A9
S36743.06	1,4-Dioxane	SW8260B - SIM	06/09/22 14:05	220609A9
S36743.07	1,4-Dioxane	SW8260B - SIM	06/09/22 12:01	220609A9
S36743.08	1,4-Dioxane	SW8260B - SIM	06/09/22 12:21	220609A9
S36743.10	1,4-Dioxane	SW8260B - SIM	06/09/22 19:28	220609A9

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36743.05	1,4-Dioxane	SW8260B - SIM	06/13/22 20:25	220613A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36743.04

Sample Tag: MW-13-22_060622

Collected Date/Time: 06/06/2022 14:30

Matrix: Groundwater

COC Reference: 140979

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609A7, Run Date: 06/09/2022 15:13, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.3**	80.0	124.0
1,2-Dichloroethane-D4		**89.3**	72.0	125.0
Toluene-D8		**98.5**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36743.09

Sample Tag: TB-05_060622

Collected Date/Time: 06/06/2022 00:01

Matrix: Water

COC Reference: 140979

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 15:43, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.5**	80.0	124.0
1,2-Dichloroethane-D4		**94.1**	72.0	125.0
Toluene-D8		**99.8**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220608W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.2**	80.0	124.0
1,2-Dichloroethane-D4		**96.4**	72.0	125.0
Toluene-D8		**97.9**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.5**	80.0	124.0
1,2-Dichloroethane-D4		**96.2**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.6**	80.0	124.0
1,2-Dichloroethane-D4		**97.7**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.8**	80.0	124.0
1,2-Dichloroethane-D4		**100.5**	72.0	125.0
Toluene-D8		**100.0**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**106.1**	80.0	124.0
1,2-Dichloroethane-D4		**102.7**	72.0	125.0
Toluene-D8		**100.1**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220609W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.4**	80.0	124.0
1,2-Dichloroethane-D4		**85.3**	72.0	125.0
Toluene-D8		**97.4**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.0**	80.0	124.0
1,2-Dichloroethane-D4		**90.2**	72.0	125.0
Toluene-D8		**98.2**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**106.1**	80.0	124.0
1,2-Dichloroethane-D4		**93.2**	72.0	125.0
Toluene-D8		**98.8**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220609W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220609A9.BLKW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 13:23, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 10:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A9.LCSDW09A, Parent Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 11:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674209M, Parent Sample ID: S36742.08

Run in Batch: 220609A9, Run Date: 06/09/2022 11:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674307M, Parent Sample ID: S36743.06

Run in Batch: 220609A9, Run Date: 06/09/2022 12:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674210N, Parent Sample ID: 220609A9.3674209M

Run in Batch: 220609A9, Run Date: 06/09/2022 11:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674308N, Parent Sample ID: 220609A9.3674307M

Run in Batch: 220609A9, Run Date: 06/09/2022 12:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36743.01

Sample Tag: TW-14-06_060622

Collected Date/Time: 06/06/2022 10:10

Matrix: Groundwater

COC Reference: 140979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 17:41, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**108.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36743.02

Sample Tag: PW-14-03_060622

Collected Date/Time: 06/06/2022 11:25

Matrix: Groundwater

COC Reference: 140979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 18:03, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**113.9**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36743.03

Sample Tag: TW-15-11_060622

Collected Date/Time: 06/06/2022 12:35

Matrix: Groundwater

COC Reference: 140979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 18:24, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**137.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36743.04

Sample Tag: MW-13-22_060622

Collected Date/Time: 06/06/2022 14:30

Matrix: Groundwater

COC Reference: 140979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 18:45, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**108.7**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609A7, Run Date: 06/09/2022 15:13, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**95.3**	50.0	200.0
1,4-Difluorobenzene		**94.8**	50.0	200.0
Chlorobenzene-D5		**94.8**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36743.05

Sample Tag: MW-13-29_060622

Collected Date/Time: 06/06/2022 15:45

Matrix: Groundwater

COC Reference: 140979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 20:25, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**112.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36743.06

Sample Tag: MW-13-34_060622

Collected Date/Time: 06/06/2022 17:40

Matrix: Groundwater

COC Reference: 140979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 14:05, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**108.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36743.09

Sample Tag: TB-05_060622

Collected Date/Time: 06/06/2022 00:01

Matrix: Water

COC Reference: 140979

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220608A7, Run Date: 06/08/2022 15:43, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**95.7**	50.0	200.0
1,4-Difluorobenzene		**94.8**	50.0	200.0
Chlorobenzene-D5		**95.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.3**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36743.10

Sample Tag: Dup-12_060622

Collected Date/Time: 06/06/2022 00:01

Matrix: Groundwater

COC Reference: 140979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220609A9, Run Date: 06/09/2022 19:28, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.0**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220608W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**95.5**	50.0	200.0
1,4-Difluorobenzene		**96.3**	50.0	200.0
Chlorobenzene-D5		**94.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.1**	50.0	200.0
1,4-Difluorobenzene		**99.0**	50.0	200.0
Chlorobenzene-D5		**98.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**98.6**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**98.3**	50.0	200.0
1,4-Difluorobenzene		**97.1**	50.0	200.0
Chlorobenzene-D5		**97.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.9**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**97.9**	50.0	200.0
1,4-Difluorobenzene		**99.3**	50.0	200.0
Chlorobenzene-D5		**99.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.3**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**97.1**	50.0	200.0
1,4-Difluorobenzene		**99.1**	50.0	200.0
Chlorobenzene-D5		**100.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220609W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.8**	50.0	200.0
1,4-Difluorobenzene		**94.3**	50.0	200.0
Chlorobenzene-D5		**92.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**90.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**99.2**	50.0	200.0
1,4-Difluorobenzene		**97.8**	50.0	200.0
Chlorobenzene-D5		**96.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**97.9**	50.0	200.0
1,4-Difluorobenzene		**97.2**	50.0	200.0
Chlorobenzene-D5		**96.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.5**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220609W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220609A9.BLKW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 13:23, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 10:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**106.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A9.LCSDW09A, Parent Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 11:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**128.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674209M, Parent Sample ID: S36742.08

Run in Batch: 220609A9, Run Date: 06/09/2022 11:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**100.4**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674307M, Parent Sample ID: S36743.06

Run in Batch: 220609A9, Run Date: 06/09/2022 12:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**100.0**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674210N, Parent Sample ID: 220609A9.3674209M

Run in Batch: 220609A9, Run Date: 06/09/2022 11:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**100.9**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674308N, Parent Sample ID: 220609A9.3674307M

Run in Batch: 220609A9, Run Date: 06/09/2022 12:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**106.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.1**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**118.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**122.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**123.2**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.6**	50.0	200.0

Inorganics, Prep Batch ID: NTRA220607-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: NTRA220607-W1-B.LRB1

Run in Batch: NTRA220607-W1-B, Run Date: 06/07/2022 13:19, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Nitrate-N		ND	0.1	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: NTRA220607-W1-B.LCS1

Run in Batch: NTRA220607-W1-B, Run Date: 06/07/2022 13:45, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Nitrate-N		96	90	110

Matrix Spike (MS)

Lab Sample ID: NTRA220607-W1-B.MS1, Parent Sample ID: S36661.18

Run in Batch: NTRA220607-W1-B, Run Date: 06/07/2022 15:15, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Nitrate-N		99	80	120

Matrix Spike Duplicate (MSD)

Lab Sample ID: NTRA220607-W1-B.MSD1, Parent Sample ID: NTRA220607-W1-B.MS1

Run in Batch: NTRA220607-W1-B, Run Date: 06/07/2022 15:28, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Nitrate-N		98	80	120	1	15

Duplicate (DUP)

Lab Sample ID: NTRA220607-W1-B.DP1, Parent Sample ID: S36661.18

Run in Batch: NTRA220607-W1-B, Run Date: 06/07/2022 15:02, Prep Date: 06/07/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	RPD	RPD CL
Nitrate-N		<1	15

Inorganics, Prep Batch ID: PHS220608QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Blank (BLK)

Lab Sample ID: PHS220608QC.LRB1

Run in Batch: PHS220608QC, Run Date: 06/08/2022 11:03, Prep Date: 06/08/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

Blank (BLK)

Lab Sample ID: PHS220608QC.LRB2

Run in Batch: PHS220608QC, Run Date: 06/08/2022 11:11, Prep Date: 06/08/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: PHS220608QC.LCS1

Run in Batch: PHS220608QC, Run Date: 06/08/2022 11:18, Prep Date: 06/08/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		95	90	110

Matrix Spike (MS)

Lab Sample ID: PHS220608QC.MS1, Parent Sample ID: S36611.03

Run in Batch: PHS220608QC, Run Date: 06/08/2022 16:29, Prep Date: 06/08/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		98	80	120

Duplicate (DUP)

Lab Sample ID: PHS220608QC.DP1, Parent Sample ID: S36743.01

Run in Batch: PHS220608QC, Run Date: 06/08/2022 16:26, Prep Date: 06/08/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Phosphorus		4.9	20

Inorganics, Prep Batch ID: TKN220609QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Blank (BLK)

Lab Sample ID: TKN220609QC.LRB1

Run in Batch: TKN220609QC, Run Date: 06/09/2022 12:41, Prep Date: 06/09/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Kjeldahl Nitrogen		ND	0.02	mg/L

Blank (BLK)

Lab Sample ID: TKN220609QC.LRB2

Run in Batch: TKN220609QC, Run Date: 06/09/2022 15:11, Prep Date: 06/09/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Kjeldahl Nitrogen		ND	0.1	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: TKN220609QC.LCS1

Run in Batch: TKN220609QC, Run Date: 06/09/2022 15:24, Prep Date: 06/09/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Kjeldahl Nitrogen		103	90	110

Matrix Spike (MS)

Lab Sample ID: TKN220609QC.MS1, Parent Sample ID: S36737.02

Run in Batch: TKN220609QC, Run Date: 06/09/2022 16:26, Prep Date: 06/09/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Kjeldahl Nitrogen		99	80	120

Duplicate (DUP)

Lab Sample ID: TKN220609QC.DP1, Parent Sample ID: S36737.03

Run in Batch: TKN220609QC, Run Date: 06/09/2022 16:56, Prep Date: 06/09/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Kjeldahl Nitrogen		6.7	20

Organics - Volatiles, Prep Batch ID: VF220608W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 220608A7.BLKW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 14:32, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		105.3	67.4	121.2
Acetone		81.0	29.9	161.5
Methyl iodide		108.6	68.8	116.4
Carbon disulfide		128.4	63.8	137.4
tert-Methyl butyl ether (MTBE)		96.1	73.2	122.4
Acrylonitrile		93.4	69.9	128.9
2-Butanone (MEK)		79.4	44.0	134.4
Dichlorodifluoromethane		109.6	10.0	222.8
Chloromethane		115.0	23.8	166.5
Vinyl chloride		119.8	43.5	149.1
Bromomethane		120.5	56.8	151.3
Chloroethane		118.5	53.4	149.4
Trichlorofluoromethane		119.2	59.7	151.8
1,1-Dichloroethene		102.7	69.6	139.4
Methylene chloride		108.5	73.3	121.1
trans-1,2-Dichloroethene		112.9	73.6	129.3
1,1-Dichloroethane		110.8	71.5	126.2
cis-1,2-Dichloroethene		118.9	76.6	122.1
Tetrahydrofuran		84.8	59.0	117.9
Chloroform		112.9	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		115.6	78.2	120.8
1,1,1-Trichloroethane		104.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		76.8	71.6	125.2
2-Hexanone		72.4	55.4	136.9
Carbon tetrachloride		103.7	72.6	133.0
Benzene		112.2	79.9	124.9
1,2-Dichloroethane		93.2	76.0	126.3
Trichloroethene		109.5	79.7	124.2
1,2-Dichloropropane		109.1	78.6	126.4
Bromodichloromethane		104.4	80.4	128.2
Dibromomethane		102.3	76.9	122.1
cis-1,3-Dichloropropene		102.8	79.8	129.9
Toluene		109.1	79.8	124.5
trans-1,3-Dichloropropene		93.2	74.0	131.3
1,1,2-Trichloroethane		98.3	78.7	123.1
Tetrachloroethene		110.3	74.5	124.5
trans-1,4-Dichloro-2-butene		89.6	68.6	135.4
Dibromochloromethane		106.1	74.6	127.2
1,2-Dibromoethane		98.0	70.3	133.7
Chlorobenzene		115.5	79.2	122.7
1,1,1,2-Tetrachloroethane		113.7	80.3	128.2
Ethylbenzene		115.3	79.5	129.1
p,m-Xylene		119.1	79.4	132.2
o-Xylene		116.7	80.2	131.0
Styrene		118.7	69.5	126.7
Isopropylbenzene		119.5	74.4	121.5
Bromoform		101.2	69.4	128.0
1,1,2,2-Tetrachloroethane		94.8	79.8	126.3
1,2,3-Trichloropropane		92.4	78.3	138.8
n-Propylbenzene		119.3	82.0	130.7
Bromobenzene		118.3	78.7	124.6
1,3,5-Trimethylbenzene		123.8	81.3	128.9
tert-Butylbenzene		114.5	80.7	128.9
1,2,4-Trimethylbenzene		123.3	81.4	130.8
sec-Butylbenzene		110.6	77.4	129.8
p-Isopropyltoluene		114.8	79.8	137.5
1,3-Dichlorobenzene		114.9	77.0	131.3
1,4-Dichlorobenzene		115.6	20.7	137.7
1,2-Dichlorobenzene		113.0	10.0	166.2
1,2,3-Trimethylbenzene		110.9	76.3	124.2
n-Butylbenzene		114.6	80.0	133.3
Hexachloroethane		107.3	23.8	138.1
1,2-Dibromo-3-chloropropane		80.2	21.2	189.4
1,2,4-Trichlorobenzene		113.7	27.4	143.4
1,2,3-Trichlorobenzene		108.5	75.4	131.4
Naphthalene		94.8	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:10, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		98.3	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		110.7	67.4	121.2	5.0	30.0
Acetone		93.7	29.9	161.5	14.5	30.0
Methyl iodide		106.1	68.8	116.4	2.3	30.0
Carbon disulfide		126.0	63.8	137.4	1.8	30.0
tert-Methyl butyl ether (MTBE)		104.1	73.2	122.4	8.0	30.0
Acrylonitrile		105.7	69.9	128.9	12.3	30.0
2-Butanone (MEK)		93.1	44.0	134.4	15.8	30.0
Dichlorodifluoromethane		106.5	10.0	222.8	2.9	30.0
Chloromethane		108.7	23.8	166.5	5.7	30.0
Vinyl chloride		113.7	43.5	149.1	5.3	30.0
Bromomethane		114.6	56.8	151.3	5.0	30.0
Chloroethane		111.1	53.4	149.4	6.4	30.0
Trichlorofluoromethane		113.4	59.7	151.8	5.0	30.0
1,1-Dichloroethene		99.2	69.6	139.4	3.4	30.0
Methylene chloride		108.0	73.3	121.1	0.5	30.0
trans-1,2-Dichloroethene		109.8	73.6	129.3	2.8	30.0
1,1-Dichloroethane		109.2	71.5	126.2	1.5	30.0
cis-1,2-Dichloroethene		117.7	76.6	122.1	1.0	30.0
Tetrahydrofuran		100.3	59.0	117.9	16.8	30.0
Chloroform		111.7	78.4	124.0	1.1	30.0
Bromochloromethane		116.1	78.2	120.8	0.4	30.0
1,1,1-Trichloroethane		100.7	79.4	130.9	3.9	30.0
4-Methyl-2-pentanone (MIBK)		90.9	71.6	125.2	16.7	30.0
2-Hexanone		87.0	55.4	136.9	18.4	30.0
Carbon tetrachloride		98.6	72.6	133.0	5.0	30.0
Benzene		110.6	79.9	124.9	1.4	30.0
1,2-Dichloroethane		96.5	76.0	126.3	3.5	30.0
Trichloroethene		108.4	79.7	124.2	1.0	30.0
1,2-Dichloropropane		108.6	78.6	126.4	0.4	30.0
Bromodichloromethane		105.5	80.4	128.2	1.0	30.0
Dibromomethane		109.3	76.9	122.1	6.6	30.0
cis-1,3-Dichloropropene		105.6	79.8	129.9	2.7	30.0
Toluene		107.5	79.8	124.5	1.4	30.0
trans-1,3-Dichloropropene		99.0	74.0	131.3	6.1	30.0
1,1,2-Trichloroethane		104.6	78.7	123.1	6.2	30.0
Tetrachloroethene		107.5	74.5	124.5	2.6	30.0
trans-1,4-Dichloro-2-butene		100.0	68.6	135.4	10.9	30.0
Dibromochloromethane		109.1	74.6	127.2	2.8	30.0
1,2-Dibromoethane		103.5	70.3	133.7	5.5	30.0
Chlorobenzene		114.3	79.2	122.7	1.1	30.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220608A7.LCSDW08A, Parent Sample ID: 220608A7.LCSW08A

Run in Batch: 220608A7, Run Date: 06/08/2022 12:34, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		112.0	80.3	128.2	1.5	30.0
Ethylbenzene		112.5	79.5	129.1	2.4	30.0
p,m-Xylene		116.9	79.4	132.2	1.8	30.0
o-Xylene		114.9	80.2	131.0	1.5	30.0
Styrene		118.0	69.5	126.7	0.6	30.0
Isopropylbenzene		115.4	74.4	121.5	3.5	30.0
Bromoform		108.3	69.4	128.0	6.8	30.0
1,1,2,2-Tetrachloroethane		105.9	79.8	126.3	11.1	30.0
1,2,3-Trichloropropane		102.1	78.3	138.8	10.1	30.0
n-Propylbenzene		114.8	82.0	130.7	3.9	30.0
Bromobenzene		117.7	78.7	124.6	0.5	30.0
1,3,5-Trimethylbenzene		122.1	81.3	128.9	1.4	30.0
tert-Butylbenzene		112.7	80.7	128.9	1.6	30.0
1,2,4-Trimethylbenzene		122.3	81.4	130.8	0.8	30.0
sec-Butylbenzene		107.4	77.4	129.8	2.9	30.0
p-Isopropyltoluene		112.3	79.8	137.5	2.2	30.0
1,3-Dichlorobenzene		114.2	77.0	131.3	0.7	30.0
1,4-Dichlorobenzene		113.6	20.7	137.7	1.8	30.0
1,2-Dichlorobenzene		112.9	10.0	166.2	0.0	30.0
1,2,3-Trimethylbenzene		110.4	76.3	124.2	0.4	30.0
n-Butylbenzene		111.0	80.0	133.3	3.2	30.0
Hexachloroethane		108.2	23.8	138.1	0.9	30.0
1,2-Dibromo-3-chloropropane		95.5	21.2	189.4	17.5	30.0
1,2,4-Trichlorobenzene		117.7	27.4	143.4	3.5	30.0
1,2,3-Trichlorobenzene		113.6	75.4	131.4	4.6	30.0
Naphthalene		106.9	32.9	135.8	12.0	30.0
2-Methylnaphthalene		112.2	25.5	165.5	13.3	30.0

Matrix Spike (MS)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		113.6	67.4	121.2
Acetone		82.8	29.9	161.5
Methyl iodide	*	118.7	68.8	116.4
Carbon disulfide		137.0	63.8	137.4
tert-Methyl butyl ether (MTBE)		104.3	73.2	122.4
Acrylonitrile		99.2	69.9	128.9
2-Butanone (MEK)		76.0	44.0	134.4
Dichlorodifluoromethane		112.6	10.0	222.8
Chloromethane		117.9	23.8	166.5
Vinyl chloride		121.0	43.5	149.1
Bromomethane		121.6	56.8	151.3
Chloroethane		118.4	53.4	149.4
Trichlorofluoromethane		119.9	59.7	151.8
1,1-Dichloroethene		106.2	69.6	139.4

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		113.7	73.3	121.1
trans-1,2-Dichloroethene		116.4	73.6	129.3
1,1-Dichloroethane		115.6	71.5	126.2
cis-1,2-Dichloroethene	*	124.9	76.6	122.1
Tetrahydrofuran		82.9	59.0	117.9
Chloroform		117.2	78.4	124.0
Bromochloromethane	*	121.0	78.2	120.8
1,1,1-Trichloroethane		107.6	79.4	130.9
4-Methyl-2-pentanone (MIBK)		80.9	71.6	125.2
2-Hexanone		74.8	55.4	136.9
Carbon tetrachloride		102.5	72.6	133.0
Benzene		113.4	79.9	124.9
1,2-Dichloroethane		96.9	76.0	126.3
Trichloroethene		109.6	79.7	124.2
1,2-Dichloropropane		111.5	78.6	126.4
Bromodichloromethane		106.6	80.4	128.2
Dibromomethane		107.7	76.9	122.1
cis-1,3-Dichloropropene		107.7	79.8	129.9
Toluene		110.2	79.8	124.5
trans-1,3-Dichloropropene		99.4	74.0	131.3
1,1,2-Trichloroethane		102.4	78.7	123.1
Tetrachloroethene		109.9	74.5	124.5
trans-1,4-Dichloro-2-butene		91.9	68.6	135.4
Dibromochloromethane		108.9	74.6	127.2
1,2-Dibromoethane		101.4	70.3	133.7
Chlorobenzene		116.4	79.2	122.7
1,1,1,2-Tetrachloroethane		114.6	80.3	128.2
Ethylbenzene		113.5	79.5	129.1
p,m-Xylene		118.6	79.4	132.2
o-Xylene		116.0	80.2	131.0
Styrene		119.4	69.5	126.7
Isopropylbenzene		117.1	74.4	121.5
Bromoform		103.4	69.4	128.0
1,1,2,2-Tetrachloroethane		98.6	79.8	126.3
1,2,3-Trichloropropane		96.5	78.3	138.8
n-Propylbenzene		115.8	82.0	130.7
Bromobenzene		119.7	78.7	124.6
1,3,5-Trimethylbenzene		123.6	81.3	128.9
tert-Butylbenzene		114.4	80.7	128.9
1,2,4-Trimethylbenzene		123.2	81.4	130.8
sec-Butylbenzene		110.2	77.4	129.8
p-Isopropyltoluene		115.5	79.8	137.5
1,3-Dichlorobenzene		115.6	77.0	131.3
1,4-Dichlorobenzene		117.0	20.7	137.7
1,2-Dichlorobenzene		117.2	10.0	166.2
1,2,3-Trimethylbenzene		113.9	76.3	124.2

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220608A7.3664004M, Parent Sample ID: S36640.03

Run in Batch: 220608A7, Run Date: 06/08/2022 12:57, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		112.6	80.0	133.3
Hexachloroethane		112.3	23.8	138.1
1,2-Dibromo-3-chloropropane		87.5	21.2	189.4
1,2,4-Trichlorobenzene		119.7	27.4	143.4
1,2,3-Trichlorobenzene		112.4	75.4	131.4
Naphthalene		102.4	32.9	135.8
2-Methylnaphthalene		105.7	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		104.9	67.4	121.2	8.0	30.0
Acetone		79.0	29.9	161.5	4.4	30.0
Methyl iodide		100.7	68.8	116.4	16.4	30.0
Carbon disulfide		118.5	63.8	137.4	14.5	30.0
tert-Methyl butyl ether (MTBE)		96.4	73.2	122.4	7.9	30.0
Acrylonitrile		96.0	69.9	128.9	3.3	30.0
2-Butanone (MEK)		78.0	44.0	134.4	2.6	30.0
Dichlorodifluoromethane		99.8	10.0	222.8	12.1	30.0
Chloromethane		105.2	23.8	166.5	11.4	30.0
Vinyl chloride		104.2	43.5	149.1	14.9	30.0
Bromomethane		106.6	56.8	151.3	13.1	30.0
Chloroethane		103.1	53.4	149.4	13.8	30.0
Trichlorofluoromethane		104.4	59.7	151.8	13.8	30.0
1,1-Dichloroethene		91.0	69.6	139.4	15.4	30.0
Methylene chloride		100.9	73.3	121.1	11.9	30.0
trans-1,2-Dichloroethene		101.6	73.6	129.3	13.6	30.0
1,1-Dichloroethane		101.0	71.5	126.2	13.5	30.0
cis-1,2-Dichloroethene		108.4	76.6	122.1	14.2	30.0
Tetrahydrofuran		85.5	59.0	117.9	3.0	30.0
Chloroform		103.7	78.4	124.0	12.2	30.0
Bromochloromethane		107.0	78.2	120.8	12.3	30.0
1,1,1-Trichloroethane		93.1	79.4	130.9	14.5	30.0
4-Methyl-2-pentanone (MIBK)		81.3	71.6	125.2	0.5	30.0
2-Hexanone		76.1	55.4	136.9	1.6	30.0
Carbon tetrachloride		87.6	72.6	133.0	15.6	30.0
Benzene		98.9	79.9	124.9	13.7	30.0
1,2-Dichloroethane		86.4	76.0	126.3	11.5	30.0
Trichloroethene		95.0	79.7	124.2	14.3	30.0
1,2-Dichloropropane		97.3	78.6	126.4	13.6	30.0
Bromodichloromethane		95.4	80.4	128.2	11.1	30.0
Dibromomethane		97.1	76.9	122.1	10.3	30.0
cis-1,3-Dichloropropene		95.6	79.8	129.9	11.9	30.0
Toluene		96.7	79.8	124.5	13.0	30.0
trans-1,3-Dichloropropene		90.1	74.0	131.3	9.8	30.0

Organics - Volatiles, Prep Batch ID: VF220608W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220608A7.3664005N, Parent Sample ID: 220608A7.3664004M

Run in Batch: 220608A7, Run Date: 06/08/2022 13:21, Prep Date: 06/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		93.9	78.7	123.1	8.6	30.0
Tetrachloroethene		96.1	74.5	124.5	13.4	30.0
trans-1,4-Dichloro-2-butene		87.8	68.6	135.4	4.6	30.0
Dibromochloromethane		98.0	74.6	127.2	10.5	30.0
1,2-Dibromoethane		93.0	70.3	133.7	8.7	30.0
Chlorobenzene		103.1	79.2	122.7	12.2	30.0
1,1,1,2-Tetrachloroethane		99.4	80.3	128.2	14.2	30.0
Ethylbenzene		99.0	79.5	129.1	13.6	30.0
p,m-Xylene		102.1	79.4	132.2	14.9	30.0
o-Xylene		100.2	80.2	131.0	14.7	30.0
Styrene		104.5	69.5	126.7	13.3	30.0
Isopropylbenzene		100.5	74.4	121.5	15.3	30.0
Bromoform		94.5	69.4	128.0	9.0	30.0
1,1,2,2-Tetrachloroethane		94.9	79.8	126.3	3.9	30.0
1,2,3-Trichloropropane		88.7	78.3	138.8	8.4	30.0
n-Propylbenzene		99.7	82.0	130.7	14.9	30.0
Bromobenzene		105.3	78.7	124.6	12.8	30.0
1,3,5-Trimethylbenzene		106.3	81.3	128.9	15.0	30.0
tert-Butylbenzene		98.3	80.7	128.9	15.2	30.0
1,2,4-Trimethylbenzene		107.1	81.4	130.8	14.0	30.0
sec-Butylbenzene		94.2	77.4	129.8	15.7	30.0
p-Isopropyltoluene		98.9	79.8	137.5	15.5	30.0
1,3-Dichlorobenzene		100.7	77.0	131.3	13.8	30.0
1,4-Dichlorobenzene		101.5	20.7	137.7	14.3	30.0
1,2-Dichlorobenzene		102.2	10.0	166.2	13.6	30.0
1,2,3-Trimethylbenzene		99.0	76.3	124.2	14.0	30.0
n-Butylbenzene		95.6	80.0	133.3	16.4	30.0
Hexachloroethane		95.7	23.8	138.1	16.0	30.0
1,2-Dibromo-3-chloropropane		83.7	21.2	189.4	4.4	30.0
1,2,4-Trichlorobenzene		103.3	27.4	143.4	14.7	30.0
1,2,3-Trichlorobenzene		98.6	75.4	131.4	13.1	30.0
Naphthalene		94.4	32.9	135.8	8.2	30.0
2-Methylnaphthalene		96.7	25.5	165.5	9.0	30.0

Organics - Volatiles, Prep Batch ID: VF220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 220609A7.BLKW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 13:32, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		97.8	67.4	121.2
Acetone		77.3	29.9	161.5
Methyl iodide		112.0	68.8	116.4
Carbon disulfide		130.6	63.8	137.4
tert-Methyl butyl ether (MTBE)		95.3	73.2	122.4
Acrylonitrile		92.1	69.9	128.9
2-Butanone (MEK)		72.2	44.0	134.4
Dichlorodifluoromethane		104.6	10.0	222.8
Chloromethane		110.0	23.8	166.5
Vinyl chloride		109.1	43.5	149.1
Bromomethane		105.1	56.8	151.3
Chloroethane		104.3	53.4	149.4
Trichlorofluoromethane		106.7	59.7	151.8
1,1-Dichloroethene		106.4	69.6	139.4
Methylene chloride		107.7	73.3	121.1
trans-1,2-Dichloroethene		109.7	73.6	129.3
1,1-Dichloroethane		108.8	71.5	126.2
cis-1,2-Dichloroethene		117.5	76.6	122.1
Tetrahydrofuran		85.6	59.0	117.9
Chloroform		109.1	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		113.5	78.2	120.8
1,1,1-Trichloroethane		100.8	79.4	130.9
4-Methyl-2-pentanone (MIBK)		77.6	71.6	125.2
2-Hexanone		74.0	55.4	136.9
Carbon tetrachloride		101.2	72.6	133.0
Benzene		113.8	79.9	124.9
1,2-Dichloroethane		92.7	76.0	126.3
Trichloroethene		111.3	79.7	124.2
1,2-Dichloropropane		110.8	78.6	126.4
Bromodichloromethane		103.5	80.4	128.2
Dibromomethane		105.0	76.9	122.1
cis-1,3-Dichloropropene		106.3	79.8	129.9
Toluene		110.6	79.8	124.5
trans-1,3-Dichloropropene		95.6	74.0	131.3
1,1,2-Trichloroethane		100.6	78.7	123.1
Tetrachloroethene		113.4	74.5	124.5
trans-1,4-Dichloro-2-butene	*	60.0	68.6	135.4
Dibromochloromethane		104.7	74.6	127.2
1,2-Dibromoethane		100.7	70.3	133.7
Chlorobenzene		117.5	79.2	122.7
1,1,1,2-Tetrachloroethane		112.2	80.3	128.2
Ethylbenzene		116.3	79.5	129.1
p,m-Xylene		119.7	79.4	132.2
o-Xylene		117.5	80.2	131.0
Styrene		121.1	69.5	126.7
Isopropylbenzene		119.7	74.4	121.5
Bromoform		97.7	69.4	128.0
1,1,2,2-Tetrachloroethane		101.0	79.8	126.3
1,2,3-Trichloropropane		93.3	78.3	138.8
n-Propylbenzene		118.3	82.0	130.7
Bromobenzene		119.9	78.7	124.6
1,3,5-Trimethylbenzene		125.7	81.3	128.9
tert-Butylbenzene		115.8	80.7	128.9
1,2,4-Trimethylbenzene		124.3	81.4	130.8
sec-Butylbenzene		113.5	77.4	129.8
p-Isopropyltoluene		116.4	79.8	137.5
1,3-Dichlorobenzene		113.4	77.0	131.3
1,4-Dichlorobenzene		115.3	20.7	137.7
1,2-Dichlorobenzene		114.9	10.0	166.2
1,2,3-Trimethylbenzene		111.4	76.3	124.2
n-Butylbenzene		115.6	80.0	133.3
Hexachloroethane		106.9	23.8	138.1
1,2-Dibromo-3-chloropropane		86.4	21.2	189.4
1,2,4-Trichlorobenzene		122.3	27.4	143.4
1,2,3-Trichlorobenzene		116.4	75.4	131.4
Naphthalene		104.3	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 11:57, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		108.6	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		102.5	67.4	121.2	4.6	30.0
Acetone		72.2	29.9	161.5	6.8	30.0
Methyl iodide		98.4	68.8	116.4	12.9	30.0
Carbon disulfide		116.6	63.8	137.4	11.3	30.0
tert-Methyl butyl ether (MTBE)		97.0	73.2	122.4	1.7	30.0
Acrylonitrile		97.3	69.9	128.9	5.4	30.0
2-Butanone (MEK)		83.5	44.0	134.4	14.6	30.0
Dichlorodifluoromethane		98.4	10.0	222.8	6.1	30.0
Chloromethane		106.6	23.8	166.5	3.1	30.0
Vinyl chloride		104.0	43.5	149.1	4.7	30.0
Bromomethane		105.2	56.8	151.3	0.2	30.0
Chloroethane		104.7	53.4	149.4	0.4	30.0
Trichlorofluoromethane		102.8	59.7	151.8	3.8	30.0
1,1-Dichloroethene		91.6	69.6	139.4	15.0	30.0
Methylene chloride		105.5	73.3	121.1	2.1	30.0
trans-1,2-Dichloroethene		104.6	73.6	129.3	4.8	30.0
1,1-Dichloroethane		105.3	71.5	126.2	3.3	30.0
cis-1,2-Dichloroethene		113.9	76.6	122.1	3.1	30.0
Tetrahydrofuran		91.8	59.0	117.9	7.0	30.0
Chloroform		105.5	78.4	124.0	3.4	30.0
Bromochloromethane		112.4	78.2	120.8	0.9	30.0
1,1,1-Trichloroethane		95.9	79.4	130.9	5.0	30.0
4-Methyl-2-pentanone (MIBK)		85.3	71.6	125.2	9.4	30.0
2-Hexanone		81.2	55.4	136.9	9.3	30.0
Carbon tetrachloride		96.2	72.6	133.0	5.0	30.0
Benzene		110.0	79.9	124.9	3.4	30.0
1,2-Dichloroethane		91.4	76.0	126.3	1.4	30.0
Trichloroethene		104.7	79.7	124.2	6.1	30.0
1,2-Dichloropropane		108.2	78.6	126.4	2.4	30.0
Bromodichloromethane		101.6	80.4	128.2	1.9	30.0
Dibromomethane		104.9	76.9	122.1	0.2	30.0
cis-1,3-Dichloropropene		102.9	79.8	129.9	3.2	30.0
Toluene		106.4	79.8	124.5	3.9	30.0
trans-1,3-Dichloropropene		95.3	74.0	131.3	0.3	30.0
1,1,2-Trichloroethane		101.6	78.7	123.1	1.0	30.0
Tetrachloroethene		108.0	74.5	124.5	4.9	30.0
trans-1,4-Dichloro-2-butene	*	62.3	68.6	135.4	3.8	30.0
Dibromochloromethane		103.4	74.6	127.2	1.2	30.0
1,2-Dibromoethane		101.6	70.3	133.7	0.9	30.0
Chlorobenzene		112.2	79.2	122.7	4.7	30.0

Organics - Volatiles, Prep Batch ID: VF220609W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220609A7.LCSDW09A, Parent Sample ID: 220609A7.LCSW09A

Run in Batch: 220609A7, Run Date: 06/09/2022 12:20, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		109.4	80.3	128.2	2.5	30.0
Ethylbenzene		110.6	79.5	129.1	5.0	30.0
p,m-Xylene		114.7	79.4	132.2	4.3	30.0
o-Xylene		112.2	80.2	131.0	4.6	30.0
Styrene		115.3	69.5	126.7	4.9	30.0
Isopropylbenzene		114.4	74.4	121.5	4.5	30.0
Bromoform		98.5	69.4	128.0	0.8	30.0
1,1,2,2-Tetrachloroethane		103.4	79.8	126.3	2.3	30.0
1,2,3-Trichloropropane		98.1	78.3	138.8	5.0	30.0
n-Propylbenzene		113.3	82.0	130.7	4.3	30.0
Bromobenzene		115.8	78.7	124.6	3.5	30.0
1,3,5-Trimethylbenzene		119.3	81.3	128.9	5.2	30.0
tert-Butylbenzene		108.6	80.7	128.9	6.4	30.0
1,2,4-Trimethylbenzene		119.1	81.4	130.8	4.3	30.0
sec-Butylbenzene		107.6	77.4	129.8	5.3	30.0
p-Isopropyltoluene		111.5	79.8	137.5	4.3	30.0
1,3-Dichlorobenzene		111.1	77.0	131.3	2.0	30.0
1,4-Dichlorobenzene		111.7	20.7	137.7	3.2	30.0
1,2-Dichlorobenzene		113.0	10.0	166.2	1.7	30.0
1,2,3-Trimethylbenzene		108.0	76.3	124.2	3.2	30.0
n-Butylbenzene		109.9	80.0	133.3	5.1	30.0
Hexachloroethane		100.8	23.8	138.1	5.8	30.0
1,2-Dibromo-3-chloropropane		91.4	21.2	189.4	5.7	30.0
1,2,4-Trichlorobenzene		116.0	27.4	143.4	5.3	30.0
1,2,3-Trichlorobenzene		111.2	75.4	131.4	4.6	30.0
Naphthalene		102.7	32.9	135.8	1.5	30.0
2-Methylnaphthalene		105.9	25.5	165.5	2.5	30.0

Organics - Volatiles, Prep Batch ID: VS220609W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220609A9.BLKW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 13:23, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.38	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 10:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		95.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609A9.LCSDW09A, Parent Sample ID: 220609A9.LCSW09A

Run in Batch: 220609A9, Run Date: 06/09/2022 11:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		97.1	70.0	130.0	1.9	30.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674209M, Parent Sample ID: S36742.08

Run in Batch: 220609A9, Run Date: 06/09/2022 11:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		103.1	70.0	130.0

Matrix Spike (MS)

Lab Sample ID: 220609A9.3674307M, Parent Sample ID: S36743.06

Run in Batch: 220609A9, Run Date: 06/09/2022 12:01, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		116.0	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674210N, Parent Sample ID: 220609A9.3674209M

Run in Batch: 220609A9, Run Date: 06/09/2022 11:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.5	70.0	130.0	2.6	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220609A9.3674308N, Parent Sample ID: 220609A9.3674307M

Run in Batch: 220609A9, Run Date: 06/09/2022 12:21, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		107.7	70.0	130.0	3.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.34	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		97.4	70.0	130.0	1.0	30.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.6	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.0	70.0	130.0	1.4	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36743
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892 Task 0470B / Racer Lansing
Submitted: 06/07/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.4
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S36743 Submitted: 06/07/2022 08:15

Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30112892 Task 0470B / Racer Lansing

Initial Preservation Check: 06/07/2022 08:55 MMC

Preservation Recheck (E200.8): N/A

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S36743.01	250ml Plastic H2SO4	<2			

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

140979

CHAIN OF CUSTODY RECORD

Plant 3

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 947 777 5215 FAX NO.:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com
P.O. NO.:
QUOTE NO.:

INVOICE TO

CONTACT NAME: ☑ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Donald Richmond

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO3	H2SO4	NaOH	MeOH	OTHER	1,4 Dioxane	VOCs	Total Nitrate, TKN, Phosphorus
36743.01	6/6/22	1010	TW-14-06_060622	GW	5	X	X		X				X		X
.02	6/6/22	1125	PW-14-03_060622	GW	3		X						X		
.03	6/6/22	1235	TW-15-11_060622	GW	3		X						X		
.04	6/6/22	1430	MW-13-22_060622	GW	3		X						X	X	
.05	6/6/22	1545	MW-13-29_060622	GW	3		X						X		
.06/.07/.08	6/6/22	1740	MW-13-34_060622	GW	9		X						X		
.09	6/6/22	—	TB-05_060622	QW	1		X							X	
.10	6/6/22	—	Dup-12_[redacted]0606 22	GW	3		X						X		

RELINQUISHED BY: SIGNATURE/ORGANIZATION: [illegible] / Arcadis ☒ Sampler DATE: 6/7/22 TIME: 0730
RECEIVED BY: SIGNATURE/ORGANIZATION: Merit Drop Box DATE: 6/7/22 TIME: 0730

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box DATE: 6/7/22 TIME: 0815
RECEIVED BY: SIGNATURE/ORGANIZATION: M Arcadis DATE: 6/7/22 TIME: 0815

RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 3.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Revised Report

Report ID: S36871.01(02)+QC01
Generated on 06/24/2022
Replaces report S36871.01(01) generated on 06/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36871.01-S36871.20
Project: 30112892.0470A / Racer Lansing
Collected Date(s): 06/07/2022 - 06/08/2022
Submitted Date/Time: 06/09/2022 08:15
Sampled by: DonaldRichmond/Austin Westhuis
P.O. #: 30112892.0470A

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

VOC pH check result corrected.

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (20 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36871.01	MW-14-58R_060722	Groundwater	06/07/22 11:55
S36871.02	MW-14-59_060722	Groundwater	06/07/22 10:45
S36871.03	MW-14-60_060722	Groundwater	06/07/22 09:35
S36871.04	MW-14-62_060722	Groundwater	06/07/22 14:50
S36871.05	MW-21-139_060722	Groundwater	06/07/22 13:25
S36871.06	MW-20-130_060722	Groundwater	06/07/22 10:50
S36871.07	MW-21-140_060722	Groundwater	06/07/22 11:50
S36871.08	MW-21-142_060722	Groundwater	06/07/22 13:05
S36871.09	PW-14-01_060722	Groundwater	06/07/22 14:35
S36871.10	Dup-03_060722	Groundwater	06/07/22 00:01
S36871.11	TB-06_060722	Water	06/07/22 00:01
S36871.12	MW-15-73_060722	Groundwater	06/07/22 10:50
S36871.13	MW-13-51_060722	Groundwater	06/07/22 12:50
S36871.14	MW-13-43_060722	Groundwater	06/07/22 14:40
S36871.15	MW-13-45_060722	Groundwater	06/07/22 16:05
S36871.16	MW-14-63_060822	Groundwater	06/08/22 10:20
S36871.17	MW-16-80_060822	Groundwater	06/08/22 12:00
S36871.18	MW-16-76_060822	Groundwater	06/08/22 13:20
S36871.19	MW-16-77_060822	Groundwater	06/08/22 15:05
S36871.20	MW-16-75_060822	Groundwater	06/08/22 16:55

Lab Sample ID: S36871.01
Sample Tag: MW-14-58R_060722
Collected Date/Time: 06/07/2022 11:55
Matrix: Groundwater
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 19:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	310	10		ug/L	10	123-91-1	Y

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 22:49, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S36871.01 (continued)

Sample Tag: MW-14-58R_060722

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 22:49, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36871.02
Sample Tag: MW-14-59_060722
Collected Date/Time: 06/07/2022 10:45
Matrix: Groundwater
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 19:24, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	20	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 01:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	20	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	2	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36871.02 (continued)

Sample Tag: MW-14-59_060722

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 01:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36871.03
Sample Tag: MW-14-60_060722
Collected Date/Time: 06/07/2022 09:35
Matrix: Groundwater
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 19:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	10	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 01:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	4	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36871.03 (continued)

Sample Tag: MW-14-60_060722

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 01:50, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36871.04
Sample Tag: MW-14-62_060722
Collected Date/Time: 06/07/2022 14:50
Matrix: Groundwater
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 20:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	63	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 02:14, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	2	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	71	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36871.04 (continued)

Sample Tag: MW-14-62_060722

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 02:14, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	2	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	2	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36871.05
Sample Tag: MW-21-139_060722
Collected Date/Time: 06/07/2022 13:25
Matrix: Groundwater
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	n/a	n/a	Yes	n/a	n/a

Other / Misc.

Method: , Run Date: 06/10/22 11:10, Analyst: JRM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
No Analyses*	Completed				1		

Lab Sample ID: S36871.06
Sample Tag: MW-20-130_060722
Collected Date/Time: 06/07/2022 10:50
Matrix: Groundwater
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 20:29, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	13	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.07
Sample Tag: MW-21-140_060722
Collected Date/Time: 06/07/2022 11:50
Matrix: Groundwater
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 20:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.08
Sample Tag: MW-21-142_060722
Collected Date/Time: 06/07/2022 13:05
Matrix: Groundwater
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 21:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	81	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.09
Sample Tag: PW-14-01_060722
Collected Date/Time: 06/07/2022 14:35
Matrix: Groundwater
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 19:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.10
Sample Tag: Dup-03_060722
Collected Date/Time: 06/07/2022 00:01
Matrix: Groundwater
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 21:54, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	13	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.11
Sample Tag: TB-06_060722
Collected Date/Time: 06/07/2022 00:01
Matrix: Water
COC Reference: 150858

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 00:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36871.11 (continued)

Sample Tag: TB-06_060722

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 00:16, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36871.12
Sample Tag: MW-15-73_060722
Collected Date/Time: 06/07/2022 10:50
Matrix: Groundwater
COC Reference: 140981

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 22:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	9	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.13
Sample Tag: MW-13-51_060722
Collected Date/Time: 06/07/2022 12:50
Matrix: Groundwater
COC Reference: 140981

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 22:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.14
Sample Tag: MW-13-43_060722
Collected Date/Time: 06/07/2022 14:40
Matrix: Groundwater
COC Reference: 140981

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 22:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.15
Sample Tag: MW-13-45_060722
Collected Date/Time: 06/07/2022 16:05
Matrix: Groundwater
COC Reference: 140981

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 23:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	32	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.16
Sample Tag: MW-14-63_060822
Collected Date/Time: 06/08/2022 10:20
Matrix: Groundwater
COC Reference: 140981

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/10/22 23:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.17
Sample Tag: MW-16-80_060822
Collected Date/Time: 06/08/2022 12:00
Matrix: Groundwater
COC Reference: 140981

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/11/22 00:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	22	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.18
Sample Tag: MW-16-76_060822
Collected Date/Time: 06/08/2022 13:20
Matrix: Groundwater
COC Reference: 140981

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/11/22 00:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.19
Sample Tag: MW-16-77_060822
Collected Date/Time: 06/08/2022 15:05
Matrix: Groundwater
COC Reference: 140981

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/11/22 00:47, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Lab Sample ID: S36871.20
Sample Tag: MW-16-75_060822
Collected Date/Time: 06/08/2022 16:55
Matrix: Groundwater
COC Reference: 140981

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/13/22 09:30	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/11/22 01:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S36871.01(02)+QC01
Generated on 06/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36871.01-S36871.04, S36871.06-S36871.20
Project: 30112892.0470A / Racer Lansing
Submitted Date/Time: 06/09/2022 08:15
Sampled by: DonaldRichmond/Austin Westhuis
P.O. #: 30112892.0470A

QC Report Sections

Cover Page (Page 31)
Analysis Summary (Pages 32-50)
Prep Batch Summary (Page 51)
Surrogates per Lab Sample (Pages 52-55)
Surrogates per QC Sample (Pages 56-59)
Internal Standards per Lab Sample (Pages 60-78)
Internal Standards per QC Sample (Pages 79-82)
Batch QC Results (Pages 83-94)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S36871.01
Sample Tag: MW-14-58R_060722
Collected Date/Time: 06/07/2022 11:55
Matrix: Groundwater
COC Reference: 150858

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 19:03	220610A9	VS220610W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 22:49	220610A3	VF220610W2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S36871.02
Sample Tag: MW-14-59_060722
Collected Date/Time: 06/07/2022 10:45
Matrix: Groundwater
COC Reference: 150858

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 19:24	220610A9	VS220610W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 01:26	220609B7	VF220609W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.03

Sample Tag: MW-14-60_060722

Collected Date/Time: 06/07/2022 09:35

Matrix: Groundwater

COC Reference: 150858

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 19:46	220610A9	VS220610W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 01:50	220609B7	VF220609W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.04

Sample Tag: MW-14-62_060722

Collected Date/Time: 06/07/2022 14:50

Matrix: Groundwater

COC Reference: 150858

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 20:07	220610A9	VS220610W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 02:14	220609B7	VF220609W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.06

Sample Tag: MW-20-130_060722

Collected Date/Time: 06/07/2022 10:50

Matrix: Groundwater

COC Reference: 150858

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 20:29	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.07

Sample Tag: MW-21-140_060722

Collected Date/Time: 06/07/2022 11:50

Matrix: Groundwater

COC Reference: 150858

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 20:50	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.08

Sample Tag: MW-21-142_060722

Collected Date/Time: 06/07/2022 13:05

Matrix: Groundwater

COC Reference: 150858

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 21:12	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.09

Sample Tag: PW-14-01_060722

Collected Date/Time: 06/07/2022 14:35

Matrix: Groundwater

COC Reference: 150858

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 19:42	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36871.10

Sample Tag: Dup-03_060722

Collected Date/Time: 06/07/2022 00:01

Matrix: Groundwater

COC Reference: 150858

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 21:54	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S36871.11
Sample Tag: TB-06_060722
Collected Date/Time: 06/07/2022 00:01
Matrix: Water
COC Reference: 150858

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 00:16	220609B7	VF220609W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.12

Sample Tag: MW-15-73_060722

Collected Date/Time: 06/07/2022 10:50

Matrix: Groundwater

COC Reference: 140981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 22:16	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.13

Sample Tag: MW-13-51_060722

Collected Date/Time: 06/07/2022 12:50

Matrix: Groundwater

COC Reference: 140981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 22:37	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.14

Sample Tag: MW-13-43_060722

Collected Date/Time: 06/07/2022 14:40

Matrix: Groundwater

COC Reference: 140981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 22:59	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.15

Sample Tag: MW-13-45_060722

Collected Date/Time: 06/07/2022 16:05

Matrix: Groundwater

COC Reference: 140981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 23:20	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.16

Sample Tag: MW-14-63_060822

Collected Date/Time: 06/08/2022 10:20

Matrix: Groundwater

COC Reference: 140981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/10/22 23:42	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.17

Sample Tag: MW-16-80_060822

Collected Date/Time: 06/08/2022 12:00

Matrix: Groundwater

COC Reference: 140981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/11/22 00:03	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.18

Sample Tag: MW-16-76_060822

Collected Date/Time: 06/08/2022 13:20

Matrix: Groundwater

COC Reference: 140981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/11/22 00:26	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.19

Sample Tag: MW-16-77_060822

Collected Date/Time: 06/08/2022 15:05

Matrix: Groundwater

COC Reference: 140981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/11/22 00:47	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36871.20

Sample Tag: MW-16-75_060822

Collected Date/Time: 06/08/2022 16:55

Matrix: Groundwater

COC Reference: 140981

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/11/22 01:08	220610A9	VS220610W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF220609W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36871.02	Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 01:26	220609B7
S36871.03	Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 01:50	220609B7
S36871.04	Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 02:14	220609B7
S36871.11	Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 00:16	220609B7

Organics - Volatiles, Prep Batch ID: VF220610W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36871.01	Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 22:49	220610A3

Organics - Volatiles, Prep Batch ID: VS220610W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36871.01	1,4-Dioxane	SW8260B - SIM	06/10/22 19:03	220610A9
S36871.02	1,4-Dioxane	SW8260B - SIM	06/10/22 19:24	220610A9
S36871.03	1,4-Dioxane	SW8260B - SIM	06/10/22 19:46	220610A9
S36871.04	1,4-Dioxane	SW8260B - SIM	06/10/22 20:07	220610A9
S36871.06	1,4-Dioxane	SW8260B - SIM	06/10/22 20:29	220610A9
S36871.07	1,4-Dioxane	SW8260B - SIM	06/10/22 20:50	220610A9
S36871.08	1,4-Dioxane	SW8260B - SIM	06/10/22 21:12	220610A9
S36871.10	1,4-Dioxane	SW8260B - SIM	06/10/22 21:54	220610A9
S36871.12	1,4-Dioxane	SW8260B - SIM	06/10/22 22:16	220610A9
S36871.13	1,4-Dioxane	SW8260B - SIM	06/10/22 22:37	220610A9
S36871.14	1,4-Dioxane	SW8260B - SIM	06/10/22 22:59	220610A9
S36871.15	1,4-Dioxane	SW8260B - SIM	06/10/22 23:20	220610A9
S36871.16	1,4-Dioxane	SW8260B - SIM	06/10/22 23:42	220610A9
S36871.17	1,4-Dioxane	SW8260B - SIM	06/11/22 00:03	220610A9
S36871.18	1,4-Dioxane	SW8260B - SIM	06/11/22 00:26	220610A9
S36871.19	1,4-Dioxane	SW8260B - SIM	06/11/22 00:47	220610A9
S36871.20	1,4-Dioxane	SW8260B - SIM	06/11/22 01:08	220610A9

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36871.09	1,4-Dioxane	SW8260B - SIM	06/13/22 19:42	220613A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36871.02

Sample Tag: MW-14-59_060722

Collected Date/Time: 06/07/2022 10:45

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 01:26, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**114.2**	80.0	124.0
1,2-Dichloroethane-D4		**105.1**	72.0	125.0
Toluene-D8		**95.9**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36871.03

Sample Tag: MW-14-60_060722

Collected Date/Time: 06/07/2022 09:35

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 01:50, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**113.6**	80.0	124.0
1,2-Dichloroethane-D4		**105.9**	72.0	125.0
Toluene-D8		**96.7**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36871.04

Sample Tag: MW-14-62_060722

Collected Date/Time: 06/07/2022 14:50

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 02:14, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**113.9**	80.0	124.0
1,2-Dichloroethane-D4		**101.9**	72.0	125.0
Toluene-D8		**96.6**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36871.11

Sample Tag: TB-06_060722

Collected Date/Time: 06/07/2022 00:01

Matrix: Water

COC Reference: 150858

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 00:16, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**112.9**	80.0	124.0
1,2-Dichloroethane-D4		**105.7**	72.0	125.0
Toluene-D8		**94.6**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220609W3

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609B7.BLKW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 23:52, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**114.0**	80.0	124.0
1,2-Dichloroethane-D4		**105.9**	72.0	125.0
Toluene-D8		**96.1**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:17, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**115.9**	80.0	124.0
1,2-Dichloroethane-D4		**105.1**	72.0	125.0
Toluene-D8		**98.4**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609B7.LCSDW09B, Parent Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**115.5**	80.0	124.0
1,2-Dichloroethane-D4		**109.0**	72.0	125.0
Toluene-D8		**97.0**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220610W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220610A3.BLKW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 16:25, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**111.0**	80.0	124.0
1,2-Dichloroethane-D4		**92.8**	72.0	125.0
Toluene-D8		**104.0**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220610A3.LCSW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 14:52, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**116.6**	80.0	124.0
1,2-Dichloroethane-D4		**96.0**	72.0	125.0
Toluene-D8		**105.2**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220610A3.LCSDW10A, Parent Sample ID: 220610A3.LCSW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 15:15, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**115.4**	80.0	124.0
1,2-Dichloroethane-D4		**91.6**	72.0	125.0
Toluene-D8		**105.6**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS220610W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220610A9.BLKW01A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 16:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220610A9.LCSDW10A, Parent Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:19, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.01

Sample Tag: MW-14-58R_060722

Collected Date/Time: 06/07/2022 11:55

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 19:03, Matrix: WW, Dilution: 10

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**96.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.02

Sample Tag: MW-14-59_060722

Collected Date/Time: 06/07/2022 10:45

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 19:24, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**91.3**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 01:26, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.7**	50.0	200.0
1,4-Difluorobenzene		**96.1**	50.0	200.0
Chlorobenzene-D5		**91.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**86.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.03

Sample Tag: MW-14-60_060722

Collected Date/Time: 06/07/2022 09:35

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 19:46, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**120.9**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 01:50, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**89.9**	50.0	200.0
1,4-Difluorobenzene		**90.5**	50.0	200.0
Chlorobenzene-D5		**87.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**84.3**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.04

Sample Tag: MW-14-62_060722

Collected Date/Time: 06/07/2022 14:50

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 20:07, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**96.4**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 02:14, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**94.1**	50.0	200.0
1,4-Difluorobenzene		**94.3**	50.0	200.0
Chlorobenzene-D5		**89.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**84.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.06

Sample Tag: MW-20-130_060722

Collected Date/Time: 06/07/2022 10:50

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 20:29, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**93.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.07

Sample Tag: MW-21-140_060722

Collected Date/Time: 06/07/2022 11:50

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 20:50, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**91.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.08

Sample Tag: MW-21-142_060722

Collected Date/Time: 06/07/2022 13:05

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 21:12, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**96.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.09

Sample Tag: PW-14-01_060722

Collected Date/Time: 06/07/2022 14:35

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 19:42, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**122.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.10

Sample Tag: Dup-03_060722

Collected Date/Time: 06/07/2022 00:01

Matrix: Groundwater

COC Reference: 150858

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 21:54, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**87.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.11

Sample Tag: TB-06_060722

Collected Date/Time: 06/07/2022 00:01

Matrix: Water

COC Reference: 150858

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 00:16, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**102.2**	50.0	200.0
1,4-Difluorobenzene		**101.9**	50.0	200.0
Chlorobenzene-D5		**95.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**90.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.12

Sample Tag: MW-15-73_060722

Collected Date/Time: 06/07/2022 10:50

Matrix: Groundwater

COC Reference: 140981

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 22:16, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**93.2**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.13

Sample Tag: MW-13-51_060722

Collected Date/Time: 06/07/2022 12:50

Matrix: Groundwater

COC Reference: 140981

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 22:37, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**90.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.14

Sample Tag: MW-13-43_060722

Collected Date/Time: 06/07/2022 14:40

Matrix: Groundwater

COC Reference: 140981

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 22:59, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**85.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.15

Sample Tag: MW-13-45_060722

Collected Date/Time: 06/07/2022 16:05

Matrix: Groundwater

COC Reference: 140981

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 23:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**93.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.16

Sample Tag: MW-14-63_060822

Collected Date/Time: 06/08/2022 10:20

Matrix: Groundwater

COC Reference: 140981

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/10/2022 23:42, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**89.3**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.17

Sample Tag: MW-16-80_060822

Collected Date/Time: 06/08/2022 12:00

Matrix: Groundwater

COC Reference: 140981

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/11/2022 00:03, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**97.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.18

Sample Tag: MW-16-76_060822

Collected Date/Time: 06/08/2022 13:20

Matrix: Groundwater

COC Reference: 140981

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/11/2022 00:26, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**84.2**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.19

Sample Tag: MW-16-77_060822

Collected Date/Time: 06/08/2022 15:05

Matrix: Groundwater

COC Reference: 140981

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/11/2022 00:47, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**88.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36871.20

Sample Tag: MW-16-75_060822

Collected Date/Time: 06/08/2022 16:55

Matrix: Groundwater

COC Reference: 140981

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220610A9, Run Date: 06/11/2022 01:08, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**90.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220609W3

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609B7.BLKW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 23:52, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**105.7**	50.0	200.0
1,4-Difluorobenzene		**104.4**	50.0	200.0
Chlorobenzene-D5		**99.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.6**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:17, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**103.4**	50.0	200.0
1,4-Difluorobenzene		**101.8**	50.0	200.0
Chlorobenzene-D5		**96.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.1**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609B7.LCSDW09B, Parent Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**107.2**	50.0	200.0
1,4-Difluorobenzene		**107.7**	50.0	200.0
Chlorobenzene-D5		**103.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**101.0**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220610W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220610A3.BLKW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 16:25, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**93.7**	50.0	200.0
1,4-Difluorobenzene		**93.9**	50.0	200.0
Chlorobenzene-D5		**90.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**87.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220610A3.LCSW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 14:52, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.7**	50.0	200.0
1,4-Difluorobenzene		**99.9**	50.0	200.0
Chlorobenzene-D5		**98.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220610A3.LCSDW10A, Parent Sample ID: 220610A3.LCSW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 15:15, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.5**	50.0	200.0
1,4-Difluorobenzene		**99.0**	50.0	200.0
Chlorobenzene-D5		**96.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**96.8**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220610W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220610A9.BLKW01A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 16:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**83.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220610A9.LCSDW10A, Parent Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:19, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**99.7**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.1**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**118.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**122.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**123.2**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.6**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220609W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609B7.BLKW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 23:52, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220609W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 220609B7.BLKW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 23:52, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:17, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		81.9	67.4	121.2
Acetone		66.6	29.9	161.5
Methyl iodide		100.2	68.8	116.4
Carbon disulfide		95.7	63.8	137.4
tert-Methyl butyl ether (MTBE)		89.7	73.2	122.4
Acrylonitrile	*	61.5	69.9	128.9
2-Butanone (MEK)		48.0	44.0	134.4
Dichlorodifluoromethane		116.5	10.0	222.8
Chloromethane		73.9	23.8	166.5
Vinyl chloride		79.5	43.5	149.1
Bromomethane		98.5	56.8	151.3
Chloroethane		86.6	53.4	149.4
Trichlorofluoromethane		146.3	59.7	151.8
1,1-Dichloroethene		94.0	69.6	139.4
Methylene chloride		82.8	73.3	121.1
trans-1,2-Dichloroethene		87.4	73.6	129.3
1,1-Dichloroethane		87.1	71.5	126.2
cis-1,2-Dichloroethene		94.9	76.6	122.1
Tetrahydrofuran	*	50.9	59.0	117.9
Chloroform		107.6	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220609W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:17, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		100.8	78.2	120.8
1,1,1-Trichloroethane		120.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)	*	59.2	71.6	125.2
2-Hexanone	*	54.4	55.4	136.9
Carbon tetrachloride	*	144.8	72.6	133.0
Benzene		99.5	79.9	124.9
1,2-Dichloroethane		124.6	76.0	126.3
Trichloroethene		114.5	79.7	124.2
1,2-Dichloropropane		82.9	78.6	126.4
Bromodichloromethane		120.4	80.4	128.2
Dibromomethane		112.2	76.9	122.1
cis-1,3-Dichloropropene		97.4	79.8	129.9
Toluene		104.5	79.8	124.5
trans-1,3-Dichloropropene		102.3	74.0	131.3
1,1,2-Trichloroethane		86.7	78.7	123.1
Tetrachloroethene	*	126.3	74.5	124.5
trans-1,4-Dichloro-2-butene	*	53.9	68.6	135.4
Dibromochloromethane		118.1	74.6	127.2
1,2-Dibromoethane		96.1	70.3	133.7
Chlorobenzene		112.9	79.2	122.7
1,1,1,2-Tetrachloroethane	*	133.9	80.3	128.2
Ethylbenzene		113.8	79.5	129.1
p,m-Xylene		114.6	79.4	132.2
o-Xylene		121.7	80.2	131.0
Styrene		117.3	69.5	126.7
Isopropylbenzene	*	125.2	74.4	121.5
Bromoform		112.1	69.4	128.0
1,1,2,2-Tetrachloroethane		80.2	79.8	126.3
1,2,3-Trichloropropane		106.3	78.3	138.8
n-Propylbenzene		116.6	82.0	130.7
Bromobenzene	*	127.1	78.7	124.6
1,3,5-Trimethylbenzene		127.5	81.3	128.9
tert-Butylbenzene	*	137.9	80.7	128.9
1,2,4-Trimethylbenzene		128.9	81.4	130.8
sec-Butylbenzene		105.4	77.4	129.8
p-Isopropyltoluene		116.7	79.8	137.5
1,3-Dichlorobenzene		113.1	77.0	131.3
1,4-Dichlorobenzene		112.0	20.7	137.7
1,2-Dichlorobenzene		113.0	10.0	166.2
1,2,3-Trimethylbenzene		111.9	76.3	124.2
n-Butylbenzene		104.5	80.0	133.3
Hexachloroethane		125.4	23.8	138.1
1,2-Dibromo-3-chloropropane		88.5	21.2	189.4
1,2,4-Trichlorobenzene		124.6	27.4	143.4
1,2,3-Trichlorobenzene		119.7	75.4	131.4
Naphthalene		98.0	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220609W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:17, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		104.5	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609B7.LCSDW09B, Parent Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		83.5	67.4	121.2	1.8	30.0
Acetone		74.0	29.9	161.5	10.5	30.0
Methyl iodide		97.1	68.8	116.4	3.1	30.0
Carbon disulfide		91.3	63.8	137.4	4.7	30.0
tert-Methyl butyl ether (MTBE)		92.6	73.2	122.4	3.1	30.0
Acrylonitrile	*	63.9	69.9	128.9	3.9	30.0
2-Butanone (MEK)		55.9	44.0	134.4	15.2	30.0
Dichlorodifluoromethane		107.7	10.0	222.8	7.9	30.0
Chloromethane		69.1	23.8	166.5	6.7	30.0
Vinyl chloride		73.8	43.5	149.1	7.4	30.0
Bromomethane		92.6	56.8	151.3	6.2	30.0
Chloroethane		81.3	53.4	149.4	6.3	30.0
Trichlorofluoromethane		137.0	59.7	151.8	6.6	30.0
1,1-Dichloroethene		93.9	69.6	139.4	0.0	30.0
Methylene chloride		81.2	73.3	121.1	2.0	30.0
trans-1,2-Dichloroethene		84.6	73.6	129.3	3.3	30.0
1,1-Dichloroethane		85.0	71.5	126.2	2.4	30.0
cis-1,2-Dichloroethene		92.8	76.6	122.1	2.2	30.0
Tetrahydrofuran	*	56.8	59.0	117.9	10.9	30.0
Chloroform		105.4	78.4	124.0	2.0	30.0
Bromochloromethane		99.1	78.2	120.8	1.7	30.0
1,1,1-Trichloroethane		115.4	79.4	130.9	4.5	30.0
4-Methyl-2-pentanone (MIBK)	*	63.7	71.6	125.2	7.3	30.0
2-Hexanone		59.6	55.4	136.9	9.0	30.0
Carbon tetrachloride	*	135.5	72.6	133.0	6.7	30.0
Benzene		93.6	79.9	124.9	6.1	30.0
1,2-Dichloroethane		121.7	76.0	126.3	2.4	30.0
Trichloroethene		106.2	79.7	124.2	7.5	30.0
1,2-Dichloropropane		82.5	78.6	126.4	0.5	30.0
Bromodichloromethane		117.8	80.4	128.2	2.2	30.0
Dibromomethane		115.4	76.9	122.1	2.8	30.0
cis-1,3-Dichloropropene		96.6	79.8	129.9	0.8	30.0
Toluene		99.2	79.8	124.5	5.2	30.0
trans-1,3-Dichloropropene		99.2	74.0	131.3	3.1	30.0
1,1,2-Trichloroethane		85.6	78.7	123.1	1.3	30.0
Tetrachloroethene		117.3	74.5	124.5	7.4	30.0
trans-1,4-Dichloro-2-butene	*	57.8	68.6	135.4	7.0	30.0
Dibromochloromethane		116.6	74.6	127.2	1.3	30.0
1,2-Dibromoethane		94.5	70.3	133.7	1.6	30.0
Chlorobenzene		106.7	79.2	122.7	5.7	30.0

Organics - Volatiles, Prep Batch ID: VF220609W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220609B7.LCSDW09B, Parent Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		124.7	80.3	128.2	7.1	30.0
Ethylbenzene		108.5	79.5	129.1	4.7	30.0
p,m-Xylene		107.5	79.4	132.2	6.4	30.0
o-Xylene		113.2	80.2	131.0	7.3	30.0
Styrene		111.0	69.5	126.7	5.6	30.0
Isopropylbenzene		116.5	74.4	121.5	7.2	30.0
Bromoform		114.7	69.4	128.0	2.3	30.0
1,1,2,2-Tetrachloroethane		84.4	79.8	126.3	5.1	30.0
1,2,3-Trichloropropane		109.6	78.3	138.8	3.1	30.0
n-Propylbenzene		107.5	82.0	130.7	8.1	30.0
Bromobenzene		119.7	78.7	124.6	6.0	30.0
1,3,5-Trimethylbenzene		118.7	81.3	128.9	7.2	30.0
tert-Butylbenzene		127.7	80.7	128.9	7.7	30.0
1,2,4-Trimethylbenzene		119.1	81.4	130.8	7.9	30.0
sec-Butylbenzene		97.9	77.4	129.8	7.4	30.0
p-Isopropyltoluene		110.3	79.8	137.5	5.6	30.0
1,3-Dichlorobenzene		107.1	77.0	131.3	5.4	30.0
1,4-Dichlorobenzene		105.8	20.7	137.7	5.7	30.0
1,2-Dichlorobenzene		107.7	10.0	166.2	4.8	30.0
1,2,3-Trimethylbenzene		106.0	76.3	124.2	5.4	30.0
n-Butylbenzene		96.3	80.0	133.3	8.2	30.0
Hexachloroethane		118.5	23.8	138.1	5.7	30.0
1,2-Dibromo-3-chloropropane		94.8	21.2	189.4	6.8	30.0
1,2,4-Trichlorobenzene		116.2	27.4	143.4	7.0	30.0
1,2,3-Trichlorobenzene		114.2	75.4	131.4	4.7	30.0
Naphthalene		96.3	32.9	135.8	1.8	30.0
2-Methylnaphthalene		103.5	25.5	165.5	1.0	30.0

Organics - Volatiles, Prep Batch ID: VF220610W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220610A3.BLKW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 16:25, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220610W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 220610A3.BLKW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 16:25, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220610A3.LCSW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 14:52, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		103.6	67.4	121.2
Acetone		128.8	29.9	161.5
Methyl iodide		100.0	68.8	116.4
Carbon disulfide		92.0	63.8	137.4
tert-Methyl butyl ether (MTBE)		88.5	73.2	122.4
Acrylonitrile		122.0	69.9	128.9
2-Butanone (MEK)		130.1	44.0	134.4
Dichlorodifluoromethane		65.4	10.0	222.8
Chloromethane		91.4	23.8	166.5
Vinyl chloride		81.7	43.5	149.1
Bromomethane		105.9	56.8	151.3
Chloroethane		97.3	53.4	149.4
Trichlorofluoromethane		85.7	59.7	151.8
1,1-Dichloroethene		86.0	69.6	139.4
Methylene chloride		99.7	73.3	121.1
trans-1,2-Dichloroethene		93.1	73.6	129.3
1,1-Dichloroethane		94.9	71.5	126.2
cis-1,2-Dichloroethene		100.7	76.6	122.1
Tetrahydrofuran	*	133.5	59.0	117.9
Chloroform		96.8	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220610W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220610A3.LCSW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 14:52, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		105.7	78.2	120.8
1,1,1-Trichloroethane		87.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		117.9	71.6	125.2
2-Hexanone		127.8	55.4	136.9
Carbon tetrachloride		90.9	72.6	133.0
Benzene		101.0	79.9	124.9
1,2-Dichloroethane		98.9	76.0	126.3
Trichloroethene		98.7	79.7	124.2
1,2-Dichloropropane		106.1	78.6	126.4
Bromodichloromethane		104.7	80.4	128.2
Dibromomethane		115.0	76.9	122.1
cis-1,3-Dichloropropene		109.1	79.8	129.9
Toluene		98.9	79.8	124.5
trans-1,3-Dichloropropene		109.7	74.0	131.3
1,1,2-Trichloroethane		110.3	78.7	123.1
Tetrachloroethene		100.9	74.5	124.5
trans-1,4-Dichloro-2-butene		113.1	68.6	135.4
Dibromochloromethane		113.9	74.6	127.2
1,2-Dibromoethane		115.1	70.3	133.7
Chlorobenzene		111.4	79.2	122.7
1,1,1,2-Tetrachloroethane		112.7	80.3	128.2
Ethylbenzene		104.1	79.5	129.1
p,m-Xylene		106.2	79.4	132.2
o-Xylene		108.2	80.2	131.0
Styrene		114.4	69.5	126.7
Isopropylbenzene		102.0	74.4	121.5
Bromoform		122.6	69.4	128.0
1,1,2,2-Tetrachloroethane		120.5	79.8	126.3
1,2,3-Trichloropropane		122.0	78.3	138.8
n-Propylbenzene		99.3	82.0	130.7
Bromobenzene		117.1	78.7	124.6
1,3,5-Trimethylbenzene		104.7	81.3	128.9
tert-Butylbenzene		92.4	80.7	128.9
1,2,4-Trimethylbenzene		105.2	81.4	130.8
sec-Butylbenzene		81.7	77.4	129.8
p-Isopropyltoluene		87.9	79.8	137.5
1,3-Dichlorobenzene		104.5	77.0	131.3
1,4-Dichlorobenzene		105.2	20.7	137.7
1,2-Dichlorobenzene		104.8	10.0	166.2
1,2,3-Trimethylbenzene		96.3	76.3	124.2
n-Butylbenzene		81.6	80.0	133.3
Hexachloroethane		88.3	23.8	138.1
1,2-Dibromo-3-chloropropane		128.5	21.2	189.4
1,2,4-Trichlorobenzene		99.0	27.4	143.4
1,2,3-Trichlorobenzene		98.7	75.4	131.4
Naphthalene		111.1	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220610W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220610A3.LCSW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 14:52, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		106.2	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220610A3.LCSDW10A, Parent Sample ID: 220610A3.LCSW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 15:15, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		101.2	67.4	121.2	2.3	30.0
Acetone		120.5	29.9	161.5	6.7	30.0
Methyl iodide		97.2	68.8	116.4	2.9	30.0
Carbon disulfide		88.6	63.8	137.4	3.8	30.0
tert-Methyl butyl ether (MTBE)		86.7	73.2	122.4	2.0	30.0
Acrylonitrile		118.6	69.9	128.9	2.8	30.0
2-Butanone (MEK)		120.0	44.0	134.4	8.1	30.0
Dichlorodifluoromethane		62.2	10.0	222.8	5.1	30.0
Chloromethane		87.3	23.8	166.5	4.6	30.0
Vinyl chloride		78.6	43.5	149.1	3.8	30.0
Bromomethane		102.5	56.8	151.3	3.2	30.0
Chloroethane		94.0	53.4	149.4	3.5	30.0
Trichlorofluoromethane		81.3	59.7	151.8	5.2	30.0
1,1-Dichloroethene		82.2	69.6	139.4	4.5	30.0
Methylene chloride		96.0	73.3	121.1	3.7	30.0
trans-1,2-Dichloroethene		89.0	73.6	129.3	4.5	30.0
1,1-Dichloroethane		91.4	71.5	126.2	3.7	30.0
cis-1,2-Dichloroethene		96.3	76.6	122.1	4.4	30.0
Tetrahydrofuran	*	124.8	59.0	117.9	6.7	30.0
Chloroform		93.9	78.4	124.0	3.0	30.0
Bromochloromethane		103.3	78.2	120.8	2.3	30.0
1,1,1-Trichloroethane		85.2	79.4	130.9	2.9	30.0
4-Methyl-2-pentanone (MIBK)		111.3	71.6	125.2	5.7	30.0
2-Hexanone		119.5	55.4	136.9	6.8	30.0
Carbon tetrachloride		88.1	72.6	133.0	3.2	30.0
Benzene		97.4	79.9	124.9	3.6	30.0
1,2-Dichloroethane		96.8	76.0	126.3	2.1	30.0
Trichloroethene		95.3	79.7	124.2	3.5	30.0
1,2-Dichloropropane		103.2	78.6	126.4	2.8	30.0
Bromodichloromethane		101.5	80.4	128.2	3.1	30.0
Dibromomethane		112.4	76.9	122.1	2.3	30.0
cis-1,3-Dichloropropene		106.3	79.8	129.9	2.6	30.0
Toluene		95.3	79.8	124.5	3.8	30.0
trans-1,3-Dichloropropene		106.3	74.0	131.3	3.1	30.0
1,1,2-Trichloroethane		107.4	78.7	123.1	2.6	30.0
Tetrachloroethene		98.8	74.5	124.5	2.2	30.0
trans-1,4-Dichloro-2-butene		111.9	68.6	135.4	1.1	30.0
Dibromochloromethane		112.6	74.6	127.2	1.2	30.0
1,2-Dibromoethane		113.9	70.3	133.7	1.1	30.0
Chlorobenzene		108.7	79.2	122.7	2.5	30.0

Organics - Volatiles, Prep Batch ID: VF220610W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220610A3.LCSDW10A, Parent Sample ID: 220610A3.LCSW10A

Run in Batch: 220610A3, Run Date: 06/10/2022 15:15, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		110.5	80.3	128.2	2.0	30.0
Ethylbenzene		101.9	79.5	129.1	2.1	30.0
p,m-Xylene		104.2	79.4	132.2	1.9	30.0
o-Xylene		105.8	80.2	131.0	2.2	30.0
Styrene		112.2	69.5	126.7	2.0	30.0
Isopropylbenzene		100.7	74.4	121.5	1.3	30.0
Bromoform		120.9	69.4	128.0	1.4	30.0
1,1,2,2-Tetrachloroethane		117.5	79.8	126.3	2.5	30.0
1,2,3-Trichloropropane		119.6	78.3	138.8	2.0	30.0
n-Propylbenzene		96.8	82.0	130.7	2.5	30.0
Bromobenzene		115.3	78.7	124.6	1.5	30.0
1,3,5-Trimethylbenzene		102.0	81.3	128.9	2.6	30.0
tert-Butylbenzene		90.3	80.7	128.9	2.3	30.0
1,2,4-Trimethylbenzene		102.6	81.4	130.8	2.5	30.0
sec-Butylbenzene		81.2	77.4	129.8	0.6	30.0
p-Isopropyltoluene		85.9	79.8	137.5	2.3	30.0
1,3-Dichlorobenzene		104.0	77.0	131.3	0.6	30.0
1,4-Dichlorobenzene		104.6	20.7	137.7	0.6	30.0
1,2-Dichlorobenzene		104.5	10.0	166.2	0.2	30.0
1,2,3-Trimethylbenzene		96.7	76.3	124.2	0.3	30.0
n-Butylbenzene		80.8	80.0	133.3	1.0	30.0
Hexachloroethane		87.4	23.8	138.1	1.0	30.0
1,2-Dibromo-3-chloropropane		122.9	21.2	189.4	4.5	30.0
1,2,4-Trichlorobenzene		97.4	27.4	143.4	1.6	30.0
1,2,3-Trichlorobenzene		97.8	75.4	131.4	0.9	30.0
Naphthalene		108.1	32.9	135.8	2.7	30.0
2-Methylnaphthalene		101.8	25.5	165.5	4.3	30.0

Organics - Volatiles, Prep Batch ID: VS220610W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220610A9.BLKW01A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.35	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 16:59, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		119.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220610A9.LCSDW10A, Parent Sample ID: 220610A9.LCSW10A

Run in Batch: 220610A9, Run Date: 06/10/2022 17:19, Prep Date: 06/10/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		98.6	70.0	130.0	19.0	30.0

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.34	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		97.4	70.0	130.0	1.0	30.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.6	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.0	70.0	130.0	1.4	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36871
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470A / Racer Lansing
Submitted: 06/09/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.7
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Plant 2

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 2

150858

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 947-777-5215 | CELL NO.: | P.O. NO.:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com | QUOTE NO.:

INVOICE TO

CONTACT NAME: | ☒ SAME
COMPANY:
ADDRESS:
CITY: | STATE: | ZIP CODE:
PHONE NO.: | E-MAIL ADDRESS:

PROJECT NO./NAME: 30012892.0470A/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260B SIMS	1,4-Dioxane 8260B SIMS
36871.01	6/7/22	1155	mw-14-58R_060722	GW	3		3						X	X
.02	6/7/22	1045	mw-14-59_060722	GW	3		3						X	X
.03	6/7/22	0935	mw-14-60_060722	GW	3		3						X	X
.04	6/7/22	1450	mw-14-62_060722	GW	3		3						X	X
.05	6/7/22	1325	mw-21-139_060722	GW	3		3							X
.06	6/7/22	1050	mw-20-130_060722	GW	3		3							X
.07	6/7/22	1150	mw-21-140_060722	GW	3		3							X
.08	6/7/22	1305	mw-21-142_060722	GW	3		3							X
.09	6/7/22	1435	pw-14-01_060722	GW	3		3							X
.10	6/7/22	—	Dup-03_060722	GW	3		3							X
.11	6/7/22	—	TB-06_060722	GW	1		1						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☒ Sampler	DATE	TIME
[signature] / Arcadis		6/9/22	0700
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
Merit Drop Box		6/9/22	0700
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
Merit Drop Box	6/9/22	0815
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
[signature]	6/9/22	0815

SEAL NO.: | SEAL INTACT YES ☐ NO ☐ | INITIALS:
SEAL NO.: | SEAL INTACT YES ☐ NO ☐ | INITIALS:

NOTES: | TEMP. ON ARRIVAL: 3.7

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev 1.26.22

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 2 OF 2

140981

CHAIN OF CUSTODY RECORD

Plant 2

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO: 947 777 5215 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☑ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892 / Racer Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Donald Richmond/DR Richmond

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☐ Other
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4 Dioxane
368711.12	6/7/22	1050	MW-15-73_060722	GW	3		X						X
.13	6/7/22	1250	MW-13-51_060722	GW	3		X						X
.14	6/7/22	1440	MW-13-43_060722	GW	3		X						X
.15	6/7/22	1605	MW-13-45_060722	GW	3		X						X
.16	6/8/22	1020	MW-14-63_060822	GW	3		X						X
.17	6/8/22	1200	MW-16-80_060822	GW	3		X						X
.18	6/8/22	1320	MW-16-76_060822	GW	3		X						X
.19	6/8/22	1505	MW-16-77_060822	GW	3		X						X
.20	6/8/22	1655	MW-16-75_060822	GW	3		X						X

RELINQUISHED BY: SIGNATURE/ORGANIZATION: [signature] / Arcadis ☒ Sampler	6/9/22	0700	RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box	6/9/22 0815
RECEIVED BY: SIGNATURE/ORGANIZATION: Merit Drop Box	6/9/22	0700	RECEIVED BY: SIGNATURE/ORGANIZATION: M Chilcote	6/9/22 0815
RELINQUISHED BY: SIGNATURE/ORGANIZATION:	DATE	TIME	SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS	NOTES: TEMP. ON ARRIVAL 3.7
RECEIVED BY: SIGNATURE/ORGANIZATION:	DATE	TIME	SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS	

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S36872.01(01)+QC01
Generated on 06/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36872.01-S36872.09
Project: 30112892.0470A / Racer Lansing
Collected Date(s): 06/07/2022 - 06/08/2022
Submitted Date/Time: 06/09/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (9 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36872.01	MW-02-04(3)_060822	Groundwater	06/08/22 10:45
S36872.02	MW-18-94_060822	Groundwater	06/08/22 12:25
S36872.03	MW-18-97_060822	Groundwater	06/08/22 13:30
S36872.04	UNK-10_060822	Groundwater	06/08/22 10:35
S36872.05	UNK-11_060822	Groundwater	06/08/22 11:50
S36872.06	MW-05(3)_060722	Groundwater	06/07/22 16:15
S36872.07	Dup-08_060722	Groundwater	06/07/22 00:01
S36872.08	TB-07_060822	Water	06/08/22 00:01
S36872.09	Dup-10_060822	Groundwater	06/08/22 00:01

Lab Sample ID: S36872.01
Sample Tag: MW-02-04(3)_060822
Collected Date/Time: 06/08/2022 10:45
Matrix: Groundwater
COC Reference: 137975

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.7	IR
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Metals

Method: E200.8, Run Date: 06/20/22 17:09, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.016	0.002		mg/L	5	7440-38-2	
Arsenic	0.051	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	0.019	0.005		mg/L	5	7440-02-0	
Nickel	0.022	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 21:29, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	4	1		ug/L	1	123-91-1	

Lab Sample ID: S36872.02
Sample Tag: MW-18-94_060822
Collected Date/Time: 06/08/2022 12:25
Matrix: Groundwater
COC Reference: 137975

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 21:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	5	1		ug/L	1	123-91-1	

Lab Sample ID: S36872.03
Sample Tag: MW-18-97_060822
Collected Date/Time: 06/08/2022 13:30
Matrix: Groundwater
COC Reference: 137975

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 22:11, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36872.04
Sample Tag: UNK-10_060822
Collected Date/Time: 06/08/2022 10:35
Matrix: Groundwater
COC Reference: 137975

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 02:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36872.04 (continued)
Sample Tag: UNK-10_060822

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 02:38, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36872.05
Sample Tag: UNK-11_060822
Collected Date/Time: 06/08/2022 11:50
Matrix: Groundwater
COC Reference: 137975

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 03:01, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	7	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36872.05 (continued)
Sample Tag: UNK-11_060822

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 03:01, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36872.06
Sample Tag: MW-05(3)_060722
Collected Date/Time: 06/07/2022 16:15
Matrix: Groundwater
COC Reference: 137975

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 03:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36872.06 (continued)
Sample Tag: MW-05(3)_060722

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 03:25, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36872.07
Sample Tag: Dup-08_060722
Collected Date/Time: 06/07/2022 00:01
Matrix: Groundwater
COC Reference: 137975

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 03:49, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36872.07 (continued)
Sample Tag: Dup-08_060722

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 03:49, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36872.08
Sample Tag: TB-07_060822
Collected Date/Time: 06/08/2022 00:01
Matrix: Water
COC Reference: 137975

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 04:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36872.08 (continued)
Sample Tag: TB-07_060822

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/10/22 04:12, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36872.09
Sample Tag: Dup-10_060822
Collected Date/Time: 06/08/2022 00:01
Matrix: Groundwater
COC Reference: 137975

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.7	IR
3	40ml Glass	HCL	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/10/22 09:00	BDO	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Metals

Method: E200.8, Run Date: 06/20/22 17:10, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.054	0.002		mg/L	5	7440-38-2	
Chromium	0.006	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	0.026	0.005		mg/L	5	7440-02-0	
Vanadium	0.008	0.005		mg/L	5	7440-62-2	

Method: E200.8, Run Date: 06/20/22 17:11, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.017	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	0.019	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 22:33, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	4	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S36872.01(01)+QC01
Generated on 06/20/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36872.01-S36872.09
Project: 30112892.0470A / Racer Lansing
Submitted Date/Time: 06/09/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

QC Report Sections

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Analysis Summary (Pages 21-29)
Prep Batch Summary (Page 30)
Surrogates per Lab Sample (Pages 31-35)
Surrogates per QC Sample (Pages 36-37)
Internal Standards per Lab Sample (Pages 38-46)
Internal Standards per QC Sample (Pages 47-48)
Batch QC Results (Pages 49-56)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S36872.01
Sample Tag: MW-02-04(3)_060822
Collected Date/Time: 06/08/2022 10:45
Matrix: Groundwater
COC Reference: 137975

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:09	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 21:29	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36872.02
Sample Tag: MW-18-94_060822
Collected Date/Time: 06/08/2022 12:25
Matrix: Groundwater
COC Reference: 137975

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 21:50	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36872.03
Sample Tag: MW-18-97_060822
Collected Date/Time: 06/08/2022 13:30
Matrix: Groundwater
COC Reference: 137975

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 22:11	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36872.04
Sample Tag: UNK-10_060822
Collected Date/Time: 06/08/2022 10:35
Matrix: Groundwater
COC Reference: 137975

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 02:38	220609B7	VF220609W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S36872.05

Sample Tag: UNK-11_060822

Collected Date/Time: 06/08/2022 11:50

Matrix: Groundwater

COC Reference: 137975

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 03:01	220609B7	VF220609W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S36872.06
Sample Tag: MW-05(3)_060722
Collected Date/Time: 06/07/2022 16:15
Matrix: Groundwater
COC Reference: 137975

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 03:25	220609B7	VF220609W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S36872.07

Sample Tag: Dup-08_060722

Collected Date/Time: 06/07/2022 00:01

Matrix: Groundwater

COC Reference: 137975

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 03:49	220609B7	VF220609W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S36872.08
Sample Tag: TB-07_060822
Collected Date/Time: 06/08/2022 00:01
Matrix: Water
COC Reference: 137975

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 04:12	220609B7	VF220609W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S36872.09

Sample Tag: Dup-10_060822

Collected Date/Time: 06/08/2022 00:01

Matrix: Groundwater

COC Reference: 137975

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/20/22 17:10	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:10	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:10	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:10	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:10	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:10	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 22:33	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Metals, Prep Batch ID: MTD-062022-6

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36872.01	Arsenic, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Arsenic	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Chromium, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Chromium	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Copper, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Copper	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Lead, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Lead	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Nickel, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Nickel	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Vanadium, Dissolved	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.01	Vanadium	E200.8	06/20/22 17:09	MT4-22-0620C
S36872.09	Arsenic, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C
S36872.09	Arsenic	E200.8	06/20/22 17:10	MT4-22-0620C
S36872.09	Chromium, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C
S36872.09	Chromium	E200.8	06/20/22 17:10	MT4-22-0620C
S36872.09	Copper, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C
S36872.09	Copper	E200.8	06/20/22 17:10	MT4-22-0620C
S36872.09	Lead, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C
S36872.09	Lead	E200.8	06/20/22 17:10	MT4-22-0620C
S36872.09	Nickel, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C
S36872.09	Nickel	E200.8	06/20/22 17:10	MT4-22-0620C
S36872.09	Vanadium, Dissolved	E200.8	06/20/22 17:11	MT4-22-0620C
S36872.09	Vanadium	E200.8	06/20/22 17:10	MT4-22-0620C

Organics - Volatiles, Prep Batch ID: VF220609W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36872.04	Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 02:38	220609B7
S36872.05	Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 03:01	220609B7
S36872.06	Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 03:25	220609B7
S36872.07	Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 03:49	220609B7
S36872.08	Volatile Organics - DEQ List	SW5030C/8260C	06/10/22 04:12	220609B7

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36872.01	1,4-Dioxane	SW8260B - SIM	06/13/22 21:29	220613A9
S36872.02	1,4-Dioxane	SW8260B - SIM	06/13/22 21:50	220613A9
S36872.03	1,4-Dioxane	SW8260B - SIM	06/13/22 22:11	220613A9
S36872.09	1,4-Dioxane	SW8260B - SIM	06/13/22 22:33	220613A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36872.04

Sample Tag: UNK-10_060822

Collected Date/Time: 06/08/2022 10:35

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 02:38, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**114.2**	80.0	124.0
1,2-Dichloroethane-D4		**104.7**	72.0	125.0
Toluene-D8		**96.1**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36872.05

Sample Tag: UNK-11_060822

Collected Date/Time: 06/08/2022 11:50

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 03:01, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**113.9**	80.0	124.0
1,2-Dichloroethane-D4		**108.7**	72.0	125.0
Toluene-D8		**97.0**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36872.06

Sample Tag: MW-05(3)_060722

Collected Date/Time: 06/07/2022 16:15

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 03:25, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**113.0**	80.0	124.0
1,2-Dichloroethane-D4		**103.6**	72.0	125.0
Toluene-D8		**96.3**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36872.07

Sample Tag: Dup-08_060722

Collected Date/Time: 06/07/2022 00:01

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 03:49, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**114.6**	80.0	124.0
1,2-Dichloroethane-D4		**108.6**	72.0	125.0
Toluene-D8		**97.0**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36872.08

Sample Tag: TB-07_060822

Collected Date/Time: 06/08/2022 00:01

Matrix: Water

COC Reference: 137975

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 04:12, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**112.6**	80.0	124.0
1,2-Dichloroethane-D4		**105.1**	72.0	125.0
Toluene-D8		**96.3**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220609W3

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609B7.BLKW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 23:52, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**114.0**	80.0	124.0
1,2-Dichloroethane-D4		**105.9**	72.0	125.0
Toluene-D8		**96.1**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:17, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**115.9**	80.0	124.0
1,2-Dichloroethane-D4		**105.1**	72.0	125.0
Toluene-D8		**98.4**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609B7.LCSDW09B, Parent Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**115.5**	80.0	124.0
1,2-Dichloroethane-D4		**109.0**	72.0	125.0
Toluene-D8		**97.0**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Lab Sample ID: S36872.01

Sample Tag: MW-02-04(3)_060822

Collected Date/Time: 06/08/2022 10:45

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 21:29, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**111.2**	50.0	200.0

Lab Sample ID: S36872.02

Sample Tag: MW-18-94_060822

Collected Date/Time: 06/08/2022 12:25

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 21:50, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**121.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36872.03

Sample Tag: MW-18-97_060822

Collected Date/Time: 06/08/2022 13:30

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 22:11, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**115.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36872.04

Sample Tag: UNK-10_060822

Collected Date/Time: 06/08/2022 10:35

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 02:38, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.3**	50.0	200.0
1,4-Difluorobenzene		**96.6**	50.0	200.0
Chlorobenzene-D5		**91.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**88.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36872.05

Sample Tag: UNK-11_060822

Collected Date/Time: 06/08/2022 11:50

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 03:01, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**97.3**	50.0	200.0
1,4-Difluorobenzene		**98.4**	50.0	200.0
Chlorobenzene-D5		**95.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**90.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36872.06

Sample Tag: MW-05(3)_060722

Collected Date/Time: 06/07/2022 16:15

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 03:25, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**91.6**	50.0	200.0
1,4-Difluorobenzene		**92.1**	50.0	200.0
Chlorobenzene-D5		**87.8**	50.0	200.0
1,4-Dichlorobenzene-D4		**82.9**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36872.07

Sample Tag: Dup-08_060722

Collected Date/Time: 06/07/2022 00:01

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 03:49, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**94.1**	50.0	200.0
1,4-Difluorobenzene		**95.6**	50.0	200.0
Chlorobenzene-D5		**92.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**89.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36872.08

Sample Tag: TB-07_060822

Collected Date/Time: 06/08/2022 00:01

Matrix: Water

COC Reference: 137975

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220609B7, Run Date: 06/10/2022 04:12, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**93.5**	50.0	200.0
1,4-Difluorobenzene		**93.7**	50.0	200.0
Chlorobenzene-D5		**90.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**85.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36872.09

Sample Tag: Dup-10_060822

Collected Date/Time: 06/08/2022 00:01

Matrix: Groundwater

COC Reference: 137975

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 22:33, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**122.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220609W3

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609B7.BLKW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 23:52, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**105.7**	50.0	200.0
1,4-Difluorobenzene		**104.4**	50.0	200.0
Chlorobenzene-D5		**99.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.6**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:17, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**103.4**	50.0	200.0
1,4-Difluorobenzene		**101.8**	50.0	200.0
Chlorobenzene-D5		**96.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.1**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609B7.LCSDW09B, Parent Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**107.2**	50.0	200.0
1,4-Difluorobenzene		**107.7**	50.0	200.0
Chlorobenzene-D5		**103.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**101.0**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**114.1**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**118.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**122.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**123.2**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**114.6**	50.0	200.0

Metals, Prep Batch ID: MTD-062022-6

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-22-0620C.018.LRB

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:00, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Nickel		ND	0.001	mg/L
Vanadium		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-0620C.017.LCS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 16:59, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	85	115
Chromium		105	85	115
Copper		103	85	115
Lead		101	85	115
Nickel		102	85	115
Vanadium		105	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-22-0620C.030.MS, Parent Sample ID: S36941.01

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:13, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	75	125
Chromium		102	75	125
Copper		100	75	125
Lead		102	75	125
Nickel		100	75	125
Vanadium		105	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-22-0620C.047.MS, Parent Sample ID: S36941.01

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:35, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Chromium		104	75	125
Copper		102	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0620C.031.MSD, Parent Sample ID: MT4-22-0620C.030.MS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:13, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		102	75	125	0	20
Chromium		104	75	125	2	20
Copper		100	75	125	0	20
Lead		100	75	125	1	20
Nickel		101	75	125	1	20
Vanadium		105	75	125	0	20

Metals, Prep Batch ID: MTD-062022-6 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0620C.048.MSD, Parent Sample ID: MT4-22-0620C.047.MS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:36, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chromium		109	75	125	5	20
Copper		107	75	125	5	20

Organics - Volatiles, Prep Batch ID: VF220609W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220609B7.BLKW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 23:52, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220609W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 220609B7.BLKW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 23:52, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:17, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		81.9	67.4	121.2
Acetone		66.6	29.9	161.5
Methyl iodide		100.2	68.8	116.4
Carbon disulfide		95.7	63.8	137.4
tert-Methyl butyl ether (MTBE)		89.7	73.2	122.4
Acrylonitrile	*	61.5	69.9	128.9
2-Butanone (MEK)		48.0	44.0	134.4
Dichlorodifluoromethane		116.5	10.0	222.8
Chloromethane		73.9	23.8	166.5
Vinyl chloride		79.5	43.5	149.1
Bromomethane		98.5	56.8	151.3
Chloroethane		86.6	53.4	149.4
Trichlorofluoromethane		146.3	59.7	151.8
1,1-Dichloroethene		94.0	69.6	139.4
Methylene chloride		82.8	73.3	121.1
trans-1,2-Dichloroethene		87.4	73.6	129.3
1,1-Dichloroethane		87.1	71.5	126.2
cis-1,2-Dichloroethene		94.9	76.6	122.1
Tetrahydrofuran	*	50.9	59.0	117.9
Chloroform		107.6	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220609W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:17, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		100.8	78.2	120.8
1,1,1-Trichloroethane		120.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)	*	59.2	71.6	125.2
2-Hexanone	*	54.4	55.4	136.9
Carbon tetrachloride	*	144.8	72.6	133.0
Benzene		99.5	79.9	124.9
1,2-Dichloroethane		124.6	76.0	126.3
Trichloroethene		114.5	79.7	124.2
1,2-Dichloropropane		82.9	78.6	126.4
Bromodichloromethane		120.4	80.4	128.2
Dibromomethane		112.2	76.9	122.1
cis-1,3-Dichloropropene		97.4	79.8	129.9
Toluene		104.5	79.8	124.5
trans-1,3-Dichloropropene		102.3	74.0	131.3
1,1,2-Trichloroethane		86.7	78.7	123.1
Tetrachloroethene	*	126.3	74.5	124.5
trans-1,4-Dichloro-2-butene	*	53.9	68.6	135.4
Dibromochloromethane		118.1	74.6	127.2
1,2-Dibromoethane		96.1	70.3	133.7
Chlorobenzene		112.9	79.2	122.7
1,1,1,2-Tetrachloroethane	*	133.9	80.3	128.2
Ethylbenzene		113.8	79.5	129.1
p,m-Xylene		114.6	79.4	132.2
o-Xylene		121.7	80.2	131.0
Styrene		117.3	69.5	126.7
Isopropylbenzene	*	125.2	74.4	121.5
Bromoform		112.1	69.4	128.0
1,1,2,2-Tetrachloroethane		80.2	79.8	126.3
1,2,3-Trichloropropane		106.3	78.3	138.8
n-Propylbenzene		116.6	82.0	130.7
Bromobenzene	*	127.1	78.7	124.6
1,3,5-Trimethylbenzene		127.5	81.3	128.9
tert-Butylbenzene	*	137.9	80.7	128.9
1,2,4-Trimethylbenzene		128.9	81.4	130.8
sec-Butylbenzene		105.4	77.4	129.8
p-Isopropyltoluene		116.7	79.8	137.5
1,3-Dichlorobenzene		113.1	77.0	131.3
1,4-Dichlorobenzene		112.0	20.7	137.7
1,2-Dichlorobenzene		113.0	10.0	166.2
1,2,3-Trimethylbenzene		111.9	76.3	124.2
n-Butylbenzene		104.5	80.0	133.3
Hexachloroethane		125.4	23.8	138.1
1,2-Dibromo-3-chloropropane		88.5	21.2	189.4
1,2,4-Trichlorobenzene		124.6	27.4	143.4
1,2,3-Trichlorobenzene		119.7	75.4	131.4
Naphthalene		98.0	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220609W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:17, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		104.5	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220609B7.LCSDW09B, Parent Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		83.5	67.4	121.2	1.8	30.0
Acetone		74.0	29.9	161.5	10.5	30.0
Methyl iodide		97.1	68.8	116.4	3.1	30.0
Carbon disulfide		91.3	63.8	137.4	4.7	30.0
tert-Methyl butyl ether (MTBE)		92.6	73.2	122.4	3.1	30.0
Acrylonitrile	*	63.9	69.9	128.9	3.9	30.0
2-Butanone (MEK)		55.9	44.0	134.4	15.2	30.0
Dichlorodifluoromethane		107.7	10.0	222.8	7.9	30.0
Chloromethane		69.1	23.8	166.5	6.7	30.0
Vinyl chloride		73.8	43.5	149.1	7.4	30.0
Bromomethane		92.6	56.8	151.3	6.2	30.0
Chloroethane		81.3	53.4	149.4	6.3	30.0
Trichlorofluoromethane		137.0	59.7	151.8	6.6	30.0
1,1-Dichloroethene		93.9	69.6	139.4	0.0	30.0
Methylene chloride		81.2	73.3	121.1	2.0	30.0
trans-1,2-Dichloroethene		84.6	73.6	129.3	3.3	30.0
1,1-Dichloroethane		85.0	71.5	126.2	2.4	30.0
cis-1,2-Dichloroethene		92.8	76.6	122.1	2.2	30.0
Tetrahydrofuran	*	56.8	59.0	117.9	10.9	30.0
Chloroform		105.4	78.4	124.0	2.0	30.0
Bromochloromethane		99.1	78.2	120.8	1.7	30.0
1,1,1-Trichloroethane		115.4	79.4	130.9	4.5	30.0
4-Methyl-2-pentanone (MIBK)	*	63.7	71.6	125.2	7.3	30.0
2-Hexanone		59.6	55.4	136.9	9.0	30.0
Carbon tetrachloride	*	135.5	72.6	133.0	6.7	30.0
Benzene		93.6	79.9	124.9	6.1	30.0
1,2-Dichloroethane		121.7	76.0	126.3	2.4	30.0
Trichloroethene		106.2	79.7	124.2	7.5	30.0
1,2-Dichloropropane		82.5	78.6	126.4	0.5	30.0
Bromodichloromethane		117.8	80.4	128.2	2.2	30.0
Dibromomethane		115.4	76.9	122.1	2.8	30.0
cis-1,3-Dichloropropene		96.6	79.8	129.9	0.8	30.0
Toluene		99.2	79.8	124.5	5.2	30.0
trans-1,3-Dichloropropene		99.2	74.0	131.3	3.1	30.0
1,1,2-Trichloroethane		85.6	78.7	123.1	1.3	30.0
Tetrachloroethene		117.3	74.5	124.5	7.4	30.0
trans-1,4-Dichloro-2-butene	*	57.8	68.6	135.4	7.0	30.0
Dibromochloromethane		116.6	74.6	127.2	1.3	30.0
1,2-Dibromoethane		94.5	70.3	133.7	1.6	30.0
Chlorobenzene		106.7	79.2	122.7	5.7	30.0

Organics - Volatiles, Prep Batch ID: VF220609W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220609B7.LCSDW09B, Parent Sample ID: 220609B7.LCSW09B

Run in Batch: 220609B7, Run Date: 06/09/2022 22:41, Prep Date: 06/09/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		124.7	80.3	128.2	7.1	30.0
Ethylbenzene		108.5	79.5	129.1	4.7	30.0
p,m-Xylene		107.5	79.4	132.2	6.4	30.0
o-Xylene		113.2	80.2	131.0	7.3	30.0
Styrene		111.0	69.5	126.7	5.6	30.0
Isopropylbenzene		116.5	74.4	121.5	7.2	30.0
Bromoform		114.7	69.4	128.0	2.3	30.0
1,1,2,2-Tetrachloroethane		84.4	79.8	126.3	5.1	30.0
1,2,3-Trichloropropane		109.6	78.3	138.8	3.1	30.0
n-Propylbenzene		107.5	82.0	130.7	8.1	30.0
Bromobenzene		119.7	78.7	124.6	6.0	30.0
1,3,5-Trimethylbenzene		118.7	81.3	128.9	7.2	30.0
tert-Butylbenzene		127.7	80.7	128.9	7.7	30.0
1,2,4-Trimethylbenzene		119.1	81.4	130.8	7.9	30.0
sec-Butylbenzene		97.9	77.4	129.8	7.4	30.0
p-Isopropyltoluene		110.3	79.8	137.5	5.6	30.0
1,3-Dichlorobenzene		107.1	77.0	131.3	5.4	30.0
1,4-Dichlorobenzene		105.8	20.7	137.7	5.7	30.0
1,2-Dichlorobenzene		107.7	10.0	166.2	4.8	30.0
1,2,3-Trimethylbenzene		106.0	76.3	124.2	5.4	30.0
n-Butylbenzene		96.3	80.0	133.3	8.2	30.0
Hexachloroethane		118.5	23.8	138.1	5.7	30.0
1,2-Dibromo-3-chloropropane		94.8	21.2	189.4	6.8	30.0
1,2,4-Trichlorobenzene		116.2	27.4	143.4	7.0	30.0
1,2,3-Trichlorobenzene		114.2	75.4	131.4	4.7	30.0
Naphthalene		96.3	32.9	135.8	1.8	30.0
2-Methylnaphthalene		103.5	25.5	165.5	1.0	30.0

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.34	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		97.4	70.0	130.0	1.0	30.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.6	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.0	70.0	130.0	1.4	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36872
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470A / Racer Lansing
Submitted: 06/09/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.7
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[X] Yes	[ ] No	[ ] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S36872 Submitted: 06/09/2022 08:15

Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30112892.0470A / Racer Lansing

Initial Preservation Check: 06/09/2022 08:53 MMC

Preservation Recheck (E200.8): N/A

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S36872.01	125ml Plastic HNO3	<2			
S36872.01	125ml Plastic HNO3	<2			
S36872.09	125ml Plastic HNO3	<2			
S36872.09	125ml Plastic HNO3	<2			

Plant 3

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

137975

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 947-777-5215 | FAX NO. | P.O. NO
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com | QUOTE NO

INVOICE TO

CONTACT NAME | ☒ SAME
COMPANY
ADDRESS
CITY | STATE | ZIP CODE
PHONE NO. | E-MAIL ADDRESS

PROJECT NO./NAME: 30112892.0470.A / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / AmLaW.C

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260B SIMS	1,4-Dioxane 8260B SIMS	Total Select Metals (As, Ni, Pb, V, Cr, Cu)	Dissolved Select Metals (As, Ni, Pb, V, Cr, Cu)
36872.01	6/8/22	1045	MW-02-04 (3)_060822	GW	5		3	2						X	X	X
.02	6/8/22	1225	MW-18-94_060822	GW	3		3							X		
.03	6/8/22	1330	MW-18-97_060822	GW	3		3							X		
	[illegible]		[illegible]		[illegible]		[illegible]						X	X		aw 6/8/22
.04	6/8/22	1035	UNK-10_060822	GW	3		3						X			
.05	6/8/22	1150	UNK-11_060822	GW	3		3						X			
.06	6/7/22	1615	MW-05 (3)_060722	GW	3		3						X			
.07	6/7/22	—	Dup-08_060722	GW	3		3						X			
.08	6/8/22	—	TB-07_060822		1		1						X			
.09	6/8/22	—	Dup-10_060822		5		3	2						X	X	X

RELINQUISHED BY: SIGNATURE/ORGANIZATION: AmLaW.C / Arcadis ☒ Sampler	DATE: 6/9/22	TIME: 0700	
RECEIVED BY: SIGNATURE/ORGANIZATION: Merit Drop Box	DATE: 6/9/22	TIME: 0700	
RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box	DATE: 6/9/22	TIME: 0815	
RECEIVED BY: SIGNATURE/ORGANIZATION: M Aldrich	DATE: 6/9/22	TIME: 0815	
RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME	
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME	

SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

NOTES: TEMP. ON ARRIVAL 3.7
* Dissolved Select Metals samples were field filtered

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev 5.18.12

Analytical Laboratory Report

Report ID: S36941.01(01)+QC01
Generated on 06/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36941.01-S36941.11
Project: 30112892.0470A / Racer Lansing
Collected Date(s): 06/09/2022
Submitted Date/Time: 06/10/2022 08:15
Sampled by: Monica Dostert / Billy Cobern
P.O. #: 30112892.0470A

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
N/A	Not Applicable
SM3500-Cr B	Standard Method 3500 Cr B 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (11 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36941.01	MW-18-88_060922	Groundwater	06/09/22 14:05
S36941.02	MW-18-88_060922 MS	Groundwater	06/09/22 14:05
S36941.03	MW-18-88_060922 MSD	Groundwater	06/09/22 14:05
S36941.04	DUP-07_060922	Groundwater	06/09/22 14:05
S36941.05	TB-08_060922	Water	06/09/22 15:05
S36941.06	MW-15-71_060922	Groundwater	06/09/22 09:45
S36941.07	MW-14-64_060922	Groundwater	06/09/22 11:00
S36941.08	MW-13-49_060922	Groundwater	06/09/22 12:20
S36941.09	MW-91-2R_060922	Groundwater	06/09/22 13:40
S36941.10	DUP-11_060922	Groundwater	06/09/22 14:05
S36941.11	CH-14-RO_060922	Groundwater	06/09/22 16:10

Analytical Laboratory Report

Lab Sample ID: S36941.01
Sample Tag: MW-18-88_060922
Collected Date/Time: 06/09/2022 14:05
Matrix: Groundwater
COC Reference: 150010

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.6	IR
3	40ml Glass	HCL	Yes	3.6	IR
1	125ml Plastic	None	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/17/22 11:15	BDO	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 06/10/22 13:02, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01		mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 06/20/22 17:12, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Method: E200.8, Run Date: 06/20/22 17:17, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 04:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	

Lab Sample ID: S36941.01 (continued)
Sample Tag: MW-18-88_060922

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 04:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	

Lab Sample ID: S36941.01 (continued)
Sample Tag: MW-18-88_060922

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 04:45, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S36941.02
Sample Tag: MW-18-88_060922 MS
Collected Date/Time: 06/09/2022 14:05
Matrix: Groundwater
COC Reference: 150010

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.6	IR
3	40ml Glass	HCL	Yes	3.6	IR
1	125ml Plastic	None	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/17/22 11:15	BDO	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 06/10/22 13:19, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	0.192	0.01		mg/L	1	18540-29-9	1

Metals

Method: E200.8, Run Date: 06/20/22 17:13, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.256	0.002		mg/L	5	7440-38-2	
Chromium	0.255	0.005		mg/L	5	7440-47-3	
Copper	0.249	0.005		mg/L	5	7440-50-8	
Lead	0.254	0.003		mg/L	5	7439-92-1	
Nickel	0.251	0.005		mg/L	5	7440-02-0	
Vanadium	0.262	0.005		mg/L	5	7440-62-2	

Method: E200.8, Run Date: 06/20/22 17:35, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.260	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	0.259	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	0.254	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	0.255	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	0.254	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	0.262	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/22 23:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	49	10		ug/L	1	60-29-7	2
Acetone	55	50		ug/L	1	67-64-1	2
Methyl iodide	50	1		ug/L	1	74-88-4	2
Carbon disulfide	48	5		ug/L	1	75-15-0	2
tert-Methyl butyl ether (MTBE)	51	5		ug/L	1	1634-04-4	2
Acrylonitrile	52	2		ug/L	1	107-13-1	2
2-Butanone (MEK)	56	25		ug/L	1	78-93-3	2

1-MS Spiked @ 0.20mg/L
2-Spiked at 50ug/L

Lab Sample ID: S36941.02 (continued)
Sample Tag: MW-18-88_060922 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/22 23:15, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dichlorodifluoromethane	49	5		ug/L	1	75-71-8	1
Chloromethane	48	5		ug/L	1	74-87-3	1
Vinyl chloride	50	1		ug/L	1	75-01-4	1
Bromomethane	50	5		ug/L	1	74-83-9	1
Chloroethane	49	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	50	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	49	1		ug/L	1	75-35-4	1
Methylene chloride	49	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	49	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	49	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	49	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	49	1		ug/L	1	67-66-3	1
Bromochloromethane	50	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	49	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	51	50		ug/L	1	108-10-1	1
2-Hexanone	54	50		ug/L	1	591-78-6	1
Carbon tetrachloride	50	1		ug/L	1	56-23-5	1
Benzene	49	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	48	1		ug/L	1	107-06-2	1
Trichloroethene	49	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	49	1		ug/L	1	78-87-5	1
Bromodichloromethane	49	1		ug/L	1	75-27-4	1
Dibromomethane	50	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	49	1		ug/L	1	10061-01-5	1
Toluene	50	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	49	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	49	1		ug/L	1	79-00-5	1
Tetrachloroethene	49	1		ug/L	1	127-18-4	1
trans-1,4-Dichloro-2-butene	38	1		ug/L	1	110-57-6	1
Dibromochloromethane	51	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	51	1		ug/L	1	106-93-4	1
Chlorobenzene	50	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	50	1		ug/L	1	630-20-6	1
Ethylbenzene	50	1		ug/L	1	100-41-4	1
p,m-Xylene*	101	2		ug/L	1		1
o-Xylene	50	1		ug/L	1	95-47-6	1
Styrene	47	1		ug/L	1	100-42-5	1
Isopropylbenzene	51	5		ug/L	1	98-82-8	1
Bromoform	49	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	50	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	51	1		ug/L	1	96-18-4	1
n-Propylbenzene	50	1		ug/L	1	103-65-1	1
Bromobenzene	51	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	50	1		ug/L	1	108-67-8	1
tert-Butylbenzene	50	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	50	1		ug/L	1	95-63-6	1
sec-Butylbenzene	51	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	50	5		ug/L	1	99-87-6	1

1-Spiked at 50ug/L

Lab Sample ID: S36941.02 (continued)
Sample Tag: MW-18-88_060922 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/22 23:15, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,3-Dichlorobenzene	51	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	51	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	51	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	51	1		ug/L	1	526-73-8	1
n-Butylbenzene	50	1		ug/L	1	104-51-8	1
Hexachloroethane	52	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	55	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	53	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	55	5		ug/L	1	87-61-6	1
Naphthalene	58	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	67	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L

Lab Sample ID: S36941.03
Sample Tag: MW-18-88_060922 MSD
Collected Date/Time: 06/09/2022 14:05
Matrix: Groundwater
COC Reference: 150010

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.6	IR
3	40ml Glass	HCL	Yes	3.6	IR
1	125ml Plastic	None	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/17/22 11:15	BDO	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 06/10/22 13:27, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	0.201	0.01		mg/L	1	18540-29-9	1

Metals

Method: E200.8, Run Date: 06/20/22 17:13, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.255	0.002		mg/L	5	7440-38-2	
Chromium	0.259	0.005		mg/L	5	7440-47-3	
Copper	0.249	0.005		mg/L	5	7440-50-8	
Lead	0.251	0.003		mg/L	5	7439-92-1	
Nickel	0.253	0.005		mg/L	5	7440-02-0	
Vanadium	0.263	0.005		mg/L	5	7440-62-2	

Method: E200.8, Run Date: 06/20/22 17:36, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.269	0.002		mg/L	5	7440-38-2	
Chromium, Dissolved	0.272	0.005		mg/L	5	7440-47-3	
Copper, Dissolved	0.268	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	0.253	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	0.265	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	0.276	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/22 23:34, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	50	10		ug/L	1	60-29-7	2
Acetone	57	50		ug/L	1	67-64-1	2
Methyl iodide	50	1		ug/L	1	74-88-4	2
Carbon disulfide	48	5		ug/L	1	75-15-0	2
tert-Methyl butyl ether (MTBE)	52	5		ug/L	1	1634-04-4	2
Acrylonitrile	53	2		ug/L	1	107-13-1	2
2-Butanone (MEK)	56	25		ug/L	1	78-93-3	2

1-MSD Spiked @ 0.20mg/L
2-Spiked at 50ug/L

Lab Sample ID: S36941.03 (continued)
Sample Tag: MW-18-88_060922 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/22 23:34, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dichlorodifluoromethane	47	5		ug/L	1	75-71-8	1
Chloromethane	48	5		ug/L	1	74-87-3	1
Vinyl chloride	49	1		ug/L	1	75-01-4	1
Bromomethane	48	5		ug/L	1	74-83-9	1
Chloroethane	49	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	49	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	48	1		ug/L	1	75-35-4	1
Methylene chloride	49	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	48	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	48	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	49	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	49	1		ug/L	1	67-66-3	1
Bromochloromethane	50	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	49	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	53	50		ug/L	1	108-10-1	1
2-Hexanone	56	50		ug/L	1	591-78-6	1
Carbon tetrachloride	49	1		ug/L	1	56-23-5	1
Benzene	48	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	48	1		ug/L	1	107-06-2	1
Trichloroethene	47	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	49	1		ug/L	1	78-87-5	1
Bromodichloromethane	49	1		ug/L	1	75-27-4	1
Dibromomethane	50	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	49	1		ug/L	1	10061-01-5	1
Toluene	48	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	50	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	50	1		ug/L	1	79-00-5	1
Tetrachloroethene	48	1		ug/L	1	127-18-4	1
trans-1,4-Dichloro-2-butene	38	1		ug/L	1	110-57-6	1
Dibromochloromethane	50	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	50	1		ug/L	1	106-93-4	1
Chlorobenzene	49	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	50	1		ug/L	1	630-20-6	1
Ethylbenzene	49	1		ug/L	1	100-41-4	1
p,m-Xylene*	97	2		ug/L	1		1
o-Xylene	49	1		ug/L	1	95-47-6	1
Styrene	45	1		ug/L	1	100-42-5	1
Isopropylbenzene	49	5		ug/L	1	98-82-8	1
Bromoform	49	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	50	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	51	1		ug/L	1	96-18-4	1
n-Propylbenzene	49	1		ug/L	1	103-65-1	1
Bromobenzene	50	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	49	1		ug/L	1	108-67-8	1
tert-Butylbenzene	48	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	49	1		ug/L	1	95-63-6	1
sec-Butylbenzene	47	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	47	5		ug/L	1	99-87-6	1

1-Spiked at 50ug/L

Lab Sample ID: S36941.03 (continued)
Sample Tag: MW-18-88_060922 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/22 23:34, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,3-Dichlorobenzene	47	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	47	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	48	1		ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	48	1		ug/L	1	526-73-8	1
n-Butylbenzene	46	1		ug/L	1	104-51-8	1
Hexachloroethane	48	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	53	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	50	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	52	5		ug/L	1	87-61-6	1
Naphthalene	54	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	63	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L

Lab Sample ID: S36941.04
Sample Tag: DUP-07_060922
Collected Date/Time: 06/09/2022 14:05
Matrix: Groundwater
COC Reference: 150010

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.6	IR
1	125ml Plastic	None	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 06/10/22 13:54, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	7.4	0.25		mg/L	25	18540-29-9	

Metals

Method: E200.8, Run Date: 06/20/22 17:28, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium, Dissolved	7.31	0.50		mg/L	250	7440-47-3	

Method: E200.8, Run Date: 06/20/22 17:27, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium	7.45	0.50		mg/L	250	7440-47-3	

Method: E200.8, Run Date: 06/20/22 17:18, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	0.011	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Method: E200.8, Run Date: 06/20/22 17:40, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	0.011	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S36941.05
Sample Tag: TB-08_060922
Collected Date/Time: 06/09/2022 15:05
Matrix: Water
COC Reference: 150010

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/17/22 11:15	BDO	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 05:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36941.05 (continued)
Sample Tag: TB-08_060922

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 05:04, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36941.06
Sample Tag: MW-15-71_060922
Collected Date/Time: 06/09/2022 09:45
Matrix: Groundwater
COC Reference: 150995

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 22:55, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36941.07
Sample Tag: MW-14-64_060922
Collected Date/Time: 06/09/2022 11:00
Matrix: Groundwater
COC Reference: 150995

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 23:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S36941.08
Sample Tag: MW-13-49_060922
Collected Date/Time: 06/09/2022 12:20
Matrix: Groundwater
COC Reference: 150995

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 23:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36941.09
Sample Tag: MW-91-2R_060922
Collected Date/Time: 06/09/2022 13:40
Matrix: Groundwater
COC Reference: 150995

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	3.6	IR
3	40ml Glass	HCL	Yes	3.6	IR
1	125ml Plastic	None	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 06/10/22 12:52, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01		mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 06/20/22 17:22, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.010	0.002		mg/L	5	7440-38-2	
Chromium	Not detected	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	Not detected	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 23:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	6	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S36941.10
Sample Tag: DUP-11_060922
Collected Date/Time: 06/09/2022 14:05
Matrix: Groundwater
COC Reference: 150995

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/14/22 00:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36941.11
Sample Tag: CH-14-RO_060922
Collected Date/Time: 06/09/2022 16:10
Matrix: Groundwater
COC Reference: 150995

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	125ml Plastic	HNO3	Yes	3.6	IR
1	125ml Plastic	None	Yes	3.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 06/10/22 14:01, Analyst: ASB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	7.4	0.25		mg/L	25	18540-29-9	

Metals

Method: E200.8, Run Date: 06/20/22 17:34, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium, Dissolved	7.13	0.50		mg/L	250	7440-47-3	

Method: E200.8, Run Date: 06/20/22 17:30, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium	7.16	0.50		mg/L	250	7440-47-3	

Method: E200.8, Run Date: 06/20/22 17:40, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	0.011	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Method: E200.8, Run Date: 06/20/22 17:41, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002		mg/L	5	7440-38-2	
Copper, Dissolved	Not detected	0.005		mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003		mg/L	5	7439-92-1	
Nickel, Dissolved	0.011	0.005		mg/L	5	7440-02-0	
Vanadium, Dissolved	Not detected	0.005		mg/L	5	7440-62-2	

Quality Control Report

Report ID: S36941.01(01)+QC01
Generated on 06/20/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36941.01-S36941.11
Project: 30112892.0470A / Racer Lansing
Submitted Date/Time: 06/10/2022 08:15
Sampled by: Monica Dostert / Billy Cobern
P.O. #: 30112892.0470A

QC Report Sections

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Analysis Summary (Pages 25-35)
Prep Batch Summary (Pages 36-37)
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Internal Standards per Lab Sample (Pages 43-49)
Internal Standards per QC Sample (Pages 50-53)
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Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S36941.01
Sample Tag: MW-18-88_060922
Collected Date/Time: 06/09/2022 14:05
Matrix: Groundwater
COC Reference: 150010

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI	SM3500-Cr B	06/10/22 13:02	CHR220610W1	CHR220610W1	No	BLK/LCS/MS/MSD/DU
Metals						
Arsenic, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/20/22 17:12	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:12	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:12	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:12	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:12	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:12	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/17/22 04:45	220616B9	VF220616W4	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36941.02
Sample Tag: MW-18-88_060922 MS
Collected Date/Time: 06/09/2022 14:05
Matrix: Groundwater
COC Reference: 150010

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI	SM3500-Cr B	06/10/22 13:19	CHR220610W1	CHR220610W1	No	BLK/LCS/MS/MSD/DU
Metals						
Arsenic, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/16/22 23:15	220616B9	VF220616W4	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36941.03
Sample Tag: MW-18-88_060922 MSD
Collected Date/Time: 06/09/2022 14:05
Matrix: Groundwater
COC Reference: 150010

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI	SM3500-Cr B	06/10/22 13:27	CHR220610W1	CHR220610W1	No	BLK/LCS/MS/MSD/DU
Metals						
Arsenic, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:13	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/16/22 23:34	220616B9	VF220616W4	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36941.04
Sample Tag: DUP-07_060922
Collected Date/Time: 06/09/2022 14:05
Matrix: Groundwater
COC Reference: 150010

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI	SM3500-Cr B	06/10/22 13:54	CHR220610W1	CHR220610W1	No	BLK/LCS/MS/MSD/DU
Metals						
Arsenic, Dissolved	E200.8	06/20/22 17:40	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/20/22 17:18	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	06/20/22 17:28	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:27	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	06/20/22 17:40	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:18	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	06/20/22 17:40	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:18	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel, Dissolved	E200.8	06/20/22 17:40	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:18	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium, Dissolved	E200.8	06/20/22 17:40	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:18	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD

Lab Sample ID: S36941.05
Sample Tag: TB-08_060922
Collected Date/Time: 06/09/2022 15:05
Matrix: Water
COC Reference: 150010

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/17/22 05:04	220616B9	VF220616W4	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36941.06
Sample Tag: MW-15-71_060922
Collected Date/Time: 06/09/2022 09:45
Matrix: Groundwater
COC Reference: 150995

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 22:55	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36941.07
Sample Tag: MW-14-64_060922
Collected Date/Time: 06/09/2022 11:00
Matrix: Groundwater
COC Reference: 150995

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 23:16	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36941.08
Sample Tag: MW-13-49_060922
Collected Date/Time: 06/09/2022 12:20
Matrix: Groundwater
COC Reference: 150995

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 23:37	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36941.09
Sample Tag: MW-91-2R_060922
Collected Date/Time: 06/09/2022 13:40
Matrix: Groundwater
COC Reference: 150995

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI	SM3500-Cr B	06/10/22 12:52	CHR220610W1	CHR220610W1	No	BLK/LCS/MS/MSD/DU
Metals						
Arsenic	E200.8	06/20/22 17:22	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:22	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:22	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:22	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:22	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:22	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 23:59	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36941.10
Sample Tag: DUP-11_060922
Collected Date/Time: 06/09/2022 14:05
Matrix: Groundwater
COC Reference: 150995

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/14/22 00:20	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36941.11
Sample Tag: CH-14-RO_060922
Collected Date/Time: 06/09/2022 16:10
Matrix: Groundwater
COC Reference: 150995

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI	SM3500-Cr B	06/10/22 14:01	CHR220610W1	CHR220610W1	No	BLK/LCS/MS/MSD/DU
Metals						
Arsenic, Dissolved	E200.8	06/20/22 17:41	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Arsenic	E200.8	06/20/22 17:40	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	06/20/22 17:34	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:30	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	06/20/22 17:41	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:40	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	06/20/22 17:41	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:40	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel, Dissolved	E200.8	06/20/22 17:41	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:40	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium, Dissolved	E200.8	06/20/22 17:41	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:40	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD

Inorganics, Prep Batch ID: CHR220610W1

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36941.01	Chromium VI	SM3500-Cr B	06/10/22 13:02	CHR220610W1
S36941.02	Chromium VI	SM3500-Cr B	06/10/22 13:19	CHR220610W1
S36941.03	Chromium VI	SM3500-Cr B	06/10/22 13:27	CHR220610W1
S36941.04	Chromium VI	SM3500-Cr B	06/10/22 13:54	CHR220610W1
S36941.09	Chromium VI	SM3500-Cr B	06/10/22 12:52	CHR220610W1
S36941.11	Chromium VI	SM3500-Cr B	06/10/22 14:01	CHR220610W1

Metals, Prep Batch ID: MTD-062022-6

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36941.01	Arsenic, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C
S36941.01	Arsenic	E200.8	06/20/22 17:12	MT4-22-0620C
S36941.01	Chromium, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C
S36941.01	Chromium	E200.8	06/20/22 17:12	MT4-22-0620C
S36941.01	Copper, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C
S36941.01	Copper	E200.8	06/20/22 17:12	MT4-22-0620C
S36941.01	Lead, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C
S36941.01	Lead	E200.8	06/20/22 17:12	MT4-22-0620C
S36941.01	Nickel, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C
S36941.01	Nickel	E200.8	06/20/22 17:12	MT4-22-0620C
S36941.01	Vanadium, Dissolved	E200.8	06/20/22 17:17	MT4-22-0620C
S36941.01	Vanadium	E200.8	06/20/22 17:12	MT4-22-0620C
S36941.02	Arsenic, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C
S36941.02	Arsenic	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.02	Chromium, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C
S36941.02	Chromium	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.02	Copper, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C
S36941.02	Copper	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.02	Lead, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C
S36941.02	Lead	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.02	Nickel, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C
S36941.02	Nickel	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.02	Vanadium, Dissolved	E200.8	06/20/22 17:35	MT4-22-0620C
S36941.02	Vanadium	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.03	Arsenic, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C
S36941.03	Arsenic	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.03	Chromium, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C
S36941.03	Chromium	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.03	Copper, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C
S36941.03	Copper	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.03	Lead, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C
S36941.03	Lead	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.03	Nickel, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C
S36941.03	Nickel	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.03	Vanadium, Dissolved	E200.8	06/20/22 17:36	MT4-22-0620C
S36941.03	Vanadium	E200.8	06/20/22 17:13	MT4-22-0620C
S36941.04	Arsenic, Dissolved	E200.8	06/20/22 17:40	MT4-22-0620C
S36941.04	Arsenic	E200.8	06/20/22 17:18	MT4-22-0620C
S36941.04	Chromium, Dissolved	E200.8	06/20/22 17:28	MT4-22-0620C
S36941.04	Chromium	E200.8	06/20/22 17:27	MT4-22-0620C

Metals, Prep Batch ID: MTD-062022-6 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36941.04	Copper, Dissolved	E200.8	06/20/22 17:40	MT4-22-0620C
S36941.04	Copper	E200.8	06/20/22 17:18	MT4-22-0620C
S36941.04	Lead, Dissolved	E200.8	06/20/22 17:40	MT4-22-0620C
S36941.04	Lead	E200.8	06/20/22 17:18	MT4-22-0620C
S36941.04	Nickel, Dissolved	E200.8	06/20/22 17:40	MT4-22-0620C
S36941.04	Nickel	E200.8	06/20/22 17:18	MT4-22-0620C
S36941.04	Vanadium, Dissolved	E200.8	06/20/22 17:40	MT4-22-0620C
S36941.04	Vanadium	E200.8	06/20/22 17:18	MT4-22-0620C
S36941.09	Arsenic	E200.8	06/20/22 17:22	MT4-22-0620C
S36941.09	Chromium	E200.8	06/20/22 17:22	MT4-22-0620C
S36941.09	Copper	E200.8	06/20/22 17:22	MT4-22-0620C
S36941.09	Lead	E200.8	06/20/22 17:22	MT4-22-0620C
S36941.09	Nickel	E200.8	06/20/22 17:22	MT4-22-0620C
S36941.09	Vanadium	E200.8	06/20/22 17:22	MT4-22-0620C
S36941.11	Arsenic, Dissolved	E200.8	06/20/22 17:41	MT4-22-0620C
S36941.11	Arsenic	E200.8	06/20/22 17:40	MT4-22-0620C
S36941.11	Chromium, Dissolved	E200.8	06/20/22 17:34	MT4-22-0620C
S36941.11	Chromium	E200.8	06/20/22 17:30	MT4-22-0620C
S36941.11	Copper, Dissolved	E200.8	06/20/22 17:41	MT4-22-0620C
S36941.11	Copper	E200.8	06/20/22 17:40	MT4-22-0620C
S36941.11	Lead, Dissolved	E200.8	06/20/22 17:41	MT4-22-0620C
S36941.11	Lead	E200.8	06/20/22 17:40	MT4-22-0620C
S36941.11	Nickel, Dissolved	E200.8	06/20/22 17:41	MT4-22-0620C
S36941.11	Nickel	E200.8	06/20/22 17:40	MT4-22-0620C
S36941.11	Vanadium, Dissolved	E200.8	06/20/22 17:41	MT4-22-0620C
S36941.11	Vanadium	E200.8	06/20/22 17:40	MT4-22-0620C

Organics - Volatiles, Prep Batch ID: VF220616W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36941.01	Volatile Organics - DEQ List	SW5030C/8260C	06/17/22 04:45	220616B9
S36941.02	Volatile Organics - DEQ List	SW5030C/8260C	06/16/22 23:15	220616B9
S36941.03	Volatile Organics - DEQ List	SW5030C/8260C	06/16/22 23:34	220616B9
S36941.05	Volatile Organics - DEQ List	SW5030C/8260C	06/17/22 05:04	220616B9

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36941.06	1,4-Dioxane	SW8260B - SIM	06/13/22 22:55	220613A9
S36941.07	1,4-Dioxane	SW8260B - SIM	06/13/22 23:16	220613A9
S36941.08	1,4-Dioxane	SW8260B - SIM	06/13/22 23:37	220613A9
S36941.09	1,4-Dioxane	SW8260B - SIM	06/13/22 23:59	220613A9
S36941.10	1,4-Dioxane	SW8260B - SIM	06/14/22 00:20	220613A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36941.01

Sample Tag: MW-18-88_060922

Collected Date/Time: 06/09/2022 14:05

Matrix: Groundwater

COC Reference: 150010

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616B9, Run Date: 06/17/2022 04:45, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**102.0**	80.0	124.0
1,2-Dichloroethane-D4		**102.7**	72.0	125.0
Toluene-D8		**99.2**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36941.05

Sample Tag: TB-08_060922

Collected Date/Time: 06/09/2022 15:05

Matrix: Water

COC Reference: 150010

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616B9, Run Date: 06/17/2022 05:04, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**99.7**	80.0	124.0
1,2-Dichloroethane-D4		**98.2**	72.0	125.0
Toluene-D8		**98.8**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220616W4

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220616B9.BLKW16B

Run in Batch: 220616B9, Run Date: 06/17/2022 00:52, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**101.0**	80.0	124.0
1,2-Dichloroethane-D4		**100.3**	72.0	125.0
Toluene-D8		**99.2**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220616B9.LCSW16B

Run in Batch: 220616B9, Run Date: 06/16/2022 21:59, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**102.0**	80.0	124.0
1,2-Dichloroethane-D4		**96.4**	72.0	125.0
Toluene-D8		**100.0**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616B9.LCSDW16B, Parent Sample ID: 220616B9.LCSW16B

Run in Batch: 220616B9, Run Date: 06/16/2022 22:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**102.2**	80.0	124.0
1,2-Dichloroethane-D4		**94.8**	72.0	125.0
Toluene-D8		**100.4**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220616B9.3694102M, Parent Sample ID: S36941.01

Run in Batch: 220616B9, Run Date: 06/16/2022 23:15, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**100.4**	80.0	124.0
1,2-Dichloroethane-D4		**93.4**	72.0	125.0
Toluene-D8		**98.9**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220616B9.3694804M, Parent Sample ID: S36948.03

Run in Batch: 220616B9, Run Date: 06/16/2022 22:37, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**102.1**	80.0	124.0
1,2-Dichloroethane-D4		**97.9**	72.0	125.0
Toluene-D8		**99.8**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220616B9.3698611M, Parent Sample ID: S36986.10

Run in Batch: 220616B9, Run Date: 06/17/2022 05:42, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**101.1**	80.0	124.0
1,2-Dichloroethane-D4		**102.3**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220616B9.3698632M, Parent Sample ID: S36986.31

Run in Batch: 220616B9, Run Date: 06/17/2022 06:21, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**101.1**	80.0	124.0
1,2-Dichloroethane-D4		**97.3**	72.0	125.0
Toluene-D8		**99.7**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3694103N, Parent Sample ID: 220616B9.3694102M

Run in Batch: 220616B9, Run Date: 06/16/2022 23:34, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**103.4**	80.0	124.0
1,2-Dichloroethane-D4		**101.4**	72.0	125.0
Toluene-D8		**99.4**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3694805N, Parent Sample ID: 220616B9.3694804M

Run in Batch: 220616B9, Run Date: 06/16/2022 22:56, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**102.0**	80.0	124.0
1,2-Dichloroethane-D4		**97.1**	72.0	125.0
Toluene-D8		**98.9**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3698612N, Parent Sample ID: 220616B9.3698611M

Run in Batch: 220616B9, Run Date: 06/17/2022 06:01, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**103.1**	80.0	124.0
1,2-Dichloroethane-D4		**105.9**	72.0	125.0
Toluene-D8		**99.5**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3698633N, Parent Sample ID: 220616B9.3698632M

Run in Batch: 220616B9, Run Date: 06/17/2022 06:40, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**102.2**	80.0	124.0
1,2-Dichloroethane-D4		**101.3**	72.0	125.0
Toluene-D8		**100.2**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36941.01

Sample Tag: MW-18-88_060922

Collected Date/Time: 06/09/2022 14:05

Matrix: Groundwater

COC Reference: 150010

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616B9, Run Date: 06/17/2022 04:45, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**104.0**	50.0	200.0
1,4-Difluorobenzene		**105.6**	50.0	200.0
Chlorobenzene-D5		**104.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**103.4**	50.0	200.0

Lab Sample ID: S36941.05

Sample Tag: TB-08_060922

Collected Date/Time: 06/09/2022 15:05

Matrix: Water

COC Reference: 150010

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616B9, Run Date: 06/17/2022 05:04, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**103.3**	50.0	200.0
1,4-Difluorobenzene		**104.0**	50.0	200.0
Chlorobenzene-D5		**101.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**98.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36941.06

Sample Tag: MW-15-71_060922

Collected Date/Time: 06/09/2022 09:45

Matrix: Groundwater

COC Reference: 150995

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 22:55, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**119.1**	50.0	200.0

Lab Sample ID: S36941.07

Sample Tag: MW-14-64_060922

Collected Date/Time: 06/09/2022 11:00

Matrix: Groundwater

COC Reference: 150995

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 23:16, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.9**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36941.08

Sample Tag: MW-13-49_060922

Collected Date/Time: 06/09/2022 12:20

Matrix: Groundwater

COC Reference: 150995

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 23:37, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**116.1**	50.0	200.0

Lab Sample ID: S36941.09

Sample Tag: MW-91-2R_060922

Collected Date/Time: 06/09/2022 13:40

Matrix: Groundwater

COC Reference: 150995

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 23:59, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**118.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36941.10

Sample Tag: DUP-11_060922

Collected Date/Time: 06/09/2022 14:05

Matrix: Groundwater

COC Reference: 150995

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/14/2022 00:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**118.3**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220616W4

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220616B9.BLKW16B

Run in Batch: 220616B9, Run Date: 06/17/2022 00:52, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**106.3**	50.0	200.0
1,4-Difluorobenzene		**105.9**	50.0	200.0
Chlorobenzene-D5		**104.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**103.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220616B9.LCSW16B

Run in Batch: 220616B9, Run Date: 06/16/2022 21:59, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**98.9**	50.0	200.0
1,4-Difluorobenzene		**97.4**	50.0	200.0
Chlorobenzene-D5		**96.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.1**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616B9.LCSDW16B, Parent Sample ID: 220616B9.LCSW16B

Run in Batch: 220616B9, Run Date: 06/16/2022 22:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**105.9**	50.0	200.0
1,4-Difluorobenzene		**104.4**	50.0	200.0
Chlorobenzene-D5		**102.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**101.6**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220616B9.3694102M, Parent Sample ID: S36941.01

Run in Batch: 220616B9, Run Date: 06/16/2022 23:15, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.1**	50.0	200.0
1,4-Difluorobenzene		**99.7**	50.0	200.0
Chlorobenzene-D5		**97.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.3**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220616B9.3694804M, Parent Sample ID: S36948.03

Run in Batch: 220616B9, Run Date: 06/16/2022 22:37, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.8**	50.0	200.0
1,4-Difluorobenzene		**98.8**	50.0	200.0
Chlorobenzene-D5		**98.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**98.8**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220616B9.3698611M, Parent Sample ID: S36986.10

Run in Batch: 220616B9, Run Date: 06/17/2022 05:42, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**101.0**	50.0	200.0
1,4-Difluorobenzene		**102.3**	50.0	200.0
Chlorobenzene-D5		**102.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**102.8**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220616B9.3698632M, Parent Sample ID: S36986.31

Run in Batch: 220616B9, Run Date: 06/17/2022 06:21, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.7**	50.0	200.0
1,4-Difluorobenzene		**101.2**	50.0	200.0
Chlorobenzene-D5		**100.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**98.7**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3694103N, Parent Sample ID: 220616B9.3694102M

Run in Batch: 220616B9, Run Date: 06/16/2022 23:34, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**104.6**	50.0	200.0
1,4-Difluorobenzene		**105.2**	50.0	200.0
Chlorobenzene-D5		**104.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**106.3**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3694805N, Parent Sample ID: 220616B9.3694804M

Run in Batch: 220616B9, Run Date: 06/16/2022 22:56, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.2**	50.0	200.0
1,4-Difluorobenzene		**101.3**	50.0	200.0
Chlorobenzene-D5		**100.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.0**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3698612N, Parent Sample ID: 220616B9.3698611M

Run in Batch: 220616B9, Run Date: 06/17/2022 06:01, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**101.7**	50.0	200.0
1,4-Difluorobenzene		**103.7**	50.0	200.0
Chlorobenzene-D5		**104.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**105.3**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3698633N, Parent Sample ID: 220616B9.3698632M

Run in Batch: 220616B9, Run Date: 06/17/2022 06:40, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.8**	50.0	200.0
1,4-Difluorobenzene		**101.4**	50.0	200.0
Chlorobenzene-D5		**101.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**101.6**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**114.1**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**118.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**122.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**123.2**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**114.6**	50.0	200.0

Inorganics, Prep Batch ID: CHR220610W1

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: CHR220610W1.LRB1

Run in Batch: CHR220610W1, Run Date: 06/10/2022 12:31, Prep Date: 06/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Chromium VI		ND	0.01	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: CHR220610W1.LCS2

Run in Batch: CHR220610W1, Run Date: 06/10/2022 12:53, Prep Date: 06/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI		100.5	80	120

Matrix Spike (MS)

Lab Sample ID: CHR220610W1.MS1, Parent Sample ID: S36941.01

Run in Batch: CHR220610W1, Run Date: 06/10/2022 13:19, Prep Date: 06/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI		95.5	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: CHR220610W1.MSD1, Parent Sample ID: CHR220610W1.MS1

Run in Batch: CHR220610W1, Run Date: 06/10/2022 13:27, Prep Date: 06/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chromium VI		100.0	75	125	4	15

Duplicate (DUP)

Lab Sample ID: CHR220610W1.DP1, Parent Sample ID: S36941.01

Run in Batch: CHR220610W1, Run Date: 06/10/2022 13:11, Prep Date: 06/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Chromium VI		NC	20

Metals, Prep Batch ID: MTD-062022-6

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-22-0620C.018.LRB

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:00, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Nickel		ND	0.001	mg/L
Vanadium		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-0620C.017.LCS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 16:59, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	85	115
Chromium		105	85	115
Copper		103	85	115
Lead		101	85	115
Nickel		102	85	115
Vanadium		105	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-22-0620C.030.MS, Parent Sample ID: S36941.01

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:13, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	75	125
Chromium		102	75	125
Copper		100	75	125
Lead		102	75	125
Nickel		100	75	125
Vanadium		105	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-22-0620C.047.MS, Parent Sample ID: S36941.01

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:35, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Chromium		104	75	125
Copper		102	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0620C.031.MSD, Parent Sample ID: MT4-22-0620C.030.MS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:13, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		102	75	125	0	20
Chromium		104	75	125	2	20
Copper		100	75	125	0	20
Lead		100	75	125	1	20
Nickel		101	75	125	1	20
Vanadium		105	75	125	0	20

Metals, Prep Batch ID: MTD-062022-6 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0620C.048.MSD, Parent Sample ID: MT4-22-0620C.047.MS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:36, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chromium		109	75	125	5	20
Copper		107	75	125	5	20

Organics - Volatiles, Prep Batch ID: VF220616W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220616B9.BLKW16B

Run in Batch: 220616B9, Run Date: 06/17/2022 00:52, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 220616B9.BLKW16B

Run in Batch: 220616B9, Run Date: 06/17/2022 00:52, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220616B9.LCSW16B

Run in Batch: 220616B9, Run Date: 06/16/2022 21:59, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		102.6	67.4	121.2
Acetone		108.9	29.9	161.5
Methyl iodide		101.4	68.8	116.4
Carbon disulfide		95.3	63.8	137.4
tert-Methyl butyl ether (MTBE)		104.9	73.2	122.4
Acrylonitrile		107.2	69.9	128.9
2-Butanone (MEK)		112.2	44.0	134.4
Dichlorodifluoromethane		92.7	10.0	222.8
Chloromethane		95.7	23.8	166.5
Vinyl chloride		97.3	43.5	149.1
Bromomethane		101.3	56.8	151.3
Chloroethane		99.0	53.4	149.4
Trichlorofluoromethane		96.9	59.7	151.8
1,1-Dichloroethene		97.5	69.6	139.4
Methylene chloride		100.3	73.3	121.1
trans-1,2-Dichloroethene		98.3	73.6	129.3
1,1-Dichloroethane		99.7	71.5	126.2
cis-1,2-Dichloroethene		101.3	76.6	122.1
Tetrahydrofuran		103.6	59.0	117.9
Chloroform		101.3	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220616B9.LCSW16B

Run in Batch: 220616B9, Run Date: 06/16/2022 21:59, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		103.1	78.2	120.8
1,1,1-Trichloroethane		99.0	79.4	130.9
4-Methyl-2-pentanone (MIBK)		105.8	71.6	125.2
2-Hexanone		109.7	55.4	136.9
Carbon tetrachloride		100.5	72.6	133.0
Benzene		101.7	79.9	124.9
1,2-Dichloroethane		101.6	76.0	126.3
Trichloroethene		99.6	79.7	124.2
1,2-Dichloropropane		103.4	78.6	126.4
Bromodichloromethane		104.1	80.4	128.2
Dibromomethane		105.6	76.9	122.1
cis-1,3-Dichloropropene		103.6	79.8	129.9
Toluene		102.3	79.8	124.5
trans-1,3-Dichloropropene		104.4	74.0	131.3
1,1,2-Trichloroethane		105.5	78.7	123.1
Tetrachloroethene		100.9	74.5	124.5
trans-1,4-Dichloro-2-butene		84.3	68.6	135.4
Dibromochloromethane		105.8	74.6	127.2
1,2-Dibromoethane		105.9	70.3	133.7
Chlorobenzene		103.5	79.2	122.7
1,1,1,2-Tetrachloroethane		103.7	80.3	128.2
Ethylbenzene		101.9	79.5	129.1
p,m-Xylene		101.3	79.4	132.2
o-Xylene		103.0	80.2	131.0
Styrene		105.2	69.5	126.7
Isopropylbenzene		102.3	74.4	121.5
Bromoform		102.9	69.4	128.0
1,1,2,2-Tetrachloroethane		103.6	79.8	126.3
1,2,3-Trichloropropane		106.1	78.3	138.8
n-Propylbenzene		101.7	82.0	130.7
Bromobenzene		115.3	78.7	124.6
1,3,5-Trimethylbenzene		103.2	81.3	128.9
tert-Butylbenzene		101.9	80.7	128.9
1,2,4-Trimethylbenzene		104.1	81.4	130.8
sec-Butylbenzene		99.3	77.4	129.8
p-Isopropyltoluene		98.6	79.8	137.5
1,3-Dichlorobenzene		101.8	77.0	131.3
1,4-Dichlorobenzene		101.3	20.7	137.7
1,2-Dichlorobenzene		104.2	10.0	166.2
1,2,3-Trimethylbenzene		103.2	76.3	124.2
n-Butylbenzene		96.9	80.0	133.3
Hexachloroethane		102.2	23.8	138.1
1,2-Dibromo-3-chloropropane		109.0	21.2	189.4
1,2,4-Trichlorobenzene		107.2	27.4	143.4
1,2,3-Trichlorobenzene		111.4	75.4	131.4
Naphthalene		117.1	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220616B9.LCSW16B

Run in Batch: 220616B9, Run Date: 06/16/2022 21:59, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		146.0	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616B9.LCSDW16B, Parent Sample ID: 220616B9.LCSW16B

Run in Batch: 220616B9, Run Date: 06/16/2022 22:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		97.1	67.4	121.2	5.5	30.0
Acetone		112.5	29.9	161.5	3.3	30.0
Methyl iodide		93.7	68.8	116.4	7.9	30.0
Carbon disulfide		87.3	63.8	137.4	8.7	30.0
tert-Methyl butyl ether (MTBE)		99.5	73.2	122.4	5.3	30.0
Acrylonitrile		106.5	69.9	128.9	0.6	30.0
2-Butanone (MEK)		109.8	44.0	134.4	2.2	30.0
Dichlorodifluoromethane		83.3	10.0	222.8	10.7	30.0
Chloromethane		86.8	23.8	166.5	9.7	30.0
Vinyl chloride		88.5	43.5	149.1	9.5	30.0
Bromomethane		91.1	56.8	151.3	10.6	30.0
Chloroethane		90.6	53.4	149.4	8.9	30.0
Trichlorofluoromethane		87.4	59.7	151.8	10.3	30.0
1,1-Dichloroethene		89.7	69.6	139.4	8.3	30.0
Methylene chloride		93.6	73.3	121.1	7.0	30.0
trans-1,2-Dichloroethene		90.8	73.6	129.3	7.9	30.0
1,1-Dichloroethane		92.1	71.5	126.2	7.9	30.0
cis-1,2-Dichloroethene		93.5	76.6	122.1	8.0	30.0
Tetrahydrofuran		107.4	59.0	117.9	3.6	30.0
Chloroform		94.4	78.4	124.0	7.0	30.0
Bromochloromethane		96.8	78.2	120.8	6.3	30.0
1,1,1-Trichloroethane		90.0	79.4	130.9	9.6	30.0
4-Methyl-2-pentanone (MIBK)		107.6	71.6	125.2	1.7	30.0
2-Hexanone		111.0	55.4	136.9	1.2	30.0
Carbon tetrachloride		91.5	72.6	133.0	9.4	30.0
Benzene		94.0	79.9	124.9	7.8	30.0
1,2-Dichloroethane		94.0	76.0	126.3	7.8	30.0
Trichloroethene		91.6	79.7	124.2	8.5	30.0
1,2-Dichloropropane		94.9	78.6	126.4	8.6	30.0
Bromodichloromethane		95.7	80.4	128.2	8.5	30.0
Dibromomethane		98.8	76.9	122.1	6.7	30.0
cis-1,3-Dichloropropene		95.6	79.8	129.9	8.1	30.0
Toluene		94.3	79.8	124.5	8.1	30.0
trans-1,3-Dichloropropene		98.2	74.0	131.3	6.1	30.0
1,1,2-Trichloroethane		99.4	78.7	123.1	6.0	30.0
Tetrachloroethene		92.6	74.5	124.5	8.6	30.0
trans-1,4-Dichloro-2-butene		81.5	68.6	135.4	3.4	30.0
Dibromochloromethane		99.5	74.6	127.2	6.2	30.0
1,2-Dibromoethane		101.5	70.3	133.7	4.3	30.0
Chlorobenzene		96.3	79.2	122.7	7.1	30.0

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220616B9.LCSDW16B, Parent Sample ID: 220616B9.LCSW16B

Run in Batch: 220616B9, Run Date: 06/16/2022 22:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		97.6	80.3	128.2	6.0	30.0
Ethylbenzene		95.2	79.5	129.1	6.8	30.0
p,m-Xylene		95.1	79.4	132.2	6.4	30.0
o-Xylene		95.2	80.2	131.0	7.9	30.0
Styrene		97.8	69.5	126.7	7.3	30.0
Isopropylbenzene		94.7	74.4	121.5	7.8	30.0
Bromoform		98.6	69.4	128.0	4.3	30.0
1,1,2,2-Tetrachloroethane		101.6	79.8	126.3	1.9	30.0
1,2,3-Trichloropropane		102.8	78.3	138.8	3.1	30.0
n-Propylbenzene		94.4	82.0	130.7	7.4	30.0
Bromobenzene		103.1	78.7	124.6	11.1	30.0
1,3,5-Trimethylbenzene		95.1	81.3	128.9	8.2	30.0
tert-Butylbenzene		93.4	80.7	128.9	8.7	30.0
1,2,4-Trimethylbenzene		96.4	81.4	130.8	7.6	30.0
sec-Butylbenzene		92.5	77.4	129.8	7.0	30.0
p-Isopropyltoluene		92.7	79.8	137.5	6.2	30.0
1,3-Dichlorobenzene		95.6	77.0	131.3	6.3	30.0
1,4-Dichlorobenzene		94.9	20.7	137.7	6.5	30.0
1,2-Dichlorobenzene		98.3	10.0	166.2	5.9	30.0
1,2,3-Trimethylbenzene		97.5	76.3	124.2	5.6	30.0
n-Butylbenzene		91.6	80.0	133.3	5.7	30.0
Hexachloroethane		94.6	23.8	138.1	7.7	30.0
1,2-Dibromo-3-chloropropane		112.1	21.2	189.4	2.8	30.0
1,2,4-Trichlorobenzene		101.9	27.4	143.4	5.1	30.0
1,2,3-Trichlorobenzene		106.2	75.4	131.4	4.8	30.0
Naphthalene		114.2	32.9	135.8	2.5	30.0
2-Methylnaphthalene		135.7	25.5	165.5	7.3	30.0

Matrix Spike (MS)

Lab Sample ID: 220616B9.3694102M, Parent Sample ID: S36941.01

Run in Batch: 220616B9, Run Date: 06/16/2022 23:15, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		98.6	67.4	121.2
Acetone		104.9	29.9	161.5
Methyl iodide		99.1	68.8	116.4
Carbon disulfide		96.9	63.8	137.4
tert-Methyl butyl ether (MTBE)		101.4	73.2	122.4
Acrylonitrile		103.5	69.9	128.9
2-Butanone (MEK)		111.9	44.0	134.4
Dichlorodifluoromethane		97.3	10.0	222.8
Chloromethane		96.0	23.8	166.5
Vinyl chloride		99.6	43.5	149.1
Bromomethane		100.4	56.8	151.3
Chloroethane		98.9	53.4	149.4
Trichlorofluoromethane		99.7	59.7	151.8
1,1-Dichloroethene		98.2	69.6	139.4

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220616B9.3694102M, Parent Sample ID: S36941.01

Run in Batch: 220616B9, Run Date: 06/16/2022 23:15, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		97.2	73.3	121.1
trans-1,2-Dichloroethene		98.0	73.6	129.3
1,1-Dichloroethane		97.6	71.5	126.2
cis-1,2-Dichloroethene		98.5	76.6	122.1
Tetrahydrofuran		103.0	59.0	117.9
Chloroform		98.6	78.4	124.0
Bromochloromethane		99.2	78.2	120.8
1,1,1-Trichloroethane		98.4	79.4	130.9
4-Methyl-2-pentanone (MIBK)		103.0	71.6	125.2
2-Hexanone		107.1	55.4	136.9
Carbon tetrachloride		99.9	72.6	133.0
Benzene		98.0	79.9	124.9
1,2-Dichloroethane		96.6	76.0	126.3
Trichloroethene		97.1	79.7	124.2
1,2-Dichloropropane		98.3	78.6	126.4
Bromodichloromethane		98.4	80.4	128.2
Dibromomethane		99.5	76.9	122.1
cis-1,3-Dichloropropene		98.3	79.8	129.9
Toluene		99.3	79.8	124.5
trans-1,3-Dichloropropene		98.9	74.0	131.3
1,1,2-Trichloroethane		98.9	78.7	123.1
Tetrachloroethene		99.0	74.5	124.5
trans-1,4-Dichloro-2-butene		76.2	68.6	135.4
Dibromochloromethane		101.0	74.6	127.2
1,2-Dibromoethane		101.9	70.3	133.7
Chlorobenzene		100.2	79.2	122.7
1,1,1,2-Tetrachloroethane		100.4	80.3	128.2
Ethylbenzene		100.5	79.5	129.1
p,m-Xylene		100.5	79.4	132.2
o-Xylene		99.2	80.2	131.0
Styrene		94.8	69.5	126.7
Isopropylbenzene		101.3	74.4	121.5
Bromoform		97.6	69.4	128.0
1,1,2,2-Tetrachloroethane		99.2	79.8	126.3
1,2,3-Trichloropropane		101.7	78.3	138.8
n-Propylbenzene		100.3	82.0	130.7
Bromobenzene		101.7	78.7	124.6
1,3,5-Trimethylbenzene		100.4	81.3	128.9
tert-Butylbenzene		99.9	80.7	128.9
1,2,4-Trimethylbenzene		100.7	81.4	130.8
sec-Butylbenzene		101.3	77.4	129.8
p-Isopropyltoluene		101.0	79.8	137.5
1,3-Dichlorobenzene		101.3	77.0	131.3
1,4-Dichlorobenzene		101.9	20.7	137.7
1,2-Dichlorobenzene		102.1	10.0	166.2
1,2,3-Trimethylbenzene		102.5	76.3	124.2

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220616B9.3694102M, Parent Sample ID: S36941.01

Run in Batch: 220616B9, Run Date: 06/16/2022 23:15, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		100.5	80.0	133.3
Hexachloroethane		104.0	23.8	138.1
1,2-Dibromo-3-chloropropane		110.3	21.2	189.4
1,2,4-Trichlorobenzene		105.9	27.4	143.4
1,2,3-Trichlorobenzene		109.6	75.4	131.4
Naphthalene		115.5	32.9	135.8
2-Methylnaphthalene		133.9	25.5	165.5

Matrix Spike (MS)

Lab Sample ID: 220616B9.3694804M, Parent Sample ID: S36948.03

Run in Batch: 220616B9, Run Date: 06/16/2022 22:37, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Vinyl chloride		101.1	43.5	149.1
Chloroethane		99.6	53.4	149.4
1,1-Dichloroethene		99.7	69.6	139.4
trans-1,2-Dichloroethene		99.0	73.6	129.3
1,1-Dichloroethane		98.4	71.5	126.2
cis-1,2-Dichloroethene		99.9	76.6	122.1
1,1,1-Trichloroethane		99.7	79.4	130.9
1,2-Dichloroethane		97.6	76.0	126.3
Trichloroethene		98.4	79.7	124.2
1,1,2-Trichloroethane		101.3	78.7	123.1
Tetrachloroethene		100.5	74.5	124.5
1,1,2,2-Tetrachloroethane		99.7	79.8	126.3

Matrix Spike (MS)

Lab Sample ID: 220616B9.3698611M, Parent Sample ID: S36986.10

Run in Batch: 220616B9, Run Date: 06/17/2022 05:42, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		100.7	67.4	121.2
Acetone		118.9	29.9	161.5
Methyl iodide		98.4	68.8	116.4
Carbon disulfide		93.7	63.8	137.4
tert-Methyl butyl ether (MTBE)		102.5	73.2	122.4
Acrylonitrile		104.1	69.9	128.9
2-Butanone (MEK)		107.3	44.0	134.4
Dichlorodifluoromethane		94.0	10.0	222.8
Chloromethane		98.0	23.8	166.5
Vinyl chloride		100.5	43.5	149.1
Bromomethane		96.4	56.8	151.3
Chloroethane		98.9	53.4	149.4
Trichlorofluoromethane		98.7	59.7	151.8
1,1-Dichloroethene		99.3	69.6	139.4
Methylene chloride		99.1	73.3	121.1
trans-1,2-Dichloroethene		98.5	73.6	129.3
1,1-Dichloroethane		98.3	71.5	126.2

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220616B9.3698611M, Parent Sample ID: S36986.10

Run in Batch: 220616B9, Run Date: 06/17/2022 05:42, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
cis-1,2-Dichloroethene		99.8	76.6	122.1
Tetrahydrofuran		103.4	59.0	117.9
Chloroform		99.5	78.4	124.0
Bromochloromethane		100.2	78.2	120.8
1,1,1-Trichloroethane		97.2	79.4	130.9
4-Methyl-2-pentanone (MIBK)		103.0	71.6	125.2
2-Hexanone		105.9	55.4	136.9
Carbon tetrachloride		96.2	72.6	133.0
Benzene		97.7	79.9	124.9
1,2-Dichloroethane		96.6	76.0	126.3
Trichloroethene		94.6	79.7	124.2
1,2-Dichloropropane		98.8	78.6	126.4
Bromodichloromethane		97.1	80.4	128.2
Dibromomethane		98.7	76.9	122.1
cis-1,3-Dichloropropene		92.5	79.8	129.9
Toluene		97.8	79.8	124.5
trans-1,3-Dichloropropene		92.8	74.0	131.3
1,1,2-Trichloroethane		99.4	78.7	123.1
Tetrachloroethene		96.0	74.5	124.5
trans-1,4-Dichloro-2-butene	*	56.5	68.6	135.4
Dibromochloromethane		95.2	74.6	127.2
1,2-Dibromoethane		98.4	70.3	133.7
Chlorobenzene		97.4	79.2	122.7
1,1,1,2-Tetrachloroethane		96.2	80.3	128.2
Ethylbenzene		96.2	79.5	129.1
p,m-Xylene		96.0	79.4	132.2
o-Xylene		96.1	80.2	131.0
Styrene		94.6	69.5	126.7
Isopropylbenzene		96.6	74.4	121.5
Bromoform		88.3	69.4	128.0
1,1,2,2-Tetrachloroethane		97.2	79.8	126.3
1,2,3-Trichloropropane		99.1	78.3	138.8
n-Propylbenzene		95.6	82.0	130.7
Bromobenzene		96.7	78.7	124.6
1,3,5-Trimethylbenzene		96.4	81.3	128.9
tert-Butylbenzene		95.1	80.7	128.9
1,2,4-Trimethylbenzene		96.4	81.4	130.8
sec-Butylbenzene		91.9	77.4	129.8
p-Isopropyltoluene		92.1	79.8	137.5
1,3-Dichlorobenzene		93.9	77.0	131.3
1,4-Dichlorobenzene		93.9	20.7	137.7
1,2-Dichlorobenzene		96.2	10.0	166.2
1,2,3-Trimethylbenzene		96.1	76.3	124.2
n-Butylbenzene		90.7	80.0	133.3
Hexachloroethane		94.3	23.8	138.1
1,2-Dibromo-3-chloropropane		99.1	21.2	189.4

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220616B9.3698611M, Parent Sample ID: S36986.10

Run in Batch: 220616B9, Run Date: 06/17/2022 05:42, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,2,4-Trichlorobenzene		95.6	27.4	143.4
1,2,3-Trichlorobenzene		98.8	75.4	131.4
Naphthalene		104.4	32.9	135.8
2-Methylnaphthalene		111.4	25.5	165.5

Matrix Spike (MS)

Lab Sample ID: 220616B9.3698632M, Parent Sample ID: S36986.31

Run in Batch: 220616B9, Run Date: 06/17/2022 06:21, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		98.1	67.4	121.2
Acetone		115.1	29.9	161.5
Methyl iodide		98.8	68.8	116.4
Carbon disulfide		95.1	63.8	137.4
tert-Methyl butyl ether (MTBE)		99.9	73.2	122.4
Acrylonitrile		105.4	69.9	128.9
2-Butanone (MEK)		110.0	44.0	134.4
Dichlorodifluoromethane		94.1	10.0	222.8
Chloromethane		95.0	23.8	166.5
Vinyl chloride		98.2	43.5	149.1
Bromomethane		96.9	56.8	151.3
Chloroethane		98.5	53.4	149.4
Trichlorofluoromethane		97.3	59.7	151.8
1,1-Dichloroethene		98.7	69.6	139.4
Methylene chloride		98.2	73.3	121.1
trans-1,2-Dichloroethene		97.5	73.6	129.3
1,1-Dichloroethane		97.7	71.5	126.2
cis-1,2-Dichloroethene		99.6	76.6	122.1
Tetrahydrofuran		100.6	59.0	117.9
Chloroform		98.2	78.4	124.0
Bromochloromethane		99.3	78.2	120.8
1,1,1-Trichloroethane		97.8	79.4	130.9
4-Methyl-2-pentanone (MIBK)		100.7	71.6	125.2
2-Hexanone		104.6	55.4	136.9
Carbon tetrachloride		97.8	72.6	133.0
Benzene		97.2	79.9	124.9
1,2-Dichloroethane		93.9	76.0	126.3
Trichloroethene		91.9	79.7	124.2
1,2-Dichloropropane		97.6	78.6	126.4
Bromodichloromethane		97.3	80.4	128.2
Dibromomethane		97.9	76.9	122.1
cis-1,3-Dichloropropene		92.9	79.8	129.9
Toluene		97.4	79.8	124.5
trans-1,3-Dichloropropene		92.2	74.0	131.3
1,1,2-Trichloroethane		97.2	78.7	123.1
Tetrachloroethene		97.1	74.5	124.5
trans-1,4-Dichloro-2-butene	*	55.7	68.6	135.4

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220616B9.3698632M, Parent Sample ID: S36986.31

Run in Batch: 220616B9, Run Date: 06/17/2022 06:21, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Dibromochloromethane		96.7	74.6	127.2
1,2-Dibromoethane		99.0	70.3	133.7
Chlorobenzene		98.2	79.2	122.7
1,1,1,2-Tetrachloroethane		97.8	80.3	128.2
Ethylbenzene		97.8	79.5	129.1
p,m-Xylene		97.2	79.4	132.2
o-Xylene		97.3	80.2	131.0
Styrene		95.9	69.5	126.7
Isopropylbenzene		98.3	74.4	121.5
Bromoform		88.6	69.4	128.0
1,1,2,2-Tetrachloroethane		96.5	79.8	126.3
1,2,3-Trichloropropane		98.5	78.3	138.8
n-Propylbenzene		97.0	82.0	130.7
Bromobenzene		98.7	78.7	124.6
1,3,5-Trimethylbenzene		97.7	81.3	128.9
tert-Butylbenzene		96.7	80.7	128.9
1,2,4-Trimethylbenzene		98.1	81.4	130.8
sec-Butylbenzene		95.6	77.4	129.8
p-Isopropyltoluene		95.2	79.8	137.5
1,3-Dichlorobenzene		96.9	77.0	131.3
1,4-Dichlorobenzene		96.2	20.7	137.7
1,2-Dichlorobenzene		98.3	10.0	166.2
1,2,3-Trimethylbenzene		99.0	76.3	124.2
n-Butylbenzene		93.5	80.0	133.3
Hexachloroethane		98.6	23.8	138.1
1,2-Dibromo-3-chloropropane		101.3	21.2	189.4
1,2,4-Trichlorobenzene		98.0	27.4	143.4
1,2,3-Trichlorobenzene		101.7	75.4	131.4
Naphthalene		106.6	32.9	135.8
2-Methylnaphthalene		115.6	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3694103N, Parent Sample ID: 220616B9.3694102M

Run in Batch: 220616B9, Run Date: 06/16/2022 23:34, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		99.8	67.4	121.2	1.3	30.0
Acetone		109.2	29.9	161.5	3.8	30.0
Methyl iodide		100.2	68.8	116.4	1.2	30.0
Carbon disulfide		95.5	63.8	137.4	1.5	30.0
tert-Methyl butyl ether (MTBE)		103.7	73.2	122.4	2.3	30.0
Acrylonitrile		106.3	69.9	128.9	2.7	30.0
2-Butanone (MEK)		112.1	44.0	134.4	0.1	30.0
Dichlorodifluoromethane		93.8	10.0	222.8	3.7	30.0
Chloromethane		95.5	23.8	166.5	0.5	30.0
Vinyl chloride		97.5	43.5	149.1	2.2	30.0
Bromomethane		96.8	56.8	151.3	3.7	30.0

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220616B9.3694103N, Parent Sample ID: 220616B9.3694102M

Run in Batch: 220616B9, Run Date: 06/16/2022 23:34, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chloroethane		98.3	53.4	149.4	0.6	30.0
Trichlorofluoromethane		97.1	59.7	151.8	2.7	30.0
1,1-Dichloroethene		96.8	69.6	139.4	1.4	30.0
Methylene chloride		97.7	73.3	121.1	0.5	30.0
trans-1,2-Dichloroethene		96.0	73.6	129.3	2.0	30.0
1,1-Dichloroethane		96.9	71.5	126.2	0.7	30.0
cis-1,2-Dichloroethene		98.1	76.6	122.1	0.4	30.0
Tetrahydrofuran		106.2	59.0	117.9	3.1	30.0
Chloroform		98.2	78.4	124.0	0.4	30.0
Bromochloromethane		100.3	78.2	120.8	1.1	30.0
1,1,1-Trichloroethane		97.4	79.4	130.9	1.0	30.0
4-Methyl-2-pentanone (MIBK)		105.8	71.6	125.2	2.7	30.0
2-Hexanone		111.4	55.4	136.9	3.9	30.0
Carbon tetrachloride		97.6	72.6	133.0	2.2	30.0
Benzene		96.8	79.9	124.9	1.2	30.0
1,2-Dichloroethane		95.2	76.0	126.3	1.5	30.0
Trichloroethene		94.6	79.7	124.2	2.6	30.0
1,2-Dichloropropane		98.2	78.6	126.4	0.1	30.0
Bromodichloromethane		98.6	80.4	128.2	0.2	30.0
Dibromomethane		100.5	76.9	122.1	1.0	30.0
cis-1,3-Dichloropropene		97.5	79.8	129.9	0.8	30.0
Toluene		96.9	79.8	124.5	2.5	30.0
trans-1,3-Dichloropropene		99.5	74.0	131.3	0.6	30.0
1,1,2-Trichloroethane		100.0	78.7	123.1	1.1	30.0
Tetrachloroethene		96.4	74.5	124.5	2.6	30.0
trans-1,4-Dichloro-2-butene		75.9	68.6	135.4	0.3	30.0
Dibromochloromethane		99.6	74.6	127.2	1.4	30.0
1,2-Dibromoethane		100.8	70.3	133.7	1.1	30.0
Chlorobenzene		98.1	79.2	122.7	2.1	30.0
1,1,1,2-Tetrachloroethane		99.0	80.3	128.2	1.4	30.0
Ethylbenzene		97.3	79.5	129.1	3.2	30.0
p,m-Xylene		96.9	79.4	132.2	3.7	30.0
o-Xylene		97.1	80.2	131.0	2.1	30.0
Styrene		90.5	69.5	126.7	4.6	30.0
Isopropylbenzene		98.0	74.4	121.5	3.3	30.0
Bromoform		97.1	69.4	128.0	0.5	30.0
1,1,2,2-Tetrachloroethane		99.8	79.8	126.3	0.7	30.0
1,2,3-Trichloropropane		101.2	78.3	138.8	0.5	30.0
n-Propylbenzene		97.0	82.0	130.7	3.3	30.0
Bromobenzene		99.5	78.7	124.6	2.2	30.0
1,3,5-Trimethylbenzene		97.7	81.3	128.9	2.7	30.0
tert-Butylbenzene		96.7	80.7	128.9	3.3	30.0
1,2,4-Trimethylbenzene		98.5	81.4	130.8	2.2	30.0
sec-Butylbenzene		93.2	77.4	129.8	8.4	30.0
p-Isopropyltoluene		93.2	79.8	137.5	8.0	30.0
1,3-Dichlorobenzene		94.5	77.0	131.3	6.9	30.0

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220616B9.3694103N, Parent Sample ID: 220616B9.3694102M

Run in Batch: 220616B9, Run Date: 06/16/2022 23:34, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dichlorobenzene		94.0	20.7	137.7	8.1	30.0
1,2-Dichlorobenzene		96.6	10.0	166.2	5.5	30.0
1,2,3-Trimethylbenzene		96.5	76.3	124.2	6.1	30.0
n-Butylbenzene		92.7	80.0	133.3	8.1	30.0
Hexachloroethane		96.4	23.8	138.1	7.6	30.0
1,2-Dibromo-3-chloropropane		105.6	21.2	189.4	4.3	30.0
1,2,4-Trichlorobenzene		99.1	27.4	143.4	6.6	30.0
1,2,3-Trichlorobenzene		103.2	75.4	131.4	6.0	30.0
Naphthalene		108.9	32.9	135.8	5.8	30.0
2-Methylnaphthalene		125.9	25.5	165.5	6.2	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3694805N, Parent Sample ID: 220616B9.3694804M

Run in Batch: 220616B9, Run Date: 06/16/2022 22:56, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Vinyl chloride		97.3	43.5	149.1	3.8	30.0
Chloroethane		96.5	53.4	149.4	3.2	30.0
1,1-Dichloroethene		94.9	69.6	139.4	5.0	30.0
trans-1,2-Dichloroethene		94.1	73.6	129.3	5.1	30.0
1,1-Dichloroethane		94.1	71.5	126.2	4.5	30.0
cis-1,2-Dichloroethene		95.4	76.6	122.1	4.6	30.0
1,1,1-Trichloroethane		95.1	79.4	130.9	4.7	30.0
1,2-Dichloroethane		93.7	76.0	126.3	4.1	30.0
Trichloroethene		96.0	79.7	124.2	2.3	30.0
1,1,2-Trichloroethane		98.4	78.7	123.1	2.9	30.0
Tetrachloroethene		96.9	74.5	124.5	3.6	30.0
1,1,2,2-Tetrachloroethane		99.6	79.8	126.3	0.1	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3698612N, Parent Sample ID: 220616B9.3698611M

Run in Batch: 220616B9, Run Date: 06/17/2022 06:01, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		100.5	67.4	121.2	0.2	30.0
Acetone		121.9	29.9	161.5	2.5	30.0
Methyl iodide		93.8	68.8	116.4	4.8	30.0
Carbon disulfide		89.3	63.8	137.4	4.9	30.0
tert-Methyl butyl ether (MTBE)		101.6	73.2	122.4	0.9	30.0
Acrylonitrile		107.2	69.9	128.9	3.0	30.0
2-Butanone (MEK)		113.5	44.0	134.4	5.5	30.0
Dichlorodifluoromethane		87.7	10.0	222.8	7.0	30.0
Chloromethane		92.4	23.8	166.5	5.9	30.0
Vinyl chloride		94.5	43.5	149.1	6.2	30.0
Bromomethane		91.4	56.8	151.3	5.3	30.0
Chloroethane		92.9	53.4	149.4	6.2	30.0
Trichlorofluoromethane		92.8	59.7	151.8	6.2	30.0
1,1-Dichloroethene		93.7	69.6	139.4	5.8	30.0

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220616B9.3698612N, Parent Sample ID: 220616B9.3698611M

Run in Batch: 220616B9, Run Date: 06/17/2022 06:01, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Methylene chloride		95.1	73.3	121.1	4.2	30.0
trans-1,2-Dichloroethene		92.0	73.6	129.3	6.4	30.0
1,1-Dichloroethane		94.6	71.5	126.2	3.9	30.0
cis-1,2-Dichloroethene		89.0	76.6	122.1	8.5	30.0
Tetrahydrofuran		109.0	59.0	117.9	5.3	30.0
Chloroform		95.2	78.4	124.0	4.4	30.0
Bromochloromethane		98.0	78.2	120.8	2.3	30.0
1,1,1-Trichloroethane		92.3	79.4	130.9	5.2	30.0
4-Methyl-2-pentanone (MIBK)		107.0	71.6	125.2	3.8	30.0
2-Hexanone		112.3	55.4	136.9	5.9	30.0
Carbon tetrachloride		90.4	72.6	133.0	6.2	30.0
Benzene		92.6	79.9	124.9	5.4	30.0
1,2-Dichloroethane		93.5	76.0	126.3	3.2	30.0
Trichloroethene		86.8	79.7	124.2	6.7	30.0
1,2-Dichloropropane		93.7	78.6	126.4	5.4	30.0
Bromodichloromethane		94.2	80.4	128.2	3.1	30.0
Dibromomethane		96.9	76.9	122.1	1.8	30.0
cis-1,3-Dichloropropene		90.0	79.8	129.9	2.8	30.0
Toluene		92.7	79.8	124.5	5.3	30.0
trans-1,3-Dichloropropene		91.7	74.0	131.3	1.2	30.0
1,1,2-Trichloroethane		97.9	78.7	123.1	1.4	30.0
Tetrachloroethene		89.9	74.5	124.5	6.6	30.0
trans-1,4-Dichloro-2-butene	*	57.3	68.6	135.4	1.4	30.0
Dibromochloromethane		94.1	74.6	127.2	1.2	30.0
1,2-Dibromoethane		97.4	70.3	133.7	1.0	30.0
Chlorobenzene		92.2	79.2	122.7	5.5	30.0
1,1,1,2-Tetrachloroethane		91.7	80.3	128.2	4.8	30.0
Ethylbenzene		90.4	79.5	129.1	6.3	30.0
p,m-Xylene		90.5	79.4	132.2	5.9	30.0
o-Xylene		91.5	80.2	131.0	4.9	30.0
Styrene		91.6	69.5	126.7	3.2	30.0
Isopropylbenzene		90.2	74.4	121.5	6.9	30.0
Bromoform		89.5	69.4	128.0	1.4	30.0
1,1,2,2-Tetrachloroethane		96.7	79.8	126.3	0.5	30.0
1,2,3-Trichloropropane		98.9	78.3	138.8	0.2	30.0
n-Propylbenzene		89.5	82.0	130.7	6.6	30.0
Bromobenzene		93.8	78.7	124.6	3.1	30.0
1,3,5-Trimethylbenzene		90.0	81.3	128.9	6.9	30.0
tert-Butylbenzene		88.9	80.7	128.9	6.7	30.0
1,2,4-Trimethylbenzene		91.2	81.4	130.8	5.6	30.0
sec-Butylbenzene		85.9	77.4	129.8	6.7	30.0
p-Isopropyltoluene		85.2	79.8	137.5	7.7	30.0
1,3-Dichlorobenzene		88.5	77.0	131.3	5.9	30.0
1,4-Dichlorobenzene		88.7	20.7	137.7	5.7	30.0
1,2-Dichlorobenzene		90.6	10.0	166.2	5.9	30.0
1,2,3-Trimethylbenzene		89.8	76.3	124.2	6.7	30.0

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220616B9.3698612N, Parent Sample ID: 220616B9.3698611M

Run in Batch: 220616B9, Run Date: 06/17/2022 06:01, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
n-Butylbenzene		83.4	80.0	133.3	8.3	30.0
Hexachloroethane		87.5	23.8	138.1	7.5	30.0
1,2-Dibromo-3-chloropropane		102.8	21.2	189.4	3.7	30.0
1,2,4-Trichlorobenzene		91.7	27.4	143.4	4.2	30.0
1,2,3-Trichlorobenzene		95.3	75.4	131.4	3.6	30.0
Naphthalene		103.1	32.9	135.8	1.2	30.0
2-Methylnaphthalene		113.0	25.5	165.5	1.4	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220616B9.3698633N, Parent Sample ID: 220616B9.3698632M

Run in Batch: 220616B9, Run Date: 06/17/2022 06:40, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		101.1	67.4	121.2	3.1	30.0
Acetone		127.6	29.9	161.5	10.3	30.0
Methyl iodide		99.4	68.8	116.4	0.6	30.0
Carbon disulfide		94.6	63.8	137.4	0.5	30.0
tert-Methyl butyl ether (MTBE)		104.1	73.2	122.4	4.1	30.0
Acrylonitrile		109.5	69.9	128.9	3.8	30.0
2-Butanone (MEK)		116.0	44.0	134.4	5.3	30.0
Dichlorodifluoromethane		93.0	10.0	222.8	1.2	30.0
Chloromethane		96.7	23.8	166.5	1.8	30.0
Vinyl chloride		98.9	43.5	149.1	0.8	30.0
Bromomethane		96.3	56.8	151.3	0.6	30.0
Chloroethane		98.8	53.4	149.4	0.3	30.0
Trichlorofluoromethane		97.3	59.7	151.8	0.0	30.0
1,1-Dichloroethene		98.7	69.6	139.4	0.0	30.0
Methylene chloride		99.7	73.3	121.1	1.5	30.0
trans-1,2-Dichloroethene		98.0	73.6	129.3	0.5	30.0
1,1-Dichloroethane		98.4	71.5	126.2	0.8	30.0
cis-1,2-Dichloroethene		100.8	76.6	122.1	1.2	30.0
Tetrahydrofuran		111.7	59.0	117.9	10.5	30.0
Chloroform		99.1	78.4	124.0	1.0	30.0
Bromochloromethane		100.7	78.2	120.8	1.3	30.0
1,1,1-Trichloroethane		98.1	79.4	130.9	0.3	30.0
4-Methyl-2-pentanone (MIBK)		109.4	71.6	125.2	8.4	30.0
2-Hexanone		115.5	55.4	136.9	9.8	30.0
Carbon tetrachloride		98.1	72.6	133.0	0.3	30.0
Benzene		98.9	79.9	124.9	1.7	30.0
1,2-Dichloroethane		96.5	76.0	126.3	2.7	30.0
Trichloroethene		92.2	79.7	124.2	0.2	30.0
1,2-Dichloropropane		98.8	78.6	126.4	1.2	30.0
Bromodichloromethane		98.7	80.4	128.2	1.5	30.0
Dibromomethane		101.4	76.9	122.1	3.5	30.0
cis-1,3-Dichloropropene		94.5	79.8	129.9	1.7	30.0
Toluene		98.4	79.8	124.5	1.0	30.0
trans-1,3-Dichloropropene		95.4	74.0	131.3	3.4	30.0

Organics - Volatiles, Prep Batch ID: VF220616W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220616B9.3698633N, Parent Sample ID: 220616B9.3698632M

Run in Batch: 220616B9, Run Date: 06/17/2022 06:40, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		101.4	78.7	123.1	4.3	30.0
Tetrachloroethene		97.2	74.5	124.5	0.2	30.0
trans-1,4-Dichloro-2-butene	*	57.5	68.6	135.4	3.1	30.0
Dibromochloromethane		97.2	74.6	127.2	0.5	30.0
1,2-Dibromoethane		102.0	70.3	133.7	3.0	30.0
Chlorobenzene		97.8	79.2	122.7	0.4	30.0
1,1,1,2-Tetrachloroethane		99.4	80.3	128.2	1.6	30.0
Ethylbenzene		97.3	79.5	129.1	0.5	30.0
p,m-Xylene		97.5	79.4	132.2	0.2	30.0
o-Xylene		97.4	80.2	131.0	0.1	30.0
Styrene		96.2	69.5	126.7	0.4	30.0
Isopropylbenzene		96.9	74.4	121.5	1.4	30.0
Bromoform		92.5	69.4	128.0	4.3	30.0
1,1,2,2-Tetrachloroethane		101.3	79.8	126.3	4.8	30.0
1,2,3-Trichloropropane		103.9	78.3	138.8	5.4	30.0
n-Propylbenzene		96.5	82.0	130.7	0.5	30.0
Bromobenzene		98.9	78.7	124.6	0.2	30.0
1,3,5-Trimethylbenzene		97.2	81.3	128.9	0.5	30.0
tert-Butylbenzene		95.9	80.7	128.9	0.9	30.0
1,2,4-Trimethylbenzene		97.8	81.4	130.8	0.3	30.0
sec-Butylbenzene		93.6	77.4	129.8	2.2	30.0
p-Isopropyltoluene		93.1	79.8	137.5	2.3	30.0
1,3-Dichlorobenzene		95.2	77.0	131.3	1.7	30.0
1,4-Dichlorobenzene		94.4	20.7	137.7	1.9	30.0
1,2-Dichlorobenzene		97.3	10.0	166.2	1.0	30.0
1,2,3-Trimethylbenzene		97.2	76.3	124.2	1.9	30.0
n-Butylbenzene		91.0	80.0	133.3	2.7	30.0
Hexachloroethane		97.0	23.8	138.1	1.6	30.0
1,2-Dibromo-3-chloropropane		106.6	21.2	189.4	5.1	30.0
1,2,4-Trichlorobenzene		97.0	27.4	143.4	1.0	30.0
1,2,3-Trichlorobenzene		101.8	75.4	131.4	0.1	30.0
Naphthalene		110.5	32.9	135.8	3.5	30.0
2-Methylnaphthalene		121.8	25.5	165.5	5.2	30.0

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.34	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		97.4	70.0	130.0	1.0	30.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.6	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.0	70.0	130.0	1.4	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36941
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470A / Racer Lansing
Submitted: 06/10/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.6
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[X] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[X] Yes	[ ] No	[ ] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S36941 Submitted: 06/10/2022 08:15

Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30112892.0470A / Racer Lansing

Initial Preservation Check: 06/10/2022 08:54 MMC

Preservation Recheck (E200.8): N/A

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S36941.01	125ml Plastic HNO3	<2			
S36941.01	125ml Plastic HNO3	<2			
S36941.02	125ml Plastic HNO3	<2			
S36941.02	125ml Plastic HNO3	<2			
S36941.03	125ml Plastic HNO3	<2			
S36941.03	125ml Plastic HNO3	<2			
S36941.04	125ml Plastic HNO3	<2			
S36941.04	125ml Plastic HNO3	<2			
S36941.09	125ml Plastic HNO3	<2			
S36941.11	125ml Plastic HNO3	<2			
S36941.11	125ml Plastic HNO3	<2			

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 2 OF 2

150010

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO: 947-777-5258 CELL NO.: P.O. NO.:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☐ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.0470A / LACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Monica Dolat / Monica Dolat

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☐ Other
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO3	H2SO4	NaOH	MeOH	OTHER	VOCs 8260B Short	Total Select Metals (As, Mn, Pb, V)	Dissolved Select Metals (As, Mn, Pb, V)	Methane, Ethane, Ethene RSK-175
.01/.02/.03	6/9/22	1405	MW-18-88-060922 (MS, MSD)	GW	18	3	9	6					X	X	X	X
36941.04	6/9/22	—	DUP-07-060922	GW	3	1		2						X		X
.05	6/9/22	1525	TB-08-060922	GW	1	1							X			

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Monica Dolat / ARC ☒ Sampler DATE: 6/9/22 TIME: 1505
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box DATE: 6/10/22 TIME: 0815
RECEIVED BY: SIGNATURE/ORGANIZATION: M Chitwood DATE: 6/10/22 TIME: 0815

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL: 3.6

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

PLANT-3

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 2

150995

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: KAITLYN HUNT
COMPANY: ARCADIS
ADDRESS: 28550 CABOT DR. SUITE 500
CITY: NOVI STATE: MI ZIP CODE: 48377
PHONE NO.: 947.777.5215 CELL NO.: P.O. NO.:
E-MAIL ADDRESS: KAITLYN.HUNT@ARCADIS.COM QUOTE NO.:

INVOICE TO

CONTACT NAME: ☐ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.0470.A / RACER LANSING
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Brian J. Corcoran

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☐ Other
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4 Dioxane 8260 Sims	Target Screen Metals (As, Ni, Pb, V, Cr, Cyanide)	Hexavalent Chromium SM-3500-Cr B	Dissolved Select Metals (As, Ni, Pb, V, Cr, Cyanide)
36941.06	6/9/22	9:45	MW-15-71_060922	GW	3		3						X			
.07	6/9/22	11:00	MW-14-64_060922	GW	3		3						X			
.08	6/9/22	12:20	MW-13-49_060922	GW	3		3						X			
.09	6/9/22	13:40	MW-91-2R_060922	GW	5	1	3	1					X	X	X	
.10	6/9/22	—	DUP-11_060922	GW	3		3						X			
.11	6/9/22	16:10	CH-14-20_060922	GW	3	1		2					X	X		X

RELINQUISHED BY: SIGNATURE/ORGANIZATION: ☒ Sampler DATE: 6-9-22 TIME: 14:10
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box DATE: 6/10/22 TIME: 0815
RECEIVED BY: SIGNATURE/ORGANIZATION: M Malcolm DATE: 6/10/22 TIME: 0815

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES. TEMP. ON ARRIVAL: 3.6

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Analytical Laboratory Report

Report ID: S36996.01(01)+QC01
Generated on 06/16/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36996.01
Project: 30112892.0470A / Racer Lansing
Collected Date(s): 06/10/2022
Submitted Date/Time: 06/10/2022 15:35
Sampled by: Monica Dostert
P.O. #: 30112892.0470A

Table of Contents

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Report Narrative (Page 2)
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Sample Summary (Page 5)
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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36996.01	MW-21-139_061022	Groundwater	06/10/22 11:20

Analytical Laboratory Report

Lab Sample ID: S36996.01
Sample Tag: MW-21-139_061022
Collected Date/Time: 06/10/2022 11:20
Matrix: Groundwater
COC Reference: 150011

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 14:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/14/22 13:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	4	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S36996.01(01)+QC01
Generated on 06/16/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36996.01
Project: 30112892.0470A / Racer Lansing
Submitted Date/Time: 06/10/2022 15:35
Sampled by: Monica Dostert
P.O. #: 30112892.0470A

QC Report Sections

Cover Page (Page 7)
Analysis Summary (Page 8)
Prep Batch Summary (Page 9)
Surrogates per QC Sample (Page 10)
Internal Standards per Lab Sample (Page 11)
Internal Standards per QC Sample (Page 12)
Batch QC Results (Page 13)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S36996.01
Sample Tag: MW-21-139_061022
Collected Date/Time: 06/10/2022 11:20
Matrix: Groundwater
COC Reference: 150011

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/14/22 13:12	220614A9	VS220614W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS220614W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36996.01	1,4-Dioxane	SW8260B - SIM	06/14/22 13:12	220614A9

Organics - Volatiles, Prep Batch ID: VS220614W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220614A9.BLKW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:50, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample (LCS)

Lab Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 11:49, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220614A9.LCSDW14A, Parent Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:10, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36996.01

Sample Tag: MW-21-139_061022

Collected Date/Time: 06/10/2022 11:20

Matrix: Groundwater

COC Reference: 150011

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220614A9, Run Date: 06/14/2022 13:12, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220614W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220614A9.BLKW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:50, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**110.8**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 11:49, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.1**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220614A9.LCSDW14A, Parent Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:10, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**101.8**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220614W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220614A9.BLKW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:50, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane		ND	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 11:49, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		106.1	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220614A9.LCSDW14A, Parent Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:10, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.3	70.0	130.0	5.7	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36996
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470A / Racer Lansing
Submitted: 06/10/2022 15:35 Login User: JRM

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.9
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[ ] Yes	[X] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Plant 2

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

150011

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO: 947-777-5215 CELL NO: P.O. NO:
E-MAIL ADDRESS: kaitlyn.hunt@arcadis.com QUOTE NO:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Monica Dostert/Monica Dostert

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane (1,4-D) by 8260 SIM
36996.01	6/10/22	1120	MW-21-139-061022	GW	3		3						1

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Arcadis ☒ Sampler	DATE 6/10/22	TIME 1510
RECEIVED BY: SIGNATURE/ORGANIZATION	PME	DATE 6/10/22	TIME 153
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE 6/10/22	TIME 1535

RELINQUISHED BY: SIGNATURE/ORGANIZATION	MI	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:
SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:

NOTES: TEMP. ON ARRIVAL 4.9

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Analytical Laboratory Report

Report ID: S36998.01(01)+QC01
Generated on 06/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S36998.01-S36998.13
Project: 30112892.0470A / Racer Lansing
Collected Date(s): 06/10/2022
Submitted Date/Time: 06/10/2022 15:35
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
N/A	Not Applicable
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (13 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S36998.01	MW-12-20_061022	Groundwater	06/10/22 10:30
S36998.02	MW-12-21_061022	Groundwater	06/10/22 11:50
S36998.03	MW-13-23_061022	Groundwater	06/10/22 13:00
S36998.04	MW-13-24_061022	Groundwater	06/10/22 14:20
S36998.05	MW-13-25_061022	Groundwater	06/10/22 14:00
S36998.06	MW-13-32_061022	Groundwater	06/10/22 12:55
S36998.07	MW-02-02(3)_061022	Groundwater	06/10/22 10:05
S36998.08	MW-02-02(3)_061022 MS	Groundwater	06/10/22 10:05
S36998.09	MW-02-02(3)_061022 MSD	Groundwater	06/10/22 10:05
S36998.10	MW-13-41_061022	Groundwater	06/10/22 11:15
S36998.11	MW-13-46_061022	Groundwater	06/10/22 12:35
S36998.12	MW-13-48_061022	Groundwater	06/10/22 13:35
S36998.13	TB-09_061022	Water	06/10/22 00:01

Analytical Laboratory Report

Lab Sample ID: S36998.01
Sample Tag: MW-12-20_061022
Collected Date/Time: 06/10/2022 10:30
Matrix: Groundwater
COC Reference: 137979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 14:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/14/22 13:33, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36998.02
Sample Tag: MW-12-21_061022
Collected Date/Time: 06/10/2022 11:50
Matrix: Groundwater
COC Reference: 137979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 14:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/14/22 13:54, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	179	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 02:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36998.02 (continued)
Sample Tag: MW-12-21_061022

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 02:41, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S36998.03
Sample Tag: MW-13-23_061022
Collected Date/Time: 06/10/2022 13:00
Matrix: Groundwater
COC Reference: 137979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 14:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/14/22 16:17, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36998.04
Sample Tag: MW-13-24_061022
Collected Date/Time: 06/10/2022 14:20
Matrix: Groundwater
COC Reference: 137979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 14:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/14/22 14:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S36998.05
Sample Tag: MW-13-25_061022
Collected Date/Time: 06/10/2022 14:00
Matrix: Groundwater
COC Reference: 137979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 14:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/14/22 14:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	4	1		ug/L	1	123-91-1	

Lab Sample ID: S36998.06
Sample Tag: MW-13-32_061022
Collected Date/Time: 06/10/2022 12:55
Matrix: Groundwater
COC Reference: 137979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	HNO3	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3015A	06/20/22 15:00	CCM	

Metals

Method: E200.8, Run Date: 06/20/22 17:24, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002		mg/L	5	7440-38-2	
Chromium	0.009	0.005		mg/L	5	7440-47-3	
Copper	Not detected	0.005		mg/L	5	7440-50-8	
Lead	Not detected	0.003		mg/L	5	7439-92-1	
Nickel	0.363	0.005		mg/L	5	7440-02-0	
Vanadium	Not detected	0.005		mg/L	5	7440-62-2	

Lab Sample ID: S36998.07
Sample Tag: MW-02-02(3)_061022
Collected Date/Time: 06/10/2022 10:05
Matrix: Groundwater
COC Reference: 137980

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 21:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36998.08
Sample Tag: MW-02-02(3)_061022 MS
Collected Date/Time: 06/10/2022 10:05
Matrix: Groundwater
COC Reference: 137980

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 17:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	50	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S36998.09
Sample Tag: MW-02-02(3)_061022 MSD
Collected Date/Time: 06/10/2022 10:05
Matrix: Groundwater
COC Reference: 137980

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 10:15	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/13/22 18:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	50	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S36998.10
Sample Tag: MW-13-41_061022
Collected Date/Time: 06/10/2022 11:15
Matrix: Groundwater
COC Reference: 137980

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/17/22 11:15	BDO	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 03:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36998.10 (continued)
Sample Tag: MW-13-41_061022

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 03:04, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36998.11
Sample Tag: MW-13-46_061022
Collected Date/Time: 06/10/2022 12:35
Matrix: Groundwater
COC Reference: 137980

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 14:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/14/22 15:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S36998.12
Sample Tag: MW-13-48_061022
Collected Date/Time: 06/10/2022 13:35
Matrix: Groundwater
COC Reference: 137980

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/14/22 14:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 06/14/22 15:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	37	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/22 16:51, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S36998.12 (continued)
Sample Tag: MW-13-48_061022

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/16/22 16:51, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S36998.13
Sample Tag: TB-09_061022
Collected Date/Time: 06/10/2022 00:01
Matrix: Water
COC Reference: 137979

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	06/17/22 11:15	BDO	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 02:17, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S36998.13 (continued)
Sample Tag: TB-09_061022

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 06/17/22 02:17, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Quality Control Report

Report ID: S36998.01(01)+QC01
Generated on 06/20/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S36998.01-S36998.13
Project: 30112892.0470A / Racer Lansing
Submitted Date/Time: 06/10/2022 15:35
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

QC Report Sections

Cover Page (Page 23)
Analysis Summary (Pages 24-36)
Prep Batch Summary (Page 37)
Surrogates per Lab Sample (Pages 38-41)
Surrogates per QC Sample (Pages 42-45)
Internal Standards per Lab Sample (Pages 46-55)
Internal Standards per QC Sample (Pages 56-60)
Batch QC Results (Pages 61-74)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S36998.01
Sample Tag: MW-12-20_061022
Collected Date/Time: 06/10/2022 10:30
Matrix: Groundwater
COC Reference: 137979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/14/22 13:33	220614A9	VS220614W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36998.02
Sample Tag: MW-12-21_061022
Collected Date/Time: 06/10/2022 11:50
Matrix: Groundwater
COC Reference: 137979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/14/22 13:54	220614A9	VS220614W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/17/22 02:41	220616C7	VF220616W5	Yes	BLK/LCS/LCSD

Lab Sample ID: S36998.03
Sample Tag: MW-13-23_061022
Collected Date/Time: 06/10/2022 13:00
Matrix: Groundwater
COC Reference: 137979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/14/22 16:17	220614A9	VS220614W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36998.04
Sample Tag: MW-13-24_061022
Collected Date/Time: 06/10/2022 14:20
Matrix: Groundwater
COC Reference: 137979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/14/22 14:37	220614A9	VS220614W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36998.05
Sample Tag: MW-13-25_061022
Collected Date/Time: 06/10/2022 14:00
Matrix: Groundwater
COC Reference: 137979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/14/22 14:59	220614A9	VS220614W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36998.06

Sample Tag: MW-13-32_061022

Collected Date/Time: 06/10/2022 12:55

Matrix: Groundwater

COC Reference: 137979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic	E200.8	06/20/22 17:24	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Chromium	E200.8	06/20/22 17:24	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Copper	E200.8	06/20/22 17:24	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Lead	E200.8	06/20/22 17:24	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Nickel	E200.8	06/20/22 17:24	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD
Vanadium	E200.8	06/20/22 17:24	MT4-22-0620C	MTD-062022-6	No	BLK/LCS/MS/MSD

Lab Sample ID: S36998.07
Sample Tag: MW-02-02(3)_061022
Collected Date/Time: 06/10/2022 10:05
Matrix: Groundwater
COC Reference: 137980

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 21:07	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36998.08
Sample Tag: MW-02-02(3)_061022 MS
Collected Date/Time: 06/10/2022 10:05
Matrix: Groundwater
COC Reference: 137980

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 17:59	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36998.09
Sample Tag: MW-02-02(3)_061022 MSD
Collected Date/Time: 06/10/2022 10:05
Matrix: Groundwater
COC Reference: 137980

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/13/22 18:19	220613A9	VS220613W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S36998.10
Sample Tag: MW-13-41_061022
Collected Date/Time: 06/10/2022 11:15
Matrix: Groundwater
COC Reference: 137980

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/17/22 03:04	220616C7	VF220616W5	Yes	BLK/LCS/LCSD

Lab Sample ID: S36998.11
Sample Tag: MW-13-46_061022
Collected Date/Time: 06/10/2022 12:35
Matrix: Groundwater
COC Reference: 137980

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/14/22 15:20	220614A9	VS220614W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36998.12
Sample Tag: MW-13-48_061022
Collected Date/Time: 06/10/2022 13:35
Matrix: Groundwater
COC Reference: 137980

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	06/14/22 15:42	220614A9	VS220614W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	06/16/22 16:51	220616A7	VF220616W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S36998.13
Sample Tag: TB-09_061022
Collected Date/Time: 06/10/2022 00:01
Matrix: Water
COC Reference: 137979

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	06/17/22 02:17	220616C7	VF220616W5	Yes	BLK/LCS/LCSD

Metals, Prep Batch ID: MTD-062022-6

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36998.06	Arsenic	E200.8	06/20/22 17:24	MT4-22-0620C
S36998.06	Chromium	E200.8	06/20/22 17:24	MT4-22-0620C
S36998.06	Copper	E200.8	06/20/22 17:24	MT4-22-0620C
S36998.06	Lead	E200.8	06/20/22 17:24	MT4-22-0620C
S36998.06	Nickel	E200.8	06/20/22 17:24	MT4-22-0620C
S36998.06	Vanadium	E200.8	06/20/22 17:24	MT4-22-0620C

Organics - Volatiles, Prep Batch ID: VF220616W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36998.12	Volatile Organics - DEQ List	SW5030C/8260C	06/16/22 16:51	220616A7

Organics - Volatiles, Prep Batch ID: VF220616W5

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36998.02	Volatile Organics - DEQ List	SW5030C/8260C	06/17/22 02:41	220616C7
S36998.10	Volatile Organics - DEQ List	SW5030C/8260C	06/17/22 03:04	220616C7
S36998.13	Volatile Organics - DEQ List	SW5030C/8260C	06/17/22 02:17	220616C7

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36998.07	1,4-Dioxane	SW8260B - SIM	06/13/22 21:07	220613A9
S36998.08	1,4-Dioxane	SW8260B - SIM	06/13/22 17:59	220613A9
S36998.09	1,4-Dioxane	SW8260B - SIM	06/13/22 18:19	220613A9

Organics - Volatiles, Prep Batch ID: VS220614W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S36998.01	1,4-Dioxane	SW8260B - SIM	06/14/22 13:33	220614A9
S36998.02	1,4-Dioxane	SW8260B - SIM	06/14/22 13:54	220614A9
S36998.03	1,4-Dioxane	SW8260B - SIM	06/14/22 16:17	220614A9
S36998.04	1,4-Dioxane	SW8260B - SIM	06/14/22 14:37	220614A9
S36998.05	1,4-Dioxane	SW8260B - SIM	06/14/22 14:59	220614A9
S36998.11	1,4-Dioxane	SW8260B - SIM	06/14/22 15:20	220614A9
S36998.12	1,4-Dioxane	SW8260B - SIM	06/14/22 15:42	220614A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36998.02

Sample Tag: MW-12-21_061022

Collected Date/Time: 06/10/2022 11:50

Matrix: Groundwater

COC Reference: 137979

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616C7, Run Date: 06/17/2022 02:41, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**98.8**	80.0	124.0
1,2-Dichloroethane-D4		**104.2**	72.0	125.0
Toluene-D8		**101.4**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36998.10

Sample Tag: MW-13-41_061022

Collected Date/Time: 06/10/2022 11:15

Matrix: Groundwater

COC Reference: 137980

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616C7, Run Date: 06/17/2022 03:04, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**96.7**	80.0	124.0
1,2-Dichloroethane-D4		**97.6**	72.0	125.0
Toluene-D8		**101.8**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36998.12

Sample Tag: MW-13-48_061022

Collected Date/Time: 06/10/2022 13:35

Matrix: Groundwater

COC Reference: 137980

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616A7, Run Date: 06/16/2022 16:51, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**99.2**	80.0	124.0
1,2-Dichloroethane-D4		**100.1**	72.0	125.0
Toluene-D8		**101.6**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S36998.13

Sample Tag: TB-09_061022

Collected Date/Time: 06/10/2022 00:01

Matrix: Water

COC Reference: 137979

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616C7, Run Date: 06/17/2022 02:17, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**98.4**	80.0	124.0
1,2-Dichloroethane-D4		**98.6**	72.0	125.0
Toluene-D8		**101.1**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220616W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220616A7.BLKW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 15:04, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**101.1**	80.0	124.0
1,2-Dichloroethane-D4		**96.6**	72.0	125.0
Toluene-D8		**102.1**	89.0	112.0

Blank (BLK)

Lab Sample ID: 220616B7.BLKW16A

Run in Batch: 220616B7, Run Date: 06/16/2022 15:04, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Toluene-D8		**100.4**	86.0	118.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220616A7.LCSW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 11:57, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**101.4**	80.0	124.0
1,2-Dichloroethane-D4		**96.5**	72.0	125.0
Toluene-D8		**101.7**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220616B7.LCSG16A

Run in Batch: 220616B7, Run Date: 06/16/2022 13:31, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Toluene-D8		**102.9**	86.0	118.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616A7.LCSDW16A, Parent Sample ID: 220616A7.LCSW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 12:20, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**101.3**	80.0	124.0
1,2-Dichloroethane-D4		**97.1**	72.0	125.0
Toluene-D8		**100.6**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616B7.LCSDG16A, Parent Sample ID: 220616B7.LCSG16A

Run in Batch: 220616B7, Run Date: 06/16/2022 14:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Toluene-D8		**98.9**	86.0	118.0

Organics - Volatiles, Prep Batch ID: VF220616W5

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220616C7.BLKW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 01:53, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**96.9**	80.0	124.0
1,2-Dichloroethane-D4		**98.5**	72.0	125.0
Toluene-D8		**100.3**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220616C7.LCSW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 00:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**99.9**	80.0	124.0
1,2-Dichloroethane-D4		**102.1**	72.0	125.0
Toluene-D8		**102.9**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616C7.LCSDW16B, Parent Sample ID: 220616C7.LCSW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 00:42, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**99.8**	80.0	124.0
1,2-Dichloroethane-D4		**97.0**	72.0	125.0
Toluene-D8		**101.3**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS220614W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220614A9.BLKW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:50, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 11:49, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220614A9.LCSDW14A, Parent Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:10, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36998.01

Sample Tag: MW-12-20_061022

Collected Date/Time: 06/10/2022 10:30

Matrix: Groundwater

COC Reference: 137979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220614A9, Run Date: 06/14/2022 13:33, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**111.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36998.02

Sample Tag: MW-12-21_061022

Collected Date/Time: 06/10/2022 11:50

Matrix: Groundwater

COC Reference: 137979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220614A9, Run Date: 06/14/2022 13:54, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.7**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616C7, Run Date: 06/17/2022 02:41, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.2**	50.0	200.0
1,4-Difluorobenzene		**99.9**	50.0	200.0
Chlorobenzene-D5		**100.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.8**	50.0	200.0

Lab Sample ID: S36998.03

Sample Tag: MW-13-23_061022

Collected Date/Time: 06/10/2022 13:00

Matrix: Groundwater

COC Reference: 137979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220614A9, Run Date: 06/14/2022 16:17, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36998.04

Sample Tag: MW-13-24_061022

Collected Date/Time: 06/10/2022 14:20

Matrix: Groundwater

COC Reference: 137979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220614A9, Run Date: 06/14/2022 14:37, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**104.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36998.05

Sample Tag: MW-13-25_061022

Collected Date/Time: 06/10/2022 14:00

Matrix: Groundwater

COC Reference: 137979

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220614A9, Run Date: 06/14/2022 14:59, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**112.7**	50.0	200.0

Lab Sample ID: S36998.07

Sample Tag: MW-02-02(3)_061022

Collected Date/Time: 06/10/2022 10:05

Matrix: Groundwater

COC Reference: 137980

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220613A9, Run Date: 06/13/2022 21:07, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**121.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36998.10

Sample Tag: MW-13-41_061022

Collected Date/Time: 06/10/2022 11:15

Matrix: Groundwater

COC Reference: 137980

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616C7, Run Date: 06/17/2022 03:04, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.8**	50.0	200.0
1,4-Difluorobenzene		**99.1**	50.0	200.0
Chlorobenzene-D5		**98.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.0**	50.0	200.0

Lab Sample ID: S36998.11

Sample Tag: MW-13-46_061022

Collected Date/Time: 06/10/2022 12:35

Matrix: Groundwater

COC Reference: 137980

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220614A9, Run Date: 06/14/2022 15:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**108.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36998.12

Sample Tag: MW-13-48_061022

Collected Date/Time: 06/10/2022 13:35

Matrix: Groundwater

COC Reference: 137980

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220614A9, Run Date: 06/14/2022 15:42, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**114.3**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616A7, Run Date: 06/16/2022 16:51, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**87.2**	50.0	200.0
1,4-Difluorobenzene		**90.7**	50.0	200.0
Chlorobenzene-D5		**90.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**88.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S36998.13

Sample Tag: TB-09_061022

Collected Date/Time: 06/10/2022 00:01

Matrix: Water

COC Reference: 137979

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220616C7, Run Date: 06/17/2022 02:17, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**97.7**	50.0	200.0
1,4-Difluorobenzene		**99.1**	50.0	200.0
Chlorobenzene-D5		**98.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220616W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220616A7.BLKW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 15:04, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**96.5**	50.0	200.0
1,4-Difluorobenzene		**95.9**	50.0	200.0
Chlorobenzene-D5		**97.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.1**	50.0	200.0

Blank (BLK)

Lab Sample ID: 220616B7.BLKW16A

Run in Batch: 220616B7, Run Date: 06/16/2022 15:04, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Difluorobenzene		**97.7**	50.0	200.0
Chlorobenzene-D5		**98.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.8**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220616A7.LCSW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 11:57, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.9**	50.0	200.0
1,4-Difluorobenzene		**98.5**	50.0	200.0
Chlorobenzene-D5		**98.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.6**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220616B7.LCSG16A

Run in Batch: 220616B7, Run Date: 06/16/2022 13:31, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Difluorobenzene		**104.4**	50.0	200.0
Chlorobenzene-D5		**104.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**105.4**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616A7.LCSDW16A, Parent Sample ID: 220616A7.LCSW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 12:20, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**105.7**	50.0	200.0
1,4-Difluorobenzene		**105.1**	50.0	200.0
Chlorobenzene-D5		**104.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**97.9**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616B7.LCSDG16A, Parent Sample ID: 220616B7.LCSG16A

Run in Batch: 220616B7, Run Date: 06/16/2022 14:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Difluorobenzene		**104.2**	50.0	200.0
Chlorobenzene-D5		**99.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**103.0**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220616W5

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220616C7.BLKW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 01:53, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**97.8**	50.0	200.0
1,4-Difluorobenzene		**99.4**	50.0	200.0
Chlorobenzene-D5		**97.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**93.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220616C7.LCSW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 00:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**103.1**	50.0	200.0
1,4-Difluorobenzene		**102.6**	50.0	200.0
Chlorobenzene-D5		**104.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**103.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616C7.LCSDW16B, Parent Sample ID: 220616C7.LCSW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 00:42, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**104.3**	50.0	200.0
1,4-Difluorobenzene		**104.3**	50.0	200.0
Chlorobenzene-D5		**103.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**103.3**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220613W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**114.1**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**118.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**122.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**123.2**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**114.6**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220614W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220614A9.BLKW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:50, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**110.8**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 11:49, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**102.1**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220614A9.LCSDW14A, Parent Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:10, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**101.8**	50.0	200.0

Metals, Prep Batch ID: MTD-062022-6

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-22-0620C.018.LRB

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:00, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Nickel		ND	0.001	mg/L
Vanadium		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-0620C.017.LCS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 16:59, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	85	115
Chromium		105	85	115
Copper		103	85	115
Lead		101	85	115
Nickel		102	85	115
Vanadium		105	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-22-0620C.030.MS, Parent Sample ID: S36941.01

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:13, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	75	125
Chromium		102	75	125
Copper		100	75	125
Lead		102	75	125
Nickel		100	75	125
Vanadium		105	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-22-0620C.047.MS, Parent Sample ID: S36941.01

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:35, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Chromium		104	75	125
Copper		102	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0620C.031.MSD, Parent Sample ID: MT4-22-0620C.030.MS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:13, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		102	75	125	0	20
Chromium		104	75	125	2	20
Copper		100	75	125	0	20
Lead		100	75	125	1	20
Nickel		101	75	125	1	20
Vanadium		105	75	125	0	20

Metals, Prep Batch ID: MTD-062022-6 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0620C.048.MSD, Parent Sample ID: MT4-22-0620C.047.MS

Run in Batch: MT4-22-0620C, Run Date: 06/20/2022 17:36, Prep Date: 06/20/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chromium		109	75	125	5	20
Copper		107	75	125	5	20

Organics - Volatiles, Prep Batch ID: VF220616W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220616A7.BLKW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 15:04, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220616W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 220616A7.BLKW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 15:04, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220616A7.LCSW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 11:57, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		100.6	67.4	121.2
Acetone		98.6	29.9	161.5
Methyl iodide		98.4	68.8	116.4
Carbon disulfide		95.5	63.8	137.4
tert-Methyl butyl ether (MTBE)		99.8	73.2	122.4
Acrylonitrile		101.8	69.9	128.9
2-Butanone (MEK)		108.0	44.0	134.4
Dichlorodifluoromethane		93.2	10.0	222.8
Chloromethane		94.6	23.8	166.5
Vinyl chloride		96.5	43.5	149.1
Bromomethane		95.1	56.8	151.3
Chloroethane		96.0	53.4	149.4
Trichlorofluoromethane		95.8	59.7	151.8
1,1-Dichloroethene		101.0	69.6	139.4
Methylene chloride		98.8	73.3	121.1
trans-1,2-Dichloroethene		98.4	73.6	129.3
1,1-Dichloroethane		99.8	71.5	126.2
cis-1,2-Dichloroethene		99.6	76.6	122.1
Tetrahydrofuran		100.2	59.0	117.9
Chloroform		99.7	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220616W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220616A7.LCSW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 11:57, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		100.1	78.2	120.8
1,1,1-Trichloroethane		98.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		107.2	71.6	125.2
2-Hexanone		106.6	55.4	136.9
Carbon tetrachloride		102.2	72.6	133.0
Benzene		101.1	79.9	124.9
1,2-Dichloroethane		97.9	76.0	126.3
Trichloroethene		100.3	79.7	124.2
1,2-Dichloropropane		100.5	78.6	126.4
Bromodichloromethane		102.5	80.4	128.2
Dibromomethane		102.8	76.9	122.1
cis-1,3-Dichloropropene		104.6	79.8	129.9
Toluene		103.0	79.8	124.5
trans-1,3-Dichloropropene		104.0	74.0	131.3
1,1,2-Trichloroethane		103.3	78.7	123.1
Tetrachloroethene		102.8	74.5	124.5
trans-1,4-Dichloro-2-butene		106.9	68.6	135.4
Dibromochloromethane		106.0	74.6	127.2
1,2-Dibromoethane		103.8	70.3	133.7
Chlorobenzene		102.4	79.2	122.7
1,1,1,2-Tetrachloroethane		104.8	80.3	128.2
Ethylbenzene		102.1	79.5	129.1
p,m-Xylene		102.5	79.4	132.2
o-Xylene		102.6	80.2	131.0
Styrene		103.1	69.5	126.7
Isopropylbenzene		103.8	74.4	121.5
Bromoform		108.6	69.4	128.0
1,1,2,2-Tetrachloroethane		103.9	79.8	126.3
1,2,3-Trichloropropane		103.1	78.3	138.8
n-Propylbenzene		103.3	82.0	130.7
Bromobenzene		102.2	78.7	124.6
1,3,5-Trimethylbenzene		103.4	81.3	128.9
tert-Butylbenzene		100.8	80.7	128.9
1,2,4-Trimethylbenzene		103.6	81.4	130.8
sec-Butylbenzene		103.9	77.4	129.8
p-Isopropyltoluene		101.2	79.8	137.5
1,3-Dichlorobenzene		100.8	77.0	131.3
1,4-Dichlorobenzene		101.5	20.7	137.7
1,2-Dichlorobenzene		102.2	10.0	166.2
1,2,3-Trimethylbenzene		101.7	76.3	124.2
n-Butylbenzene		103.1	80.0	133.3
Hexachloroethane		108.6	23.8	138.1
1,2-Dibromo-3-chloropropane		107.2	21.2	189.4
1,2,4-Trichlorobenzene		103.7	27.4	143.4
1,2,3-Trichlorobenzene		104.2	75.4	131.4
Naphthalene		104.4	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220616W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220616A7.LCSW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 11:57, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		112.2	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616A7.LCSDW16A, Parent Sample ID: 220616A7.LCSW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 12:20, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		98.1	67.4	121.2	2.5	30.0
Acetone		88.4	29.9	161.5	10.9	30.0
Methyl iodide		88.8	68.8	116.4	10.2	30.0
Carbon disulfide		87.0	63.8	137.4	9.3	30.0
tert-Methyl butyl ether (MTBE)		96.4	73.2	122.4	3.5	30.0
Acrylonitrile		99.2	69.9	128.9	2.6	30.0
2-Butanone (MEK)		101.6	44.0	134.4	6.0	30.0
Dichlorodifluoromethane		85.3	10.0	222.8	8.8	30.0
Chloromethane		89.6	23.8	166.5	5.4	30.0
Vinyl chloride		89.4	43.5	149.1	7.6	30.0
Bromomethane		88.8	56.8	151.3	6.8	30.0
Chloroethane		87.8	53.4	149.4	9.0	30.0
Trichlorofluoromethane		86.8	59.7	151.8	9.8	30.0
1,1-Dichloroethene		83.3	69.6	139.4	19.2	30.0
Methylene chloride		92.0	73.3	121.1	7.1	30.0
trans-1,2-Dichloroethene		89.0	73.6	129.3	10.0	30.0
1,1-Dichloroethane		91.3	71.5	126.2	8.9	30.0
cis-1,2-Dichloroethene		91.7	76.6	122.1	8.3	30.0
Tetrahydrofuran		101.0	59.0	117.9	0.8	30.0
Chloroform		92.5	78.4	124.0	7.4	30.0
Bromochloromethane		94.6	78.2	120.8	5.6	30.0
1,1,1-Trichloroethane		90.2	79.4	130.9	9.0	30.0
4-Methyl-2-pentanone (MIBK)		105.3	71.6	125.2	1.8	30.0
2-Hexanone		107.5	55.4	136.9	0.9	30.0
Carbon tetrachloride		90.8	72.6	133.0	11.8	30.0
Benzene		92.2	79.9	124.9	9.2	30.0
1,2-Dichloroethane		92.5	76.0	126.3	5.6	30.0
Trichloroethene		92.2	79.7	124.2	8.5	30.0
1,2-Dichloropropane		93.7	78.6	126.4	7.0	30.0
Bromodichloromethane		96.7	80.4	128.2	5.9	30.0
Dibromomethane		98.2	76.9	122.1	4.7	30.0
cis-1,3-Dichloropropene		98.7	79.8	129.9	5.8	30.0
Toluene		94.0	79.8	124.5	9.1	30.0
trans-1,3-Dichloropropene		99.8	74.0	131.3	4.2	30.0
1,1,2-Trichloroethane		99.0	78.7	123.1	4.2	30.0
Tetrachloroethene		93.0	74.5	124.5	10.0	30.0
trans-1,4-Dichloro-2-butene		106.1	68.6	135.4	0.7	30.0
Dibromochloromethane		101.2	74.6	127.2	4.6	30.0
1,2-Dibromoethane		99.6	70.3	133.7	4.1	30.0
Chlorobenzene		94.6	79.2	122.7	7.9	30.0

Organics - Volatiles, Prep Batch ID: VF220616W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220616A7.LCSDW16A, Parent Sample ID: 220616A7.LCSW16A

Run in Batch: 220616A7, Run Date: 06/16/2022 12:20, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		96.8	80.3	128.2	8.0	30.0
Ethylbenzene		93.5	79.5	129.1	8.8	30.0
p,m-Xylene		93.9	79.4	132.2	8.7	30.0
o-Xylene		92.8	80.2	131.0	10.0	30.0
Styrene		95.1	69.5	126.7	8.0	30.0
Isopropylbenzene		93.6	74.4	121.5	10.3	30.0
Bromoform		103.0	69.4	128.0	5.3	30.0
1,1,2,2-Tetrachloroethane		101.2	79.8	126.3	2.6	30.0
1,2,3-Trichloropropane		99.9	78.3	138.8	3.1	30.0
n-Propylbenzene		92.9	82.0	130.7	10.6	30.0
Bromobenzene		95.3	78.7	124.6	7.0	30.0
1,3,5-Trimethylbenzene		95.0	81.3	128.9	8.5	30.0
tert-Butylbenzene		92.8	80.7	128.9	8.2	30.0
1,2,4-Trimethylbenzene		94.7	81.4	130.8	9.0	30.0
sec-Butylbenzene		95.7	77.4	129.8	8.3	30.0
p-Isopropyltoluene		94.7	79.8	137.5	6.7	30.0
1,3-Dichlorobenzene		96.2	77.0	131.3	4.7	30.0
1,4-Dichlorobenzene		95.6	20.7	137.7	6.0	30.0
1,2-Dichlorobenzene		97.8	10.0	166.2	4.4	30.0
1,2,3-Trimethylbenzene		97.6	76.3	124.2	4.1	30.0
n-Butylbenzene		94.9	80.0	133.3	8.3	30.0
Hexachloroethane		101.6	23.8	138.1	6.7	30.0
1,2-Dibromo-3-chloropropane		112.6	21.2	189.4	5.0	30.0
1,2,4-Trichlorobenzene		103.0	27.4	143.4	0.7	30.0
1,2,3-Trichlorobenzene		104.6	75.4	131.4	0.4	30.0
Naphthalene		108.8	32.9	135.8	4.1	30.0
2-Methylnaphthalene		118.4	25.5	165.5	5.4	30.0

Organics - Volatiles, Prep Batch ID: VF220616W5

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220616C7.BLKW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 01:53, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220616W5 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 220616C7.BLKW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 01:53, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220616C7.LCSW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 00:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		100.2	67.4	121.2
Acetone		98.4	29.9	161.5
Methyl iodide		94.9	68.8	116.4
Carbon disulfide		95.1	63.8	137.4
tert-Methyl butyl ether (MTBE)		101.1	73.2	122.4
Acrylonitrile		103.4	69.9	128.9
2-Butanone (MEK)		105.9	44.0	134.4
Dichlorodifluoromethane		95.9	10.0	222.8
Chloromethane		94.4	23.8	166.5
Vinyl chloride		98.2	43.5	149.1
Bromomethane		97.1	56.8	151.3
Chloroethane		96.3	53.4	149.4
Trichlorofluoromethane		97.7	59.7	151.8
1,1-Dichloroethene		94.6	69.6	139.4
Methylene chloride		97.7	73.3	121.1
trans-1,2-Dichloroethene		96.6	73.6	129.3
1,1-Dichloroethane		98.3	71.5	126.2
cis-1,2-Dichloroethene		98.0	76.6	122.1
Tetrahydrofuran		101.4	59.0	117.9
Chloroform		99.0	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220616W5 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220616C7.LCSW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 00:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		98.7	78.2	120.8
1,1,1-Trichloroethane		98.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		106.0	71.6	125.2
2-Hexanone		106.2	55.4	136.9
Carbon tetrachloride		98.4	72.6	133.0
Benzene		98.5	79.9	124.9
1,2-Dichloroethane		96.1	76.0	126.3
Trichloroethene		97.0	79.7	124.2
1,2-Dichloropropane		97.8	78.6	126.4
Bromodichloromethane		97.6	80.4	128.2
Dibromomethane		96.7	76.9	122.1
cis-1,3-Dichloropropene		96.9	79.8	129.9
Toluene		99.5	79.8	124.5
trans-1,3-Dichloropropene		96.9	74.0	131.3
1,1,2-Trichloroethane		101.2	78.7	123.1
Tetrachloroethene		97.4	74.5	124.5
trans-1,4-Dichloro-2-butene		90.8	68.6	135.4
Dibromochloromethane		96.7	74.6	127.2
1,2-Dibromoethane		98.6	70.3	133.7
Chlorobenzene		97.9	79.2	122.7
1,1,1,2-Tetrachloroethane		98.1	80.3	128.2
Ethylbenzene		98.6	79.5	129.1
p,m-Xylene		99.2	79.4	132.2
o-Xylene		98.0	80.2	131.0
Styrene		98.0	69.5	126.7
Isopropylbenzene		98.2	74.4	121.5
Bromoform		98.2	69.4	128.0
1,1,2,2-Tetrachloroethane		101.1	79.8	126.3
1,2,3-Trichloropropane		100.2	78.3	138.8
n-Propylbenzene		97.6	82.0	130.7
Bromobenzene		95.7	78.7	124.6
1,3,5-Trimethylbenzene		99.1	81.3	128.9
tert-Butylbenzene		96.7	80.7	128.9
1,2,4-Trimethylbenzene		99.6	81.4	130.8
sec-Butylbenzene		97.5	77.4	129.8
p-Isopropyltoluene		97.1	79.8	137.5
1,3-Dichlorobenzene		95.8	77.0	131.3
1,4-Dichlorobenzene		95.6	20.7	137.7
1,2-Dichlorobenzene		95.7	10.0	166.2
1,2,3-Trimethylbenzene		98.7	76.3	124.2
n-Butylbenzene		96.7	80.0	133.3
Hexachloroethane		94.5	23.8	138.1
1,2-Dibromo-3-chloropropane		100.9	21.2	189.4
1,2,4-Trichlorobenzene		94.4	27.4	143.4
1,2,3-Trichlorobenzene		94.9	75.4	131.4
Naphthalene		100.0	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220616W5 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220616C7.LCSW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 00:18, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		104.4	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220616C7.LCSDW16B, Parent Sample ID: 220616C7.LCSW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 00:42, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		94.8	67.4	121.2	5.6	30.0
Acetone		90.2	29.9	161.5	8.7	30.0
Methyl iodide		93.7	68.8	116.4	1.3	30.0
Carbon disulfide		93.9	63.8	137.4	1.2	30.0
tert-Methyl butyl ether (MTBE)		97.4	73.2	122.4	3.8	30.0
Acrylonitrile		94.0	69.9	128.9	9.5	30.0
2-Butanone (MEK)		96.7	44.0	134.4	9.1	30.0
Dichlorodifluoromethane		93.9	10.0	222.8	2.1	30.0
Chloromethane		97.3	23.8	166.5	3.1	30.0
Vinyl chloride		98.1	43.5	149.1	0.0	30.0
Bromomethane		97.4	56.8	151.3	0.3	30.0
Chloroethane		96.9	53.4	149.4	0.6	30.0
Trichlorofluoromethane		97.2	59.7	151.8	0.5	30.0
1,1-Dichloroethene		89.4	69.6	139.4	5.7	30.0
Methylene chloride		96.1	73.3	121.1	1.7	30.0
trans-1,2-Dichloroethene		92.7	73.6	129.3	4.1	30.0
1,1-Dichloroethane		94.9	71.5	126.2	3.5	30.0
cis-1,2-Dichloroethene		94.6	76.6	122.1	3.5	30.0
Tetrahydrofuran		87.7	59.0	117.9	14.5	30.0
Chloroform		95.3	78.4	124.0	3.8	30.0
Bromochloromethane		94.6	78.2	120.8	4.3	30.0
1,1,1-Trichloroethane		95.1	79.4	130.9	3.7	30.0
4-Methyl-2-pentanone (MIBK)		96.0	71.6	125.2	9.9	30.0
2-Hexanone		97.6	55.4	136.9	8.4	30.0
Carbon tetrachloride		93.6	72.6	133.0	5.1	30.0
Benzene		94.8	79.9	124.9	3.8	30.0
1,2-Dichloroethane		92.1	76.0	126.3	4.2	30.0
Trichloroethene		93.9	79.7	124.2	3.3	30.0
1,2-Dichloropropane		94.3	78.6	126.4	3.7	30.0
Bromodichloromethane		94.9	80.4	128.2	2.7	30.0
Dibromomethane		93.3	76.9	122.1	3.5	30.0
cis-1,3-Dichloropropene		94.9	79.8	129.9	2.0	30.0
Toluene		95.8	79.8	124.5	3.8	30.0
trans-1,3-Dichloropropene		94.6	74.0	131.3	2.3	30.0
1,1,2-Trichloroethane		96.9	78.7	123.1	4.3	30.0
Tetrachloroethene		93.3	74.5	124.5	4.4	30.0
trans-1,4-Dichloro-2-butene		86.3	68.6	135.4	5.1	30.0
Dibromochloromethane		95.7	74.6	127.2	1.1	30.0
1,2-Dibromoethane		95.6	70.3	133.7	3.1	30.0
Chlorobenzene		95.9	79.2	122.7	2.1	30.0

Organics - Volatiles, Prep Batch ID: VF220616W5 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220616C7.LCSDW16B, Parent Sample ID: 220616C7.LCSW16B

Run in Batch: 220616C7, Run Date: 06/17/2022 00:42, Prep Date: 06/16/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		96.0	80.3	128.2	2.2	30.0
Ethylbenzene		94.8	79.5	129.1	3.9	30.0
p,m-Xylene		95.4	79.4	132.2	3.9	30.0
o-Xylene		93.5	80.2	131.0	4.7	30.0
Styrene		95.0	69.5	126.7	3.0	30.0
Isopropylbenzene		95.3	74.4	121.5	3.1	30.0
Bromoform		94.6	69.4	128.0	3.7	30.0
1,1,2,2-Tetrachloroethane		95.3	79.8	126.3	5.9	30.0
1,2,3-Trichloropropane		93.6	78.3	138.8	6.8	30.0
n-Propylbenzene		94.3	82.0	130.7	3.4	30.0
Bromobenzene		93.8	78.7	124.6	2.1	30.0
1,3,5-Trimethylbenzene		95.9	81.3	128.9	3.3	30.0
tert-Butylbenzene		93.4	80.7	128.9	3.5	30.0
1,2,4-Trimethylbenzene		96.2	81.4	130.8	3.5	30.0
sec-Butylbenzene		94.2	77.4	129.8	3.5	30.0
p-Isopropyltoluene		94.2	79.8	137.5	3.0	30.0
1,3-Dichlorobenzene		92.4	77.0	131.3	3.6	30.0
1,4-Dichlorobenzene		93.0	20.7	137.7	2.8	30.0
1,2-Dichlorobenzene		93.4	10.0	166.2	2.5	30.0
1,2,3-Trimethylbenzene		95.9	76.3	124.2	2.9	30.0
n-Butylbenzene		93.3	80.0	133.3	3.6	30.0
Hexachloroethane		92.8	23.8	138.1	1.9	30.0
1,2-Dibromo-3-chloropropane		95.6	21.2	189.4	5.4	30.0
1,2,4-Trichlorobenzene		95.3	27.4	143.4	1.0	30.0
1,2,3-Trichlorobenzene		95.1	75.4	131.4	0.2	30.0
Naphthalene		98.2	32.9	135.8	1.8	30.0
2-Methylnaphthalene		106.2	25.5	165.5	1.7	30.0

Organics - Volatiles, Prep Batch ID: VS220613W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220613A9.BLKW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 19:20, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.34	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220613A9.LCSDW13A, Parent Sample ID: 220613A9.LCSW13A

Run in Batch: 220613A9, Run Date: 06/13/2022 17:38, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		97.4	70.0	130.0	1.0	30.0

Matrix Spike (MS)

Lab Sample ID: 220613A9.3699808M, Parent Sample ID: S36998.07

Run in Batch: 220613A9, Run Date: 06/13/2022 17:59, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		98.6	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220613A9.3699809N, Parent Sample ID: 220613A9.3699808M

Run in Batch: 220613A9, Run Date: 06/13/2022 18:19, Prep Date: 06/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.0	70.0	130.0	1.4	30.0

Organics - Volatiles, Prep Batch ID: VS220614W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220614A9.BLKW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:50, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane		ND	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 11:49, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		106.1	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220614A9.LCSDW14A, Parent Sample ID: 220614A9.LCSW14A

Run in Batch: 220614A9, Run Date: 06/14/2022 12:10, Prep Date: 06/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.3	70.0	130.0	5.7	30.0

Merit Laboratories Login Checklist

Lab Set ID: S36998
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470A / Racer Lansing
Submitted: 06/10/2022 15:35 Login User: JRM

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.9
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[X] Yes	[ ] No	[ ] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S36998 Submitted: 06/10/2022 15:35

Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30112892.0470A / Racer Lansing

Initial Preservation Check: 06/10/2022 16:08 JRM

Preservation Recheck (E200.8): N/A

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S36998.06	125ml Plastic HNO3	<2			
S36998.06	125ml Plastic HNO3	<2			

Plant 3

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 2

137979

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 947-777 FAX NO: P.O. NO:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.0470A/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis/

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260B SIM	1,4-Dioxane 8260B SIM	Total Select Metals (As, Ni, Pb, V, Cr, Cu) 6020B	Dissolved Select Metals (As, Ni, Pb, V, Cr, Cu) 6020B							
36998.01	6/10/22	1030	mw-12-20_061022	GW	3		3							X									
.02	6/10/22	1150	mw-12-21_061022	GW	3		3						X	X									
.03	6/10/22	1300	mw-13-23_061022	GW	3		3							X									
.04	6/10/22	1420	mw-13-24_061022	GW	3		3							X									
05	6/10/22	1400	mw-13-25_061022	GW	3		3							X									
.06	6/10/22	1255	mw-13-32_061022	GW	1			1							X								
	6/10/22	—	TB-09_061022	GW	1		1						X										

RELINQUISHED BY: SIGNATURE/ORGANIZATION: [signature] / Arcadis ☒ Sampler DATE: 6/10/22 TIME: 1510
RECEIVED BY: SIGNATURE/ORGANIZATION: [signature] / PMF DATE: 6/10/22 TIME: 2353
RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: Johanna Murray DATE: 6/10/22 TIME: 1535

RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:

SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:
SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:

NOTES: TEMP ON ARRIVAL: 4.9

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

PLANT - 3

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 2 OF 2

137980

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: KAITLYN HUNT
COMPANY: ARCADIS
ADDRESS: 28550 CABOT DR, STE 500
CITY: NOVI STATE: MI ZIP CODE: 48377
PHONE NO: 947-777-5215 FAX NO: P.O. NO:
E-MAIL ADDRESS: KAITLYN.HUNT@ARCADIS.COM QUOTE NO:

INVOICE TO

CONTACT NAME: X SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO /NAME: 30112892.0470A / RACER LANSING
SAMPLER(S) - PLEASE PRINT/SIGN NAME: BILLY J. COBERT

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4 DIOXANE 8260 SIMS	VOCs 8260 6 SIMS	ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)
36998.08	6/9/22	16:05	MW-02-02(3)_061022	GW	9	9							X		MS MSD
.10	6/10/22	11:15	MW-13-41_061022	GW	3	3								X	
.11	6/10/22	12:35	MW-13-46_061022	GW	3	3							X		
.12	6/10/22	13:35	MW-13-48_061022	GW	3	3							X	X	

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☐ Other
Special Instructions

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☒ Sampler ARCADIS	DATE 6-10-22	TIME 1510
RECEIVED BY: SIGNATURE/ORGANIZATION	[illegible] / FMF	DATE 6/10/22	TIME 153
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	Johanna Murray	DATE 6/10/22	TIME 1535

RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:
SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:

NOTES: TEMP ON ARRIVAL 4.9

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev 5 18 12

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Tiffany Linder

Project Name: RACER Lansing

Project Number: 30112892.03100

Lot Number:**XD06118**

Date Completed:04/20/2022

Kathy Smith

04/21/2022 12:19 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XD06118

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples was in compliance with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

The MS/MSD associated with sample XD06118-004 had compounds recovered outside of the acceptance limits. The LCS was recovered within the required acceptance limits; therefore, this demonstrates a matrix effect and data quality is not impacted.

Samples XD06118-008, XD06118-009, XD06118-010, XD06118-011, XD06118-012 had surrogates recovered above the acceptance limits. This reflects a high bias for compounds associated with this surrogate. There were no detections for these compounds in the sample; therefore, there is no impact on data quality and no corrective action is required.

Sample Summary
Arcadis U.S., Inc.
Lot Number: XD06118

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-22-145_040422	Aqueous	04/04/2022 1325	04/06/2022
002	MW-22-144_040422	Aqueous	04/04/2022 1425	04/06/2022
003	MW-22-148_040422	Aqueous	04/04/2022 1545	04/06/2022
004	MW-22-147_040422	Aqueous	04/04/2022 1630	04/06/2022
005	MW-22-143_040522	Aqueous	04/05/2022 1045	04/06/2022
006	MW-22-146_040522	Aqueous	04/05/2022 1205	04/06/2022
007	MW-22-149_040522	Aqueous	04/05/2022 1250	04/06/2022
008	MW-22-150_040522	Aqueous	04/05/2022 1345	04/06/2022
009	MW-22-151_040522	Aqueous	04/05/2022 1440	04/06/2022
010	MW-22-152_040522	Aqueous	04/05/2022 1550	04/06/2022
011	Dup-01_040522	Aqueous	04/05/2022	04/06/2022
012	EB-01_040522	Aqueous	04/05/2022 1615	04/06/2022

(12 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XD06118

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-22-145_040422	Aqueous	PFBS	PFAS by ID	3.4	J	ng/L	6
001	MW-22-145_040422	Aqueous	PFOSA	PFAS by ID	1.1	J	ng/L	6
001	MW-22-145_040422	Aqueous	PFHxS	PFAS by ID	1.9	J	ng/L	6
001	MW-22-145_040422	Aqueous	PFBA	PFAS by ID	5.2		ng/L	6
001	MW-22-145_040422	Aqueous	PFHpA	PFAS by ID	5.7		ng/L	6
001	MW-22-145_040422	Aqueous	PFHxA	PFAS by ID	9.9		ng/L	6
001	MW-22-145_040422	Aqueous	PFOA	PFAS by ID	16		ng/L	6
001	MW-22-145_040422	Aqueous	PFPeA	PFAS by ID	9.3		ng/L	6
001	MW-22-145_040422	Aqueous	PFOS	PFAS by ID	3.6		ng/L	6
002	MW-22-144_040422	Aqueous	PFBS	PFAS by ID	1.9	J	ng/L	8
002	MW-22-144_040422	Aqueous	PFHxS	PFAS by ID	2.3	J	ng/L	8
002	MW-22-144_040422	Aqueous	PFBA	PFAS by ID	5.3		ng/L	8
002	MW-22-144_040422	Aqueous	PFHpA	PFAS by ID	3.6		ng/L	8
002	MW-22-144_040422	Aqueous	PFHxA	PFAS by ID	7.7		ng/L	8
002	MW-22-144_040422	Aqueous	PFOA	PFAS by ID	5.3		ng/L	8
002	MW-22-144_040422	Aqueous	PFPeA	PFAS by ID	8.8		ng/L	8
003	MW-22-148_040422	Aqueous	PFBS	PFAS by ID	1.6	J	ng/L	10
003	MW-22-148_040422	Aqueous	PFOSA	PFAS by ID	2.0	J	ng/L	10
003	MW-22-148_040422	Aqueous	PFBA	PFAS by ID	3.0	J	ng/L	10
003	MW-22-148_040422	Aqueous	PFHpA	PFAS by ID	0.39	J	ng/L	10
003	MW-22-148_040422	Aqueous	PFHxA	PFAS by ID	1.1	J	ng/L	10
003	MW-22-148_040422	Aqueous	PFOA	PFAS by ID	1.1	J	ng/L	10
003	MW-22-148_040422	Aqueous	PFPeA	PFAS by ID	0.92	J	ng/L	10
004	MW-22-147_040422	Aqueous	PFBS	PFAS by ID	2.5	JS	ng/L	12
004	MW-22-147_040422	Aqueous	PFOSA	PFAS by ID	0.67	J	ng/L	12
004	MW-22-147_040422	Aqueous	PFHxS	PFAS by ID	1.3	J	ng/L	12
004	MW-22-147_040422	Aqueous	PFBA	PFAS by ID	3.8	S	ng/L	12
004	MW-22-147_040422	Aqueous	PFHpA	PFAS by ID	0.69	J	ng/L	12
004	MW-22-147_040422	Aqueous	PFHxA	PFAS by ID	1.1	J	ng/L	12
004	MW-22-147_040422	Aqueous	PFOA	PFAS by ID	2.8	JS	ng/L	12
004	MW-22-147_040422	Aqueous	PFPeA	PFAS by ID	1.2	J	ng/L	12
004	MW-22-147_040422	Aqueous	PFOS	PFAS by ID	2.0	JS	ng/L	12
005	MW-22-143_040522	Aqueous	PFBS	PFAS by ID	0.81	J	ng/L	14
005	MW-22-143_040522	Aqueous	PFBA	PFAS by ID	11		ng/L	14
005	MW-22-143_040522	Aqueous	PFHpA	PFAS by ID	3.7		ng/L	14
005	MW-22-143_040522	Aqueous	PFHxA	PFAS by ID	19		ng/L	14
005	MW-22-143_040522	Aqueous	PFOA	PFAS by ID	1.5	J	ng/L	14
005	MW-22-143_040522	Aqueous	PFPeA	PFAS by ID	18		ng/L	14
006	MW-22-146_040522	Aqueous	PFBS	PFAS by ID	4.0		ng/L	16
006	MW-22-146_040522	Aqueous	PFHxS	PFAS by ID	1.1	J	ng/L	16
006	MW-22-146_040522	Aqueous	PFBA	PFAS by ID	14		ng/L	16
006	MW-22-146_040522	Aqueous	PFHpA	PFAS by ID	0.59	J	ng/L	16
006	MW-22-146_040522	Aqueous	PFHxA	PFAS by ID	6.7		ng/L	16
006	MW-22-146_040522	Aqueous	PFOA	PFAS by ID	6.5		ng/L	16
006	MW-22-146_040522	Aqueous	PFPeA	PFAS by ID	5.4		ng/L	16

Detection Summary (Continued)

Lot Number: XD06118

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
006	MW-22-146_040522	Aqueous	PFOS	PFAS by ID	1.7	J	ng/L	16
007	MW-22-149_040522	Aqueous	PFBS	PFAS by ID	1.8	J	ng/L	18
007	MW-22-149_040522	Aqueous	PFOSA	PFAS by ID	0.53	J	ng/L	18
007	MW-22-149_040522	Aqueous	PFHxS	PFAS by ID	0.88	J	ng/L	18
007	MW-22-149_040522	Aqueous	PFBA	PFAS by ID	1.2	J	ng/L	18
007	MW-22-149_040522	Aqueous	PFOA	PFAS by ID	0.72	J	ng/L	18
007	MW-22-149_040522	Aqueous	PFOS	PFAS by ID	2.1	J	ng/L	18
008	MW-22-150_040522	Aqueous	PFOSA	PFAS by ID	0.57	J	ng/L	20
008	MW-22-150_040522	Aqueous	PFBA	PFAS by ID	3.1	J	ng/L	20
008	MW-22-150_040522	Aqueous	PFHxA	PFAS by ID	1.7	J	ng/L	20
008	MW-22-150_040522	Aqueous	PFPeA	PFAS by ID	2.1	J	ng/L	20
009	MW-22-151_040522	Aqueous	PFBS	PFAS by ID	7.9		ng/L	22
009	MW-22-151_040522	Aqueous	PFHxS	PFAS by ID	1.8	J	ng/L	22
009	MW-22-151_040522	Aqueous	PFBA	PFAS by ID	11		ng/L	22
009	MW-22-151_040522	Aqueous	PFHpA	PFAS by ID	3.5	J	ng/L	22
009	MW-22-151_040522	Aqueous	PFHxA	PFAS by ID	6.0		ng/L	22
009	MW-22-151_040522	Aqueous	PFNA	PFAS by ID	0.59	J	ng/L	22
009	MW-22-151_040522	Aqueous	PFOA	PFAS by ID	9.4		ng/L	22
009	MW-22-151_040522	Aqueous	PFPeA	PFAS by ID	13		ng/L	22
009	MW-22-151_040522	Aqueous	PFOS	PFAS by ID	2.0	J	ng/L	22
010	MW-22-152_040522	Aqueous	PFBS	PFAS by ID	1.8	J	ng/L	24
010	MW-22-152_040522	Aqueous	PFHxS	PFAS by ID	1.1	J	ng/L	24
010	MW-22-152_040522	Aqueous	PFBA	PFAS by ID	3.7		ng/L	24
010	MW-22-152_040522	Aqueous	PFHpA	PFAS by ID	1.0	J	ng/L	24
010	MW-22-152_040522	Aqueous	PFHxA	PFAS by ID	2.4	J	ng/L	24
010	MW-22-152_040522	Aqueous	PFOA	PFAS by ID	2.4	J	ng/L	24
010	MW-22-152_040522	Aqueous	PFPeA	PFAS by ID	2.7	J	ng/L	24
011	Dup-01_040522	Aqueous	PFBS	PFAS by ID	0.91	J	ng/L	26
011	Dup-01_040522	Aqueous	PFBA	PFAS by ID	11		ng/L	26
011	Dup-01_040522	Aqueous	PFHpA	PFAS by ID	3.7		ng/L	26
011	Dup-01_040522	Aqueous	PFHxA	PFAS by ID	19		ng/L	26
011	Dup-01_040522	Aqueous	PFOA	PFAS by ID	1.5	J	ng/L	26
011	Dup-01_040522	Aqueous	PFPeA	PFAS by ID	20		ng/L	26

(78 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-001**

Description: **MW-22-145_040422** Matrix: **Aqueous**

Date Sampled: **04/04/2022 1325**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/19/2022 0131	MMM	04/11/2022 1037	37696

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.4**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**1.1**	**J**	**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.9**	**J**	**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.2**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**5.7**		**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**9.9**		**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**16**		**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**9.3**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**3.6**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		95	25-150
13C2_6:2FTS		123	25-150
13C2_8:2FTS		92	25-150
13C2_PFDoA		82	25-150
13C2_PFTeDA		84	25-150
13C3_PFBS		81	25-150
13C3_PFHxS		82	25-150
13C3-HFPO-DA		90	25-150
13C4_PFBA		82	25-150
13C4_PFHpA		85	25-150
13C5_PFHxA		87	25-150
13C5_PFPeA		89	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		83	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-001**
Description: **MW-22-145_040422**
Matrix: **Aqueous**
Date Sampled: **04/04/2022 1325**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		95	25-150
13C8_PFOS		84	25-150
13C8_PFOSA		86	10-150
13C9_PFNA		84	25-150
d5-EtFOSAA		82	25-150
d3-MeFOSAA		85	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-002**

Description: **MW-22-144_040422** Matrix: **Aqueous**

Date Sampled: **04/04/2022 1425**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/19/2022 0142	MMM	04/11/2022 1037	37696

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.9**	**J**	**3.5**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.3**	**J**	**3.5**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.3**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.6**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**7.7**		**3.5**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.3**		**3.5**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**8.8**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		102	25-150
13C2_6:2FTS		120	25-150
13C2_8:2FTS		90	25-150
13C2_PFDoA		86	25-150
13C2_PFTeDA		85	25-150
13C3_PFBS		86	25-150
13C3_PFHxS		88	25-150
13C3-HFPO-DA		87	25-150
13C4_PFBA		79	25-150
13C4_PFHpA		88	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		88	25-150
13C6_PFDA		87	25-150
13C7_PFUdA		84	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-002**
Description: **MW-22-144_040422**
Matrix: **Aqueous**
Date Sampled: **04/04/2022 1425**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		98	25-150
13C8_PFOS		85	25-150
13C8_PFOSA		85	10-150
13C9_PFNA		83	25-150
d5-EtFOSAA		83	25-150
d3-MeFOSAA		86	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-003**

Description: **MW-22-148_040422** Matrix: **Aqueous**

Date Sampled: **04/04/2022 1545**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/19/2022 0153	MMM	04/11/2022 1037	37696

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.6**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**2.0**	**J**	**3.5**	**0.54**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.0**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.39**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.92**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		117	25-150
13C2_6:2FTS		122	25-150
13C2_8:2FTS		89	25-150
13C2_PFDoA		84	25-150
13C2_PFTeDA		80	25-150
13C3_PFBS		85	25-150
13C3_PFHxS		87	25-150
13C3-HFPO-DA		87	25-150
13C4_PFBA		81	25-150
13C4_PFHpA		86	25-150
13C5_PFHxA		94	25-150
13C5_PFPeA		89	25-150
13C6_PFDA		87	25-150
13C7_PFUdA		88	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-003**
Description: **MW-22-148_040422**
Matrix: **Aqueous**
Date Sampled: **04/04/2022 1545**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		99	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		88	10-150
13C9_PFNA		87	25-150
d5-EtFOSAA		86	25-150
d3-MeFOSAA		88	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-004**

Description: **MW-22-147_040422** Matrix: **Aqueous**

Date Sampled: **04/04/2022 1630**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/19/2022 0204	MMM	04/11/2022 1037	37696

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	S	6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	S	6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	S	6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	S	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	S	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	S	6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	S	6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	S	6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.5**	**JS**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	S	3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	S	3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	S	3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.67**	**J**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	S	3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.3**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.8**	**S**	**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	S	3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	S	3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.69**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	S	3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.8**	**JS**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	S	3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	S	3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	S	3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.0**	**JS**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		142	25-150
13C2_6:2FTS		121	25-150
13C2_8:2FTS		89	25-150
13C2_PFDoA		82	25-150
13C2_PFTeDA		81	25-150
13C3_PFBS		79	25-150
13C3_PFHxS		87	25-150
13C3-HFPO-DA		81	25-150
13C4_PFBA		61	25-150
13C4_PFHpA		86	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		80	25-150
13C6_PFDA		84	25-150
13C7_PFUdA		87	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-004**
Description: **MW-22-147_040422**
Matrix: **Aqueous**
Date Sampled: **04/04/2022 1630**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		90	25-150
13C8_PFOS		86	25-150
13C8_PFOSA		83	10-150
13C9_PFNA		83	25-150
d5-EtFOSAA		84	25-150
d3-MeFOSAA		84	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-005**

Description: **MW-22-143_040522** Matrix: **Aqueous**

Date Sampled: **04/05/2022 1045**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/19/2022 0237	MMM	04/11/2022 1037	37696

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.81**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.7**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**19**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.5**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**18**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		122	25-150
13C2_6:2FTS		125	25-150
13C2_8:2FTS		87	25-150
13C2_PFDoA		79	25-150
13C2_PFTeDA		75	25-150
13C3_PFBS		76	25-150
13C3_PFHxS		84	25-150
13C3-HFPO-DA		80	25-150
13C4_PFBA		62	25-150
13C4_PFHpA		81	25-150
13C5_PFHxA		82	25-150
13C5_PFPeA		77	25-150
13C6_PFDA		85	25-150
13C7_PFUdA		80	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-005**
Description: **MW-22-143_040522**
Matrix: **Aqueous**
Date Sampled: **04/05/2022 1045**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		88	25-150
13C8_PFOS		82	25-150
13C8_PFOSA		82	10-150
13C9_PFNA		78	25-150
d5-EtFOSAA		78	25-150
d3-MeFOSAA		79	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-006**

Description: **MW-22-146_040522** Matrix: **Aqueous**

Date Sampled: **04/05/2022 1205**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/19/2022 0248	MMM	04/11/2022 1037	37696

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**4.0**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**14**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.59**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**6.7**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**6.5**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.4**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		143	25-150
13C2_6:2FTS		116	25-150
13C2_8:2FTS		86	25-150
13C2_PFDoA		79	25-150
13C2_PFTeDA		82	25-150
13C3_PFBS		72	25-150
13C3_PFHxS		84	25-150
13C3-HFPO-DA		78	25-150
13C4_PFBA		44	25-150
13C4_PFHpA		83	25-150
13C5_PFHxA		83	25-150
13C5_PFPeA		70	25-150
13C6_PFDA		85	25-150
13C7_PFUdA		83	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-006**
Description: **MW-22-146_040522**
Matrix: **Aqueous**
Date Sampled: **04/05/2022 1205**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		85	25-150
13C8_PFOS		81	25-150
13C8_PFOSA		81	10-150
13C9_PFNA		81	25-150
d5-EtFOSAA		80	25-150
d3-MeFOSAA		85	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-007**

Description: **MW-22-149_040522** Matrix: **Aqueous**

Date Sampled: **04/05/2022 1250**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/19/2022 0259	MMM	04/11/2022 1037	37696

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.8**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.53**	**J**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.88**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.72**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.1**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		94	25-150
13C2_6:2FTS		116	25-150
13C2_8:2FTS		85	25-150
13C2_PFDoA		83	25-150
13C2_PFTeDA		83	25-150
13C3_PFBS		80	25-150
13C3_PFHxS		79	25-150
13C3-HFPO-DA		84	25-150
13C4_PFBA		80	25-150
13C4_PFHpA		79	25-150
13C5_PFHxA		82	25-150
13C5_PFPeA		84	25-150
13C6_PFDA		86	25-150
13C7_PFUdA		84	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-007**
Description: **MW-22-149_040522**
Matrix: **Aqueous**
Date Sampled: **04/05/2022 1250**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		90	25-150
13C8_PFOS		81	25-150
13C8_PFOSA		84	10-150
13C9_PFNA		83	25-150
d5-EtFOSAA		85	25-150
d3-MeFOSAA		88	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-008**

Description: **MW-22-150_040522** Matrix: **Aqueous**

Date Sampled: **04/05/2022 1345**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/19/2022 0310	MMM	04/11/2022 1037	37696

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.57**	**J**	**3.5**	**0.54**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.1**	**J**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.1**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	177	25-150
13C2_6:2FTS		136	25-150
13C2_8:2FTS		90	25-150
13C2_PFDoA		78	25-150
13C2_PFTeDA		78	25-150
13C3_PFBS		68	25-150
13C3_PFHxS		85	25-150
13C3-HFPO-DA		67	25-150
13C4_PFBA		34	25-150
13C4_PFHpA		83	25-150
13C5_PFHxA		76	25-150
13C5_PFPeA		55	25-150
13C6_PFDA		82	25-150
13C7_PFUdA		82	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-008**
Description: **MW-22-150_040522**
Matrix: **Aqueous**
Date Sampled: **04/05/2022 1345**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		86	25-150
13C8_PFOS		85	25-150
13C8_PFOSA		79	10-150
13C9_PFNA		83	25-150
d5-EtFOSAA		80	25-150
d3-MeFOSAA		86	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-009**

Description: **MW-22-151_040522** Matrix: **Aqueous**

Date Sampled: **04/05/2022 1440**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/19/2022 2332	MMM		37899

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**7.9**		**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.5**	**J**	**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**6.0**		**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.59**	**J**	**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**9.4**		**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**13**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.0**	**J**	**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	205	25-150
13C2_6:2FTS	N	216	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		79	25-150
13C2_PFTeDA		80	25-150
13C3_PFBS		85	25-150
13C3_PFHxS		85	25-150
13C3-HFPO-DA		65	25-150
13C4_PFBA		43	25-150
13C4_PFHpA		89	25-150
13C5_PFHxA		83	25-150
13C5_PFPeA		64	25-150
13C6_PFDA		93	25-150
13C7_PFUdA		82	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-009**
Description: **MW-22-151_040522**
Matrix: **Aqueous**
Date Sampled: **04/05/2022 1440**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		92	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		86	10-150
13C9_PFNA		96	25-150
d5-EtFOSAA		86	25-150
d3-MeFOSAA		81	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
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P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-010**

Description: **MW-22-152_040522** Matrix: **Aqueous**

Date Sampled: **04/05/2022 1550**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/19/2022 2342	MMM		37899

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.8**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.7**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.0**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.4**	**J**	**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.4**	**J**	**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.7**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		123	25-150
13C2_6:2FTS	N	273	25-150
13C2_8:2FTS		76	25-150
13C2_PFDoA		76	25-150
13C2_PFTeDA		75	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		83	25-150
13C4_PFHpA		89	25-150
13C5_PFHxA		95	25-150
13C5_PFPeA		92	25-150
13C6_PFDA		80	25-150
13C7_PFUdA		77	25-150

LOQ = Limit of Quantitation
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E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-010**
Description: **MW-22-152_040522**
Matrix: **Aqueous**
Date Sampled: **04/05/2022 1550**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		88	25-150
13C8_PFOSA		89	10-150
13C9_PFNA		90	25-150
d5-EtFOSAA		78	25-150
d3-MeFOSAA		82	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-011**

Description: **Dup-01_040522** Matrix: **Aqueous**

Date Sampled: **04/05/2022**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/20/2022 0004	MMM		37899

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.91**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.7**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**19**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.5**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**20**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		149	25-150
13C2_6:2FTS	N	260	25-150
13C2_8:2FTS		80	25-150
13C2_PFDoA		79	25-150
13C2_PFTeDA		80	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		98	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		76	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		95	25-150
13C5_PFPeA		87	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		83	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-011**
Description: **Dup-01_040522**
Matrix: **Aqueous**
Date Sampled: **04/05/2022**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		95	25-150
13C8_PFOSA		89	10-150
13C9_PFNA		90	25-150
d5-EtFOSAA		79	25-150
d3-MeFOSAA		85	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XD06118-012**

Description: **EB-01_040522** Matrix: **Aqueous**

Date Sampled: **04/05/2022 1615**

Date Received: **04/06/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	04/20/2022 0014	MMM		37899

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.3	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.69	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.7	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.7	0.51	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	0.41	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.7	0.63	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.7	0.76	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	0.50	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		104	25-150
13C2_6:2FTS	N	259	25-150
13C2_8:2FTS		73	25-150
13C2_PFDoA		69	25-150
13C2_PFTeDA		68	25-150
13C3_PFBS		94	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		90	25-150
13C4_PFHpA		89	25-150
13C5_PFHxA		94	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		81	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XD06118-012**
Description: **EB-01_040522**
Matrix: **Aqueous**
Date Sampled: **04/05/2022 1615**
Date Received: **04/06/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		110	25-150
13C8_PFOS		82	25-150
13C8_PFOSA		82	10-150
13C9_PFNA		88	25-150
d5-EtFOSAA		79	25-150
d3-MeFOSAA		78	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ37696-001
Batch: 37696
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/11/2022 1037

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	04/19/2022 0109
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	04/19/2022 0109
8:2 FTS	ND		1	8.0	1.6	ng/L	04/19/2022 0109
6:2 FTS	ND		1	8.0	2.0	ng/L	04/19/2022 0109
4:2 FTS	ND		1	8.0	0.87	ng/L	04/19/2022 0109
GenX	ND		1	8.0	2.1	ng/L	04/19/2022 0109
ADONA	ND		1	8.0	0.48	ng/L	04/19/2022 0109
EtFOSAA	ND		1	8.0	0.75	ng/L	04/19/2022 0109
MeFOSAA	ND		1	8.0	0.93	ng/L	04/19/2022 0109
PFBS	ND		1	4.0	0.41	ng/L	04/19/2022 0109
PFDS	ND		1	4.0	0.78	ng/L	04/19/2022 0109
PFHpS	ND		1	4.0	0.50	ng/L	04/19/2022 0109
PFNS	ND		1	4.0	0.71	ng/L	04/19/2022 0109
PFOSA	ND		1	4.0	0.61	ng/L	04/19/2022 0109
PFPeS	ND		1	4.0	0.59	ng/L	04/19/2022 0109
PFHxS	ND		1	4.0	0.55	ng/L	04/19/2022 0109
PFBA	ND		1	4.0	0.60	ng/L	04/19/2022 0109
PFDA	ND		1	4.0	0.52	ng/L	04/19/2022 0109
PFDoA	ND		1	4.0	0.47	ng/L	04/19/2022 0109
PFHpA	ND		1	4.0	0.45	ng/L	04/19/2022 0109
PFHxA	ND		1	4.0	0.69	ng/L	04/19/2022 0109
PFNA	ND		1	4.0	0.46	ng/L	04/19/2022 0109
PFOA	ND		1	4.0	0.83	ng/L	04/19/2022 0109
PFPeA	ND		1	4.0	0.54	ng/L	04/19/2022 0109
PFTeDA	ND		1	4.0	0.60	ng/L	04/19/2022 0109
PFTrDA	ND		1	4.0	0.53	ng/L	04/19/2022 0109
PFUdA	ND		1	4.0	0.63	ng/L	04/19/2022 0109
PFOS	ND		1	4.0	2.0	ng/L	04/19/2022 0109

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		89	25-150
13C2_6:2FTS		110	25-150
13C2_8:2FTS		94	25-150
13C2_PFDoA		85	25-150
13C2_PFTeDA		81	25-150
13C3_PFBS		85	25-150
13C3_PFHxS		86	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		90	25-150
13C4_PFHpA		86	25-150
13C5_PFHxA		86	25-150
13C5_PFPeA		90	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ37696-001
Batch: 37696
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/11/2022 1037

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		91	25-150
13C7_PFUdA		90	25-150
13C8_PFOA		96	25-150
13C8_PFOS		90	25-150
13C8_PFOSA		86	10-150
13C9_PFNA		89	25-150
d5-EtFOSAA		88	25-150
d3-MeFOSAA		88	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ37696-002
Batch: 37696
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/11/2022 1037

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	104	50-150	04/19/2022 0120
11Cl-PF3OUdS	15	15		1	98	50-150	04/19/2022 0120
8:2 FTS	15	16		1	105	50-150	04/19/2022 0120
6:2 FTS	15	17		1	110	50-150	04/19/2022 0120
4:2 FTS	15	16		1	108	50-150	04/19/2022 0120
GenX	32	37		1	114	50-150	04/19/2022 0120
ADONA	15	18		1	118	50-150	04/19/2022 0120
EtFOSAA	16	17		1	108	50-150	04/19/2022 0120
MeFOSAA	16	19		1	117	50-150	04/19/2022 0120
PFBS	14	15		1	105	50-150	04/19/2022 0120
PFDS	15	16		1	104	50-150	04/19/2022 0120
PFHpS	15	18		1	118	50-150	04/19/2022 0120
PFNS	15	16		1	106	50-150	04/19/2022 0120
PFOSA	16	17		1	107	50-150	04/19/2022 0120
PFPeS	15	16		1	110	50-150	04/19/2022 0120
PFHxS	15	16		1	113	50-150	04/19/2022 0120
PFBA	16	17		1	108	50-150	04/19/2022 0120
PFDA	16	18		1	112	50-150	04/19/2022 0120
PFDoA	16	18		1	114	50-150	04/19/2022 0120
PFHpA	16	18		1	110	50-150	04/19/2022 0120
PFHxA	16	18		1	113	50-150	04/19/2022 0120
PFNA	16	18		1	111	50-150	04/19/2022 0120
PFOA	16	16		1	101	50-150	04/19/2022 0120
PFPeA	16	17		1	109	50-150	04/19/2022 0120
PFTeDA	16	18		1	110	50-150	04/19/2022 0120
PFTrDA	16	17		1	108	50-150	04/19/2022 0120
PFUdA	16	18		1	111	50-150	04/19/2022 0120
PFOS	15	15		1	102	50-150	04/19/2022 0120

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		99	25-150
13C2_6:2FTS		136	25-150
13C2_8:2FTS		99	25-150
13C2_PFDoA		86	25-150
13C2_PFTeDA		80	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		89	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		94	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ37696-002
Batch: 37696
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/11/2022 1037

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		94	25-150
13C8_PFOA		105	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		93	10-150
13C9_PFNA		91	25-150
d5-EtFOSAA		88	25-150
d3-MeFOSAA		93	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XD06118-004MS
Batch: 37696
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/11/2022 1037

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	14		1	108	50-150	04/19/2022 0215
11Cl-PF3OUdS	ND	14	14		1	106	50-150	04/19/2022 0215
8:2 FTS	ND	14	14		1	105	50-150	04/19/2022 0215
6:2 FTS	ND	14	14		1	106	50-150	04/19/2022 0215
4:2 FTS	ND	13	16		1	117	50-150	04/19/2022 0215
GenX	ND	29	30		1	103	50-150	04/19/2022 0215
ADONA	ND	14	15		1	113	50-150	04/19/2022 0215
EtFOSAA	ND	14	16		1	112	50-150	04/19/2022 0215
MeFOSAA	ND	14	17		1	116	50-150	04/19/2022 0215
PFBS	2.5	13	15		1	103	50-150	04/19/2022 0215
PFDS	ND	14	14		1	105	50-150	04/19/2022 0215
PFHpS	ND	14	14		1	103	50-150	04/19/2022 0215
PFNS	ND	14	15		1	110	50-150	04/19/2022 0215
PFOSA	0.67	14	17		1	113	50-150	04/19/2022 0215
PFPeS	ND	13	15		1	112	50-150	04/19/2022 0215
PFHxS	1.3	13	16		1	109	50-150	04/19/2022 0215
PFBA	3.8	14	19		1	104	50-150	04/19/2022 0215
PFDA	ND	14	15		1	108	50-150	04/19/2022 0215
PFDoA	ND	14	16		1	113	50-150	04/19/2022 0215
PFHpA	0.69	14	16		1	109	50-150	04/19/2022 0215
PFHxA	1.1	14	17		1	111	50-150	04/19/2022 0215
PFNA	ND	14	16		1	109	50-150	04/19/2022 0215
PFOA	2.8	14	18		1	104	50-150	04/19/2022 0215
PFPeA	1.2	14	17		1	109	50-150	04/19/2022 0215
PFTeDA	ND	14	16		1	109	50-150	04/19/2022 0215
PFTrDA	ND	14	16		1	112	50-150	04/19/2022 0215
PFUdA	ND	14	16		1	110	50-150	04/19/2022 0215
PFOS	2.0	13	16		1	123	50-150	04/19/2022 0215

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		140	25-150
13C2_6:2FTS		122	25-150
13C2_8:2FTS		86	25-150
13C2_PFDoA		81	25-150
13C2_PFTeDA		83	25-150
13C3_PFBS		78	25-150
13C3_PFHxS		84	25-150
13C3-HFPO-DA		83	25-150
13C4_PFBA		64	25-150
13C4_PFHpA		84	25-150
13C5_PFHxA		90	25-150
13C5_PFPeA		77	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XD06118-004MS
Batch: 37696
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/11/2022 1037

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		86	25-150
13C7_PFUdA		84	25-150
13C8_PFOA		89	25-150
13C8_PFOS		83	25-150
13C8_PFOSA		83	10-150
13C9_PFNA		83	25-150
d5-EtFOSAA		79	25-150
d3-MeFOSAA		84	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XD06118-004MD
Batch: 37696
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/11/2022 1037

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	8.0	2.7	N,+	1	34	140	50-150	30	04/19/2022 0226
11Cl-PF3OUdS	ND	8.1	2.8	N,+	1	34	140	50-150	30	04/19/2022 0226
8:2 FTS	ND	1.7	2.9	N,+	1	178	130	50-150	30	04/19/2022 0226
6:2 FTS	ND	1.6	2.9	N,+	1	180	130	50-150	30	04/19/2022 0226
4:2 FTS	ND	1.6	2.9	N,+	1	182	140	50-150	30	04/19/2022 0226
GenX	ND	8.6	6.1	+	1	71	130	50-150	30	04/19/2022 0226
ADONA	ND	8.1	2.9	N,+	1	36	140	50-150	30	04/19/2022 0226
EtFOSAA	ND	1.7	3.0	N,+	1	176	140	50-150	30	04/19/2022 0226
MeFOSAA	ND	1.7	3.1	N,+	1	180	140	50-150	30	04/19/2022 0226
PFBS	2.5	1.5	3.1	N,+	1	42	130	50-150	30	04/19/2022 0226
PFDS	ND	1.7	2.7	N,+	1	164	140	50-150	30	04/19/2022 0226
PFHpS	ND	1.6	2.6	N,+	1	161	140	50-150	30	04/19/2022 0226
PFNS	ND	1.7	2.7	N,+	1	165	140	50-150	30	04/19/2022 0226
PFOSA	0.67	1.7	3.1	+	1	143	140	50-150	30	04/19/2022 0226
PFPeS	ND	1.6	2.9	N,+	1	181	140	50-150	30	04/19/2022 0226
PFHxS	1.3	1.6	3.0	+	1	107	140	50-150	30	04/19/2022 0226
PFBA	3.8	1.7	3.6	N,+	1	-9.9	140	50-150	30	04/19/2022 0226
PFDA	ND	1.7	3.2	N,+	1	183	130	50-150	30	04/19/2022 0226
PFDoA	ND	1.7	3.0	N,+	1	173	140	50-150	30	04/19/2022 0226
PFHpA	0.69	1.7	3.1	+	1	140	140	50-150	30	04/19/2022 0226
PFHxA	1.1	1.7	3.3	+	1	130	130	50-150	30	04/19/2022 0226
PFNA	ND	1.7	3.1	N,+	1	179	130	50-150	30	04/19/2022 0226
PFOA	2.8	1.7	3.6	N,+	1	48	130	50-150	30	04/19/2022 0226
PFPeA	1.2	1.7	3.2	+	1	117	140	50-150	30	04/19/2022 0226
PFTeDA	ND	1.7	3.0	N,+	1	177	140	50-150	30	04/19/2022 0226
PFTrDA	ND	1.7	3.2	N,+	1	186	130	50-150	30	04/19/2022 0226
PFUdA	ND	1.7	3.1	N,+	1	182	130	50-150	30	04/19/2022 0226
PFOS	2.0	1.6	2.9	N,+	1	180	140	50-150	30	04/19/2022 0226

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		139	25-150
13C2_6:2FTS		120	25-150
13C2_8:2FTS		85	25-150
13C2_PFDoA		79	25-150
13C2_PFTeDA		70	25-150
13C3_PFBS		80	25-150
13C3_PFHxS		85	25-150
13C3-HFPO-DA		79	25-150
13C4_PFBA		62	25-150
13C4_PFHpA		80	25-150
13C5_PFHxA		86	25-150
13C5_PFPeA		79	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XD06118-004MD
Batch: 37696
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 04/11/2022 1037

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		81	25-150
13C7_PFUdA		83	25-150
13C8_PFOA		90	25-150
13C8_PFOS		83	25-150
13C8_PFOSA		82	10-150
13C9_PFNA		80	25-150
d5-EtFOSAA		80	25-150
d3-MeFOSAA		84	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ37899-001
Batch: 37899
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 12/30/1899 0000

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	04/19/2022 2310
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	04/19/2022 2310
8:2 FTS	ND		1	8.0	1.6	ng/L	04/19/2022 2310
6:2 FTS	ND		1	8.0	2.0	ng/L	04/19/2022 2310
4:2 FTS	ND		1	8.0	0.87	ng/L	04/19/2022 2310
GenX	ND		1	8.0	2.1	ng/L	04/19/2022 2310
ADONA	ND		1	8.0	0.48	ng/L	04/19/2022 2310
EtFOSAA	ND		1	8.0	0.75	ng/L	04/19/2022 2310
MeFOSAA	ND		1	8.0	0.93	ng/L	04/19/2022 2310
PFBS	ND		1	4.0	0.41	ng/L	04/19/2022 2310
PFDS	ND		1	4.0	0.78	ng/L	04/19/2022 2310
PFHpS	ND		1	4.0	0.50	ng/L	04/19/2022 2310
PFNS	ND		1	4.0	0.71	ng/L	04/19/2022 2310
PFOSA	ND		1	4.0	0.61	ng/L	04/19/2022 2310
PFPeS	ND		1	4.0	0.59	ng/L	04/19/2022 2310
PFHxS	ND		1	4.0	0.55	ng/L	04/19/2022 2310
PFBA	ND		1	4.0	0.60	ng/L	04/19/2022 2310
PFDA	ND		1	4.0	0.52	ng/L	04/19/2022 2310
PFDoA	ND		1	4.0	0.47	ng/L	04/19/2022 2310
PFHpA	ND		1	4.0	0.45	ng/L	04/19/2022 2310
PFHxA	ND		1	4.0	0.69	ng/L	04/19/2022 2310
PFNA	ND		1	4.0	0.46	ng/L	04/19/2022 2310
PFOA	ND		1	4.0	0.83	ng/L	04/19/2022 2310
PFPeA	ND		1	4.0	0.54	ng/L	04/19/2022 2310
PFTeDA	ND		1	4.0	0.60	ng/L	04/19/2022 2310
PFTrDA	ND		1	4.0	0.53	ng/L	04/19/2022 2310
PFUdA	ND		1	4.0	0.63	ng/L	04/19/2022 2310
PFOS	ND		1	4.0	2.0	ng/L	04/19/2022 2310

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		125	25-150
13C2_6:2FTS	N	273	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		113	25-150
13C2_PFTeDA		102	25-150
13C3_PFBS		124	25-150
13C3_PFHxS		117	25-150
13C3-HFPO-DA		118	25-150
13C4_PFBA		117	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		121	25-150
13C5_PFPeA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ37899-001
Batch: 37899
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 12/30/1899 0000

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		114	25-150
13C7_PFUdA		107	25-150
13C8_PFOA		132	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		113	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ37899-002
Batch: 37899
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 12/30/1899 0000

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	103	50-150	04/19/2022 2321
11Cl-PF3OUdS	15	14		1	94	50-150	04/19/2022 2321
8:2 FTS	15	18		1	118	50-150	04/19/2022 2321
6:2 FTS	15	19		1	126	50-150	04/19/2022 2321
4:2 FTS	15	16		1	110	50-150	04/19/2022 2321
GenX	32	32		1	101	50-150	04/19/2022 2321
ADONA	15	17		1	112	50-150	04/19/2022 2321
EtFOSAA	16	18		1	113	50-150	04/19/2022 2321
MeFOSAA	16	17		1	106	50-150	04/19/2022 2321
PFBS	14	15		1	104	50-150	04/19/2022 2321
PFDS	15	15		1	95	50-150	04/19/2022 2321
PFHpS	15	17		1	109	50-150	04/19/2022 2321
PFNS	15	18		1	120	50-150	04/19/2022 2321
PFOSA	16	17		1	104	50-150	04/19/2022 2321
PFPeS	15	15		1	100	50-150	04/19/2022 2321
PFHxS	15	16		1	113	50-150	04/19/2022 2321
PFBA	16	17		1	105	50-150	04/19/2022 2321
PFDA	16	16		1	102	50-150	04/19/2022 2321
PFDoA	16	18		1	109	50-150	04/19/2022 2321
PFHpA	16	17		1	108	50-150	04/19/2022 2321
PFHxA	16	18		1	110	50-150	04/19/2022 2321
PFNA	16	18		1	114	50-150	04/19/2022 2321
PFOA	16	18		1	115	50-150	04/19/2022 2321
PFPeA	16	16		1	102	50-150	04/19/2022 2321
PFTeDA	16	19		1	116	50-150	04/19/2022 2321
PFTrDA	16	16		1	102	50-150	04/19/2022 2321
PFUdA	16	17		1	104	50-150	04/19/2022 2321
PFOS	15	16		1	107	50-150	04/19/2022 2321

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		101	25-150
13C2_6:2FTS	N	207	25-150
13C2_8:2FTS		83	25-150
13C2_PFDoA		84	25-150
13C2_PFTeDA		83	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		94	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		96	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		98	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ37899-002
Batch: 37899
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 12/30/1899 0000

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		94	25-150
13C7_PFUdA		87	25-150
13C8_PFOA		106	25-150
13C8_PFOS		94	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		92	25-150
d5-EtFOSAA		83	25-150
d3-MeFOSAA		89	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XD06118-010DU
Batch: 37899
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 12/30/1899 0000

Parameter	Sample Amount (ng/L)	Result (ng/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
9Cl-PF3ONS	ND	ND		1	0.00	20	04/19/2022 2353
11Cl-PF3OUdS	ND	ND		1	0.00	20	04/19/2022 2353
8:2 FTS	ND	ND		1	0.00	20	04/19/2022 2353
6:2 FTS	ND	ND		1	0.00	20	04/19/2022 2353
4:2 FTS	ND	ND		1	0.00	20	04/19/2022 2353
GenX	ND	ND		1	0.00	20	04/19/2022 2353
ADONA	ND	ND		1	0.00	20	04/19/2022 2353
EtFOSAA	ND	ND		1	0.00	20	04/19/2022 2353
MeFOSAA	ND	ND		1	0.00	20	04/19/2022 2353
PFBS	1.8	1.8	J	1	2.0	20	04/19/2022 2353
PFDS	ND	ND		1	0.00	20	04/19/2022 2353
PFHpS	ND	ND		1	0.00	20	04/19/2022 2353
PFNS	ND	ND		1	0.00	20	04/19/2022 2353
PFOSA	ND	ND		1	0.00	20	04/19/2022 2353
PFPeS	ND	ND		1	0.00	20	04/19/2022 2353
PFHxS	1.1	1.3	J	1	8.7	20	04/19/2022 2353
PFBA	3.7	3.6	J	1	2.8	20	04/19/2022 2353
PFDA	ND	ND		1	0.00	20	04/19/2022 2353
PFDoA	ND	ND		1	0.00	20	04/19/2022 2353
PFHpA	1.0	1.0	J	1	2.0	20	04/19/2022 2353
PFHxA	2.4	2.4	J	1	3.8	20	04/19/2022 2353
PFNA	ND	ND		1	0.00	20	04/19/2022 2353
PFOA	2.4	2.3	J	1	1.1	20	04/19/2022 2353
PFPeA	2.7	2.6	J	1	1.3	20	04/19/2022 2353
PFTeDA	ND	ND		1	0.00	20	04/19/2022 2353
PFTrDA	ND	ND		1	0.00	20	04/19/2022 2353
PFUdA	ND	ND		1	0.00	20	04/19/2022 2353
PFOS	ND	ND		1	0.00	20	04/19/2022 2353

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		121	25-150
13C2_6:2FTS	N	242	25-150
13C2_8:2FTS		82	25-150
13C2_PFDoA		80	25-150
13C2_PFTeDA		75	25-150
13C3_PFBS		106	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		91	25-150
13C4_PFBA		84	25-150
13C4_PFHpA		88	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		90	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XD06118-010DU
Batch: 37899
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 12/30/1899 0000

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		94	25-150
13C7_PFUdA		85	25-150
13C8_PFOA		114	25-150
13C8_PFOS		84	25-150
13C8_PFOSA		90	10-150
13C9_PFNA		90	25-150
d5-EtFOSAA		82	25-150
d3-MeFOSAA		85	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

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www.pacelabs.com

Number 132698

Client: Arcadis	Report to Contact: Hanna Linder, Caitlin Cisse	Telephone No. / E-mail: 919-325-1928 / H.Linder@arcadis.com; 248-702-3411 / Caitlin.Cisse@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Novi; State: MI; Zip Code: 48377	Printed Name: Austin Westhuis		
Project Name: RACER Lansing			XD06118
Project No.: 30112892.03100	P.O. No.		KES2

Sample ID / Description (Containers for each sample may be combined on one line)	Collection Date(s)	Collection Time (Military)	Grab/Composite	Matrix: Air/Gas, Solid, Soil, Aqueous	No. of Containers by Preservative Type: Unpres, HNO3, H2SO4, HCl, NaOH, Na2S2O3, Other (Specify)	PFAS via Method 537.1 and/or Perfluorinated Alkyl Substances by ASTM D7979-17	Remarks / Cooler ID
MW-22-145_040422	4/4/22	1325	G	X	2	X	
MW-22-144_040422	4/4/22	1425	G	X	2	X	
MW-22-148_040422	4/4/22	1545	G	X	2	X	
MW-22-147_040422	4/4/22	1630	G	X	6	X	MS/MSD
MW-22-143_040522	4/5/22	1045	G	X	2	X	
MW-22-146_040522	4/5/22	1205	G	X	2	X	
MW-22-149_040522	4/5/22	1250	G	X	2	X	
MW-22-150_040522	4/5/22	1345	G	X	2	X	
MW-22-151_040522	4/5/22	1440	G	X	2	X	
MW-22-152_040522	4/5/22	1556	G	X	2	X	

Turn Around Time Required (Prior lab approval required for expedited TAT): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Austin Westhuis / Arcadis	4/5/22	1715	1. Received by: FedEx	4/5/22	1715
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: Fed Ex	Date: 4-6-22	Time: 10:20	4. Laboratory received by	Date: 4-6-22	Time: 10:20

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle): Yes / No; Ice Pack; Receipt Temp: 3.5 °C; Temp Blank: ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy * Report EGLE 28 Compounds *

Document Number: MF003N2-01

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www.pacelabs.com

Number 132699

Client: Arcadis	Report to Contact: Tiffany Linder Cai Hin Cisco	Telephone No. / E-mail: 310-325-1928 / Tiffany.Linder@arcadis.com 248-722-2411 / Cai.Hin.Cisco@arcadis.com
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Analysis (Attach list if more space is needed)
City: Novi / State: MI / Zip Code: 48377	Printed Name: Austin Westhuis	Quote No.
Project Name: RACER Lansing		Page 2 of 2
Project No.: 30112892.03100	P.O. No.	XD06118

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab/Composite	Matrix: Aqueous	Soil	Non-aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	NaS2O3	Field Filtered	PFAS Wipe method 537 mod. w/ isotope dilution for QSM 5.1	Remarks / Cooler I.D.
Dup-01_040522	4/5/22	—	G	X			2							X	
EB-01_040522	4/5/22	1615	G	X			2							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.): X Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: X Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Austin Westhuis / Arcadis	4/5/22	1715	1. Received by: FedEx	4/5/22	1715
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: Fed Ex	4-6-22	1620	4. Laboratory received by:	4-6-22	16:20

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) (Yes) No Ice Pack — Receipt Temp. 5.5 °C — Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

★ Report EGLE 28 Compounds ★

Document Number: ME000N2-01

PACE ANALYTICAL SERVICES, LLC

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Arcadis Cooler Inspected by/date: TEC / 04/06/2022 Lot #: XD06118

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.5 / 3.5 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc...) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L. (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: KDRW Date: 04/06/2022

Comments:

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Tiffany Linder

Project Name: RACER Lansing

Project Number: 30112892.0370A

Lot Number:**XF07074**

Date Completed:06/24/2022

Kathy Smith

06/24/2022 4:07 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
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Case Narrative
Arcadis U.S., Inc.
Lot Number: XF07074

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples was in compliance with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Samples XF07074-001, XF07074-002, XF07074-004, XF07074-006, XF07074-008, XF07074-009, XF07074-010, XF07074-011 had surrogates recovered outside of the acceptance limits due to confirmed matrix interference.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XF07074

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-04-05(6)_060222	Aqueous	06/02/2022 1610	06/07/2022
002	MW-20-131_060222	Aqueous	06/02/2022 1650	06/07/2022
003	MW-12-11_060222	Aqueous	06/02/2022 0935	06/07/2022
004	MW-20-132_060222	Aqueous	06/02/2022 1035	06/07/2022
005	MW-21-136_060222	Aqueous	06/02/2022 1215	06/07/2022
006	MW-21-137_060222	Aqueous	06/02/2022 1330	06/07/2022
007	MW-21-138_060222	Aqueous	06/02/2022 1445	06/07/2022
008	MW-12-12_060222	Aqueous	06/02/2022 1605	06/07/2022
009	MW-13-36R_060222	Aqueous	06/02/2022 1705	06/07/2022
010	MW-14-67_060322	Aqueous	06/03/2022 1015	06/07/2022
011	P6-SB-07_060322	Aqueous	06/03/2022 1200	06/07/2022
012	MW-04-06R_060322	Aqueous	06/03/2022 1100	06/07/2022
013	MW-04-04R_060322	Aqueous	06/03/2022 1335	06/07/2022
014	Dup-16_060322	Aqueous	06/03/2022	06/07/2022

(14 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XF07074

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-04-05(6)_060222	Aqueous	PFBS	PFAS by ID	3.2	J	ng/L	7
001	MW-04-05(6)_060222	Aqueous	PFHxS	PFAS by ID	2.0	J	ng/L	7
001	MW-04-05(6)_060222	Aqueous	PFBA	PFAS by ID	18		ng/L	7
001	MW-04-05(6)_060222	Aqueous	PFHpA	PFAS by ID	24		ng/L	7
001	MW-04-05(6)_060222	Aqueous	PFHxA	PFAS by ID	39		ng/L	7
001	MW-04-05(6)_060222	Aqueous	PFNA	PFAS by ID	0.53	J	ng/L	7
001	MW-04-05(6)_060222	Aqueous	PFOA	PFAS by ID	32		ng/L	7
001	MW-04-05(6)_060222	Aqueous	PFPeA	PFAS by ID	33		ng/L	7
002	MW-20-131_060222	Aqueous	PFBS	PFAS by ID	1.8	J	ng/L	9
002	MW-20-131_060222	Aqueous	PFHxS	PFAS by ID	2.1	J	ng/L	9
002	MW-20-131_060222	Aqueous	PFBA	PFAS by ID	17		ng/L	9
002	MW-20-131_060222	Aqueous	PFDA	PFAS by ID	1.0	J	ng/L	9
002	MW-20-131_060222	Aqueous	PFHpA	PFAS by ID	20		ng/L	9
002	MW-20-131_060222	Aqueous	PFHxA	PFAS by ID	24		ng/L	9
002	MW-20-131_060222	Aqueous	PFNA	PFAS by ID	1.4	J	ng/L	9
002	MW-20-131_060222	Aqueous	PFOA	PFAS by ID	27		ng/L	9
002	MW-20-131_060222	Aqueous	PFPeA	PFAS by ID	28		ng/L	9
002	MW-20-131_060222	Aqueous	PFOS	PFAS by ID	6.2		ng/L	9
003	MW-12-11_060222	Aqueous	PFBA	PFAS by ID	5.0		ng/L	11
003	MW-12-11_060222	Aqueous	PFHxA	PFAS by ID	0.78	J	ng/L	11
003	MW-12-11_060222	Aqueous	PFPeA	PFAS by ID	1.6	J	ng/L	11
004	MW-20-132_060222	Aqueous	PFBS	PFAS by ID	2.5	J	ng/L	13
004	MW-20-132_060222	Aqueous	PFHxS	PFAS by ID	1.8	J	ng/L	13
004	MW-20-132_060222	Aqueous	PFBA	PFAS by ID	15		ng/L	13
004	MW-20-132_060222	Aqueous	PFDA	PFAS by ID	1.6	J	ng/L	13
004	MW-20-132_060222	Aqueous	PFHpA	PFAS by ID	18		ng/L	13
004	MW-20-132_060222	Aqueous	PFHxA	PFAS by ID	19		ng/L	13
004	MW-20-132_060222	Aqueous	PFNA	PFAS by ID	4.5		ng/L	13
004	MW-20-132_060222	Aqueous	PFOA	PFAS by ID	29		ng/L	13
004	MW-20-132_060222	Aqueous	PFPeA	PFAS by ID	22		ng/L	13
004	MW-20-132_060222	Aqueous	PFOS	PFAS by ID	12		ng/L	13
005	MW-21-136_060222	Aqueous	6:2 FTS	PFAS by ID	11		ng/L	15
005	MW-21-136_060222	Aqueous	PFBS	PFAS by ID	0.85	J	ng/L	15
005	MW-21-136_060222	Aqueous	PFBA	PFAS by ID	1.8	J	ng/L	15
005	MW-21-136_060222	Aqueous	PFOA	PFAS by ID	0.70	J	ng/L	15
005	MW-21-136_060222	Aqueous	PFPeA	PFAS by ID	0.82	J	ng/L	15
006	MW-21-137_060222	Aqueous	PFPeA	PFAS by ID	0.56	J	ng/L	17
007	MW-21-138_060222	Aqueous	PFPeA	PFAS by ID	0.69	J	ng/L	19
008	MW-12-12_060222	Aqueous	6:2 FTS	PFAS by ID	5.4	JQ	ng/L	21
008	MW-12-12_060222	Aqueous	PFBS	PFAS by ID	2.9	J	ng/L	21
008	MW-12-12_060222	Aqueous	PFHxS	PFAS by ID	2.0	J	ng/L	21
008	MW-12-12_060222	Aqueous	PFBA	PFAS by ID	49		ng/L	21
008	MW-12-12_060222	Aqueous	PFDA	PFAS by ID	11		ng/L	21

Detection Summary (Continued)

Lot Number: XF07074

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
008	MW-12-12_060222	Aqueous	PFHpA	PFAS by ID	52		ng/L	21
008	MW-12-12_060222	Aqueous	PFHxA	PFAS by ID	150		ng/L	21
008	MW-12-12_060222	Aqueous	PFNA	PFAS by ID	5.1		ng/L	21
008	MW-12-12_060222	Aqueous	PFOA	PFAS by ID	90		ng/L	21
008	MW-12-12_060222	Aqueous	PFPeA	PFAS by ID	96		ng/L	21
008	MW-12-12_060222	Aqueous	PFOS	PFAS by ID	33		ng/L	21
009	MW-13-36R_060222	Aqueous	EtFOSAA	PFAS by ID	5.6	J	ng/L	23
009	MW-13-36R_060222	Aqueous	MeFOSAA	PFAS by ID	3.5	J	ng/L	23
009	MW-13-36R_060222	Aqueous	PFBS	PFAS by ID	2.7	J	ng/L	23
009	MW-13-36R_060222	Aqueous	PFHpS	PFAS by ID	0.54	J	ng/L	23
009	MW-13-36R_060222	Aqueous	PFOSA	PFAS by ID	3.6	J	ng/L	23
009	MW-13-36R_060222	Aqueous	PFHxS	PFAS by ID	1.6	J	ng/L	23
009	MW-13-36R_060222	Aqueous	PFBA	PFAS by ID	20		ng/L	23
009	MW-13-36R_060222	Aqueous	PFDA	PFAS by ID	24		ng/L	23
009	MW-13-36R_060222	Aqueous	PFHpA	PFAS by ID	38		ng/L	23
009	MW-13-36R_060222	Aqueous	PFHxA	PFAS by ID	35		ng/L	23
009	MW-13-36R_060222	Aqueous	PFNA	PFAS by ID	15		ng/L	23
009	MW-13-36R_060222	Aqueous	PFOA	PFAS by ID	74		ng/L	23
009	MW-13-36R_060222	Aqueous	PFPeA	PFAS by ID	31		ng/L	23
009	MW-13-36R_060222	Aqueous	PFUdA	PFAS by ID	0.71	J	ng/L	23
009	MW-13-36R_060222	Aqueous	PFOS	PFAS by ID	44		ng/L	23
010	MW-14-67_060322	Aqueous	PFBS	PFAS by ID	9.8		ng/L	25
010	MW-14-67_060322	Aqueous	PFBA	PFAS by ID	45		ng/L	25
010	MW-14-67_060322	Aqueous	PFDA	PFAS by ID	1.7	J	ng/L	25
010	MW-14-67_060322	Aqueous	PFHpA	PFAS by ID	30		ng/L	25
010	MW-14-67_060322	Aqueous	PFHxA	PFAS by ID	87		ng/L	25
010	MW-14-67_060322	Aqueous	PFNA	PFAS by ID	0.77	J	ng/L	25
010	MW-14-67_060322	Aqueous	PFOA	PFAS by ID	16		ng/L	25
010	MW-14-67_060322	Aqueous	PFPeA	PFAS by ID	68		ng/L	25
010	MW-14-67_060322	Aqueous	PFOS	PFAS by ID	2.6	J	ng/L	25
011	P6-SB-07_060322	Aqueous	PFBS	PFAS by ID	3.4	J	ng/L	27
011	P6-SB-07_060322	Aqueous	PFHpS	PFAS by ID	0.57	J	ng/L	27
011	P6-SB-07_060322	Aqueous	PFPeS	PFAS by ID	1.0	J	ng/L	27
011	P6-SB-07_060322	Aqueous	PFHxS	PFAS by ID	2.5	J	ng/L	27
011	P6-SB-07_060322	Aqueous	PFBA	PFAS by ID	220		ng/L	27
011	P6-SB-07_060322	Aqueous	PFDA	PFAS by ID	24		ng/L	27
011	P6-SB-07_060322	Aqueous	PFHpA	PFAS by ID	530		ng/L	27
011	P6-SB-07_060322	Aqueous	PFHxA	PFAS by ID	740		ng/L	27
011	P6-SB-07_060322	Aqueous	PFNA	PFAS by ID	82		ng/L	27
011	P6-SB-07_060322	Aqueous	PFOA	PFAS by ID	720		ng/L	27
011	P6-SB-07_060322	Aqueous	PFPeA	PFAS by ID	790		ng/L	27
011	P6-SB-07_060322	Aqueous	PFOS	PFAS by ID	42		ng/L	27
012	MW-04-06R_060322	Aqueous	PFBA	PFAS by ID	4.8		ng/L	29
012	MW-04-06R_060322	Aqueous	PFHpA	PFAS by ID	1.4	J	ng/L	29
012	MW-04-06R_060322	Aqueous	PFHxA	PFAS by ID	1.9	J	ng/L	29
012	MW-04-06R_060322	Aqueous	PFOA	PFAS by ID	0.91	J	ng/L	29
012	MW-04-06R_060322	Aqueous	PFPeA	PFAS by ID	2.3	J	ng/L	29
013	MW-04-04R_060322	Aqueous	PFBA	PFAS by ID	0.72	J	ng/L	31

Detection Summary (Continued)

Lot Number: XF07074

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
013	MW-04-04R_060322	Aqueous	PFPeA	PFAS by ID	0.55	J	ng/L	31
014	Dup-16_060322	Aqueous	PFBA	PFAS by ID	4.7		ng/L	33
014	Dup-16_060322	Aqueous	PFHpA	PFAS by ID	1.3	J	ng/L	33
014	Dup-16_060322	Aqueous	PFHxA	PFAS by ID	1.8	J	ng/L	33
014	Dup-16_060322	Aqueous	PFPeA	PFAS by ID	2.3	J	ng/L	33

(96 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-001**

Description: **MW-04-05(6)_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1610** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/17/2022 1816	ASD	06/13/2022 1119	44657

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.40	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.7	0.73	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.2**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**18**		**3.4**	**0.50**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**24**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**39**		**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.53**	**J**	**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**32**		**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**33**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	223	25-150
13C2_6:2FTS	N	231	25-150
13C2_8:2FTS		139	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		103	25-150
13C3_PFBS		82	25-150
13C3_PFHxS		96	25-150
13C3-HFPO-DA		76	25-150
13C4_PFBA		42	25-150
13C4_PFHpA		97	25-150
13C5_PFHxA		80	25-150
13C5_PFPeA		61	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF07074-001**
Description: **MW-04-05(6)_060222**		Matrix: **Aqueous**
Date Sampled: **06/02/2022 1610**	Project Name: **RACER Lansing**	
Date Received: **06/07/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		105	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		115	25-150
d3-MeFOSAA		119	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-002**

Description: **MW-20-131_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1650** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/17/2022 1838	ASD	06/13/2022 1119	44657

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.8**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.1**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**17**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.0**	**J**	**3.5**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**20**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**24**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**27**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**28**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**6.2**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	248	25-150
13C2_6:2FTS	N	295	25-150
13C2_8:2FTS	N	265	25-150
13C2_PFDoA		115	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		79	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		74	25-150
13C4_PFBA		35	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		76	25-150
13C5_PFPeA		56	25-150
13C6_PFDA		117	25-150
13C7_PFUdA		118	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF07074-002**
Description: **MW-20-131_060222**		Matrix: **Aqueous**
Date Sampled: **06/02/2022 1650**	Project Name: **RACER Lansing**	
Date Received: **06/07/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		98	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		143	25-150
d3-MeFOSAA		141	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-003**

Description: **MW-12-11_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 0935** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/16/2022 1932	ASD	06/15/2022 1112	44951

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.0**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.78**	**J**	**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.6**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		143	25-150
13C2_6:2FTS		125	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		89	25-150
13C2_PFTeDA		83	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		98	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		80	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		98	25-150
13C6_PFDA		96	25-150
13C7_PFUdA		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07074-003**
Description: **MW-12-11_060222**
Matrix: **Aqueous**
Date Sampled: **06/02/2022 0935**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		101	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-004**

Description: **MW-20-132_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1035** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/16/2022 1943	ASD	06/15/2022 1112	44951

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.5**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**15**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.6**	**J**	**3.4**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**18**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**19**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**4.5**		**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**29**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**22**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**12**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	247	25-150
13C2_6:2FTS	N	241	25-150
13C2_8:2FTS		147	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		59	25-150
13C4_PFHpA		119	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		81	25-150
13C6_PFDA		113	25-150
13C7_PFUdA		111	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF07074-004**
Description: **MW-20-132_060222**		Matrix: **Aqueous**
Date Sampled: **06/02/2022 1035**	Project Name: **RACER Lansing**	
Date Received: **06/07/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		116	25-150
13C8_PFOS		113	25-150
13C8_PFOSA		112	10-150
13C9_PFNA		124	25-150
d5-EtFOSAA		113	25-150
d3-MeFOSAA		116	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-005**

Description: **MW-21-136_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1215** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/16/2022 2059	ASD	06/15/2022 1415	45010

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.40	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**11**		**6.7**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.7	0.73	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.85**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.4**	**0.50**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.58	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.70**	**J**	**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.82**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		135	25-150
13C2_6:2FTS		122	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		81	25-150
13C2_PFTeDA		82	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		88	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		104	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		90	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07074-005**
Description: **MW-21-136_060222**
Matrix: **Aqueous**
Date Sampled: **06/02/2022 1215**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		112	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		90	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-006**

Description: **MW-21-137_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1330** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/16/2022 2110	ASD	06/15/2022 1415	45010

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.56**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	186	25-150
13C2_6:2FTS		150	25-150
13C2_8:2FTS		124	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		101	25-150
13C3_PFBS		114	25-150
13C3_PFHxS		123	25-150
13C3-HFPO-DA		125	25-150
13C4_PFBA		83	25-150
13C4_PFHpA		128	25-150
13C5_PFHxA		123	25-150
13C5_PFPeA		120	25-150
13C6_PFDA		120	25-150
13C7_PFUdA		109	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07074-006**
Description: **MW-21-137_060222**
Matrix: **Aqueous**
Date Sampled: **06/02/2022 1330**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		133	25-150
13C8_PFOS		127	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		127	25-150
d5-EtFOSAA		110	25-150
d3-MeFOSAA		115	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-007**

Description: **MW-21-138_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1445** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/16/2022 2143	ASD	06/15/2022 1415	45010

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.4	0.50	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.4	0.69	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.4	1.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.4	0.91	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.4	2.2	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.4	0.51	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.4	0.78	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.4	0.98	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.2	0.43	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.2	0.81	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.2	0.52	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.2	0.74	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.2	0.64	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.2	0.62	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.2	0.58	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.2	0.63	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.2	0.55	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.2	0.49	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.2	0.47	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.2	0.72	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.2	0.48	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.2	0.87	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.69**	**J**	**4.2**	**0.57**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.2	0.63	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.2	0.55	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.2	0.66	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.2	2.1	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		150	25-150
13C2_6:2FTS		124	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		71	25-150
13C2_PFTeDA		75	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		75	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		104	25-150
13C6_PFDA		95	25-150
13C7_PFUdA		80	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07074-007**
Description: **MW-21-138_060222**
Matrix: **Aqueous**
Date Sampled: **06/02/2022 1445**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		115	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		82	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		81	25-150
d3-MeFOSAA		84	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-008**

Description: **MW-12-12_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1605** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/16/2022 2154	ASD	06/15/2022 1415	45010

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	0.66	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**5.4**	**JQ**	**8.0**	**2.0**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.0	0.87	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	0.75	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	0.93	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.9**	**J**	**4.0**	**0.41**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.78	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.71	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.0**	**J**	**4.0**	**0.55**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**49**		**4.0**	**0.60**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**11**		**4.0**	**0.52**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**52**		**4.0**	**0.45**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**150**		**4.0**	**0.69**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**5.1**		**4.0**	**0.46**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**90**		**4.0**	**0.83**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**96**		**4.0**	**0.54**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.53	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.63	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**33**		**4.0**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	195	25-150
13C2_6:2FTS	N	189	25-150
13C2_8:2FTS		113	25-150
13C2_PFDoA		60	25-150
13C2_PFTeDA		55	25-150
13C3_PFBS		72	25-150
13C3_PFHxS		81	25-150
13C3-HFPO-DA		69	25-150
13C4_PFBA		47	25-150
13C4_PFHpA		85	25-150
13C5_PFHxA		74	25-150
13C5_PFPeA		57	25-150
13C6_PFDA		86	25-150
13C7_PFUdA		75	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF07074-008**
Description: **MW-12-12_060222**		Matrix: **Aqueous**
Date Sampled: **06/02/2022 1605**	Project Name: **RACER Lansing**	
Date Received: **06/07/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		86	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		94	25-150
d5-EtFOSAA		72	25-150
d3-MeFOSAA		83	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-009**

Description: **MW-13-36R_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1705** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/16/2022 2205	ASD	06/15/2022 1415	45010
2	SOP SPE	PFAS by ID SOP	1	06/23/2022 2219	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.5	0.62	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.5	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.5	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.5	0.82	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.5	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	**2991-50-6**	**PFAS by ID SOP**	**5.6**	**J**	**7.5**	**0.71**	**ng/L**	**1**
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	**2355-31-9**	**PFAS by ID SOP**	**3.5**	**J**	**7.5**	**0.88**	**ng/L**	**1**
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.7**	**J**	**3.8**	**0.39**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.73	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.54**	**J**	**3.8**	**0.47**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.67	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**3.6**	**J**	**3.8**	**0.58**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.56	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.6**	**J**	**3.8**	**0.52**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**20**		**3.7**	**0.56**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**24**		**3.8**	**0.49**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**38**		**3.8**	**0.42**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**35**		**3.8**	**0.65**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**15**		**3.8**	**0.43**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**74**		**3.8**	**0.78**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**31**		**3.8**	**0.51**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.8	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	**2058-94-8**	**PFAS by ID SOP**	**0.71**	**J**	**3.8**	**0.59**	**ng/L**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**44**		**3.8**	**1.9**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	276	25-150	N	260	25-150
13C2_6:2FTS	N	304	25-150	N	217	25-150
13C2_8:2FTS	N	290	25-150	N	346	25-150
13C2_PFDoA		101	25-150	N	156	25-150
13C2_PFTeDA		80	25-150		125	25-150
13C3_PFBS		84	25-150		114	25-150
13C3_PFHxS		92	25-150		104	25-150
13C3-HFPO-DA		79	25-150		75	25-150
13C4_PFBA	N	22	25-150		53	25-150
13C4_PFHpA		100	25-150		108	25-150
13C5_PFHxA		89	25-150		109	25-150
13C5_PFPeA		69	25-150		98	25-150
13C6_PFDA		120	25-150		133	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-009**

Description: **MW-13-36R_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1705** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		119	25-150		134	25-150
13C8_PFOA		106	25-150		95	25-150
13C8_PFOS		105	25-150		123	25-150
13C8_PFOSA		109	10-150		119	10-150
13C9_PFNA		117	25-150		126	25-150
d5-EtFOSAA		128	25-150		148	25-150
d3-MeFOSAA		125	25-150		128	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-010**

Description: **MW-14-67_060322** Matrix: **Aqueous**

Date Sampled: **06/03/2022 1015** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/16/2022 2216	ASD	06/15/2022 1415	45010

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**9.8**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**45**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**30**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**87**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.77**	**J**	**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**16**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**68**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.6**	**J**	**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	171	25-150
13C2_6:2FTS	N	151	25-150
13C2_8:2FTS		100	25-150
13C2_PFDoA		77	25-150
13C2_PFTeDA		74	25-150
13C3_PFBS		70	25-150
13C3_PFHxS		88	25-150
13C3-HFPO-DA		66	25-150
13C4_PFBA		28	25-150
13C4_PFHpA		87	25-150
13C5_PFHxA		68	25-150
13C5_PFPeA		44	25-150
13C6_PFDA		86	25-150
13C7_PFUdA		87	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF07074-010**
Description: **MW-14-67_060322**		Matrix: **Aqueous**
Date Sampled: **06/03/2022 1015**	Project Name: **RACER Lansing**	
Date Received: **06/07/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		93	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		98	25-150
d5-EtFOSAA		86	25-150
d3-MeFOSAA		91	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-011**

Description: **P6-SB-07_060322** Matrix: **Aqueous**

Date Sampled: **06/03/2022 1200** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/16/2022 2227	ASD	06/15/2022 1415	45010
2	SOP SPE	PFAS by ID SOP	5	06/17/2022 1330	ASD	06/15/2022 1415	45010

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.4**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.57**	**J**	**3.5**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**1.0**	**J**	**3.5**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.5**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**220**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**24**		**3.5**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**530**		**17**	**1.9**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**740**		**17**	**3.0**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**82**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**720**		**17**	**3.6**	**ng/L**	**2**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**790**		**17**	**2.4**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**42**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	241	25-150	N	166	25-150
13C2_6:2FTS	N	178	25-150		133	25-150
13C2_8:2FTS		131	25-150		116	25-150
13C2_PFDoA		90	25-150		91	25-150
13C2_PFTeDA		88	25-150		90	25-150
13C3_PFBS		97	25-150		112	25-150
13C3_PFHxS		105	25-150		115	25-150
13C3-HFPO-DA		95	25-150		113	25-150
13C4_PFBA		60	25-150		103	25-150
13C4_PFHpA		104	25-150		120	25-150
13C5_PFHxA		96	25-150		109	25-150
13C5_PFPeA		74	25-150		103	25-150
13C6_PFDA		111	25-150		113	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-011**

Description: **P6-SB-07_060322** Matrix: **Aqueous**

Date Sampled: **06/03/2022 1200** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		107	25-150		104	25-150
13C8_PFOA		107	25-150		105	25-150
13C8_PFOS		115	25-150		114	25-150
13C8_PFOSA		113	10-150		111	10-150
13C9_PFNA		123	25-150		112	25-150
d5-EtFOSAA		103	25-150		100	25-150
d3-MeFOSAA		111	25-150		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-012**

Description: **MW-04-06R_060322** Matrix: **Aqueous**

Date Sampled: **06/03/2022 1100** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/19/2022 1307	LAB	06/17/2022 1613	45374

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.3	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.69	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.7	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.7	0.51	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**4.8**		**3.7**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.4**	**J**	**3.7**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.9**	**J**	**3.7**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.91**	**J**	**3.7**	**0.76**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.3**	**J**	**3.7**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		67	25-150
13C2_6:2FTS		76	25-150
13C2_8:2FTS		70	25-150
13C2_PFDoA		62	25-150
13C2_PFTeDA		57	25-150
13C3_PFBS		66	25-150
13C3_PFHxS		68	25-150
13C3-HFPO-DA		67	25-150
13C4_PFBA		53	25-150
13C4_PFHpA		68	25-150
13C5_PFHxA		67	25-150
13C5_PFPeA		65	25-150
13C6_PFDA		68	25-150
13C7_PFUdA		65	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF07074-012**
Description: **MW-04-06R_060322**		Matrix: **Aqueous**
Date Sampled: **06/03/2022 1100**	Project Name: **RACER Lansing**	
Date Received: **06/07/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		68	25-150
13C8_PFOS		68	25-150
13C8_PFOSA		62	10-150
13C9_PFNA		69	25-150
d5-EtFOSAA		63	25-150
d3-MeFOSAA		64	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-013**

Description: **MW-04-04R_060322** Matrix: **Aqueous**

Date Sampled: **06/03/2022 1335** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/19/2022 1320	LAB	06/17/2022 1613	45374

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**0.72**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.55**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		87	25-150
13C2_6:2FTS		97	25-150
13C2_8:2FTS		87	25-150
13C2_PFDoA		87	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		94	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		78	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		94	25-150
13C6_PFDA		95	25-150
13C7_PFUdA		92	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07074-013**
Description: **MW-04-04R_060322**
Matrix: **Aqueous**
Date Sampled: **06/03/2022 1335**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		92	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		99	25-150
d5-EtFOSAA		86	25-150
d3-MeFOSAA		92	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07074-014**

Description: **Dup-16_060322** Matrix: **Aqueous**

Date Sampled: **06/03/2022** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/19/2022 1332	LAB	06/17/2022 1613	45374

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**4.7**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.3**	**J**	**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.3**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		102	25-150
13C2_6:2FTS		119	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		106	25-150
13C4_PFBA		74	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		100	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07074-014**
Description: **Dup-16_060322**
Matrix: **Aqueous**
Date Sampled: **06/03/2022**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		95	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ44657-001
Batch: 44657
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/13/2022 1119

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/17/2022 1403
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/17/2022 1403
8:2 FTS	ND		1	8.0	1.6	ng/L	06/17/2022 1403
6:2 FTS	ND		1	8.0	2.0	ng/L	06/17/2022 1403
4:2 FTS	ND		1	8.0	0.87	ng/L	06/17/2022 1403
GenX	ND		1	8.0	2.1	ng/L	06/17/2022 1403
ADONA	ND		1	8.0	0.48	ng/L	06/17/2022 1403
EtFOSAA	ND		1	8.0	0.75	ng/L	06/17/2022 1403
MeFOSAA	ND		1	8.0	0.93	ng/L	06/17/2022 1403
PFBS	ND		1	4.0	0.41	ng/L	06/17/2022 1403
PFDS	ND		1	4.0	0.78	ng/L	06/17/2022 1403
PFHpS	ND		1	4.0	0.50	ng/L	06/17/2022 1403
PFNS	ND		1	4.0	0.71	ng/L	06/17/2022 1403
PFOSA	ND		1	4.0	0.61	ng/L	06/17/2022 1403
PFPeS	ND		1	4.0	0.59	ng/L	06/17/2022 1403
PFHxS	ND		1	4.0	0.55	ng/L	06/17/2022 1403
PFBA	ND		1	4.0	0.60	ng/L	06/17/2022 1403
PFDA	ND		1	4.0	0.52	ng/L	06/17/2022 1403
PFDoA	ND		1	4.0	0.47	ng/L	06/17/2022 1403
PFHpA	ND		1	4.0	0.45	ng/L	06/17/2022 1403
PFHxA	ND		1	4.0	0.69	ng/L	06/17/2022 1403
PFNA	ND		1	4.0	0.46	ng/L	06/17/2022 1403
PFOA	ND		1	4.0	0.83	ng/L	06/17/2022 1403
PFPeA	ND		1	4.0	0.54	ng/L	06/17/2022 1403
PFTeDA	ND		1	4.0	0.60	ng/L	06/17/2022 1403
PFTrDA	ND		1	4.0	0.53	ng/L	06/17/2022 1403
PFUdA	ND		1	4.0	0.63	ng/L	06/17/2022 1403
PFOS	ND		1	4.0	2.0	ng/L	06/17/2022 1403

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		109	25-150
13C2_6:2FTS		117	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		104	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ44657-001
Batch: 44657
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/13/2022 1119

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		102	25-150
13C7_PFUdA		101	25-150
13C8_PFOA		106	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ44657-002
Batch: 44657
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/13/2022 1119

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	104	50-150	06/17/2022 1414
11Cl-PF3OUdS	15	16		1	104	50-150	06/17/2022 1414
8:2 FTS	15	15		1	95	50-150	06/17/2022 1414
6:2 FTS	15	18		1	117	50-150	06/17/2022 1414
4:2 FTS	15	16		1	105	50-150	06/17/2022 1414
GenX	32	33		1	104	50-150	06/17/2022 1414
ADONA	15	15		1	97	50-150	06/17/2022 1414
EtFOSAA	16	17		1	105	50-150	06/17/2022 1414
MeFOSAA	16	17		1	107	50-150	06/17/2022 1414
PFBS	14	15		1	105	50-150	06/17/2022 1414
PFDS	15	17		1	110	50-150	06/17/2022 1414
PFHpS	15	17		1	113	50-150	06/17/2022 1414
PFNS	15	16		1	105	50-150	06/17/2022 1414
PFOSA	16	17		1	109	50-150	06/17/2022 1414
PFPeS	15	16		1	106	50-150	06/17/2022 1414
PFHxS	15	15		1	105	50-150	06/17/2022 1414
PFBA	16	18		1	113	50-150	06/17/2022 1414
PFDA	16	18		1	111	50-150	06/17/2022 1414
PFDoA	16	18		1	114	50-150	06/17/2022 1414
PFHpA	16	18		1	114	50-150	06/17/2022 1414
PFHxA	16	17		1	105	50-150	06/17/2022 1414
PFNA	16	17		1	104	50-150	06/17/2022 1414
PFOA	16	17		1	106	50-150	06/17/2022 1414
PFPeA	16	18		1	110	50-150	06/17/2022 1414
PFTeDA	16	18		1	114	50-150	06/17/2022 1414
PFTrDA	16	16		1	103	50-150	06/17/2022 1414
PFUdA	16	17		1	108	50-150	06/17/2022 1414
PFOS	15	16		1	110	50-150	06/17/2022 1414

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		111	25-150
13C2_6:2FTS		124	25-150
13C2_8:2FTS		104	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		100	25-150
13C3_PFBS		107	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		106	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ44657-002
Batch: 44657
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/13/2022 1119

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		100	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		102	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XF07074-001DU
Batch: 44657
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/13/2022 1119

Parameter	Sample Amount (ng/L)	Result (ng/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
9Cl-PF3ONS	ND	ND		1	0.00	20	06/17/2022 1827
11Cl-PF3OUdS	ND	ND		1	0.00	20	06/17/2022 1827
8:2 FTS	ND	ND		1	0.00	20	06/17/2022 1827
6:2 FTS	ND	ND		1	0.00	20	06/17/2022 1827
4:2 FTS	ND	ND		1	0.00	20	06/17/2022 1827
GenX	ND	ND		1	0.00	20	06/17/2022 1827
ADONA	ND	ND		1	0.00	20	06/17/2022 1827
EtFOSAA	ND	ND		1	0.00	20	06/17/2022 1827
MeFOSAA	ND	ND		1	0.00	20	06/17/2022 1827
PFBS	3.2	3.3	J	1	3.1	20	06/17/2022 1827
PFDS	ND	ND		1	0.00	20	06/17/2022 1827
PFHpS	ND	ND		1	0.00	20	06/17/2022 1827
PFNS	ND	ND		1	0.00	20	06/17/2022 1827
PFOSA	ND	ND		1	0.00	20	06/17/2022 1827
PFPeS	ND	ND		1	0.00	20	06/17/2022 1827
PFHxS	2.0	2.0	J	1	0.79	20	06/17/2022 1827
PFBA	18	18		1	2.2	20	06/17/2022 1827
PFDA	ND	ND		1	0.00	20	06/17/2022 1827
PFDoA	ND	ND		1	0.00	20	06/17/2022 1827
PFHpA	24	23		1	5.2	20	06/17/2022 1827
PFHxA	39	38		1	3.1	20	06/17/2022 1827
PFNA	0.53	0.50	J	1	5.9	20	06/17/2022 1827
PFOA	32	32		1	0.95	20	06/17/2022 1827
PFPeA	33	34		1	2.4	20	06/17/2022 1827
PFTeDA	ND	ND		1	0.00	20	06/17/2022 1827
PFTrDA	ND	ND		1	0.00	20	06/17/2022 1827
PFUdA	ND	ND		1	0.00	20	06/17/2022 1827
PFOS	ND	ND		1	0.00	20	06/17/2022 1827

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	232	25-150
13C2_6:2FTS	N	228	25-150
13C2_8:2FTS		143	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		115	25-150
13C3_PFBS		88	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		81	25-150
13C4_PFBA		45	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		83	25-150
13C5_PFPeA		65	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XF07074-001DU
Batch: 44657
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/13/2022 1119

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		107	25-150
13C7_PFUdA		110	25-150
13C8_PFOA		103	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		114	25-150
d5-EtFOSAA		117	25-150
d3-MeFOSAA		121	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ44951-001
Batch: 44951
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1112

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/16/2022 1415
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/16/2022 1415
8:2 FTS	ND		1	8.0	1.6	ng/L	06/16/2022 1415
6:2 FTS	ND		1	8.0	2.0	ng/L	06/16/2022 1415
4:2 FTS	ND		1	8.0	0.87	ng/L	06/16/2022 1415
GenX	ND		1	8.0	2.1	ng/L	06/16/2022 1415
ADONA	ND		1	8.0	0.48	ng/L	06/16/2022 1415
EtFOSAA	ND		1	8.0	0.75	ng/L	06/16/2022 1415
MeFOSAA	ND		1	8.0	0.93	ng/L	06/16/2022 1415
PFBS	ND		1	4.0	0.41	ng/L	06/16/2022 1415
PFDS	ND		1	4.0	0.78	ng/L	06/16/2022 1415
PFHpS	ND		1	4.0	0.50	ng/L	06/16/2022 1415
PFNS	ND		1	4.0	0.71	ng/L	06/16/2022 1415
PFOSA	ND		1	4.0	0.61	ng/L	06/16/2022 1415
PFPeS	ND		1	4.0	0.59	ng/L	06/16/2022 1415
PFHxS	ND		1	4.0	0.55	ng/L	06/16/2022 1415
PFBA	ND		1	4.0	0.60	ng/L	06/16/2022 1415
PFDA	ND		1	4.0	0.52	ng/L	06/16/2022 1415
PFDoA	ND		1	4.0	0.47	ng/L	06/16/2022 1415
PFHpA	ND		1	4.0	0.45	ng/L	06/16/2022 1415
PFHxA	ND		1	4.0	0.69	ng/L	06/16/2022 1415
PFNA	ND		1	4.0	0.46	ng/L	06/16/2022 1415
PFOA	ND		1	4.0	0.83	ng/L	06/16/2022 1415
PFPeA	ND		1	4.0	0.54	ng/L	06/16/2022 1415
PFTeDA	ND		1	4.0	0.60	ng/L	06/16/2022 1415
PFTrDA	ND		1	4.0	0.53	ng/L	06/16/2022 1415
PFUdA	ND		1	4.0	0.63	ng/L	06/16/2022 1415
PFOS	ND		1	4.0	2.0	ng/L	06/16/2022 1415

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		115	25-150
13C2_6:2FTS		115	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		94	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		110	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		107	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ44951-001
Batch: 44951
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1112

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		103	25-150
13C7_PFUdA		104	25-150
13C8_PFOA		111	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		115	25-150
d5-EtFOSAA		98	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ44951-002
Batch: 44951
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1112

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	17		1	113	50-150	06/16/2022 1426
11Cl-PF3OUdS	15	17		1	112	50-150	06/16/2022 1426
8:2 FTS	15	15		1	96	50-150	06/16/2022 1426
6:2 FTS	15	16		1	108	50-150	06/16/2022 1426
4:2 FTS	15	14		1	97	50-150	06/16/2022 1426
GenX	32	33		1	105	50-150	06/16/2022 1426
ADONA	15	16		1	105	50-150	06/16/2022 1426
EtFOSAA	16	17		1	104	50-150	06/16/2022 1426
MeFOSAA	16	17		1	108	50-150	06/16/2022 1426
PFBS	14	16		1	113	50-150	06/16/2022 1426
PFDS	15	18		1	116	50-150	06/16/2022 1426
PFHpS	15	18		1	120	50-150	06/16/2022 1426
PFNS	15	18		1	114	50-150	06/16/2022 1426
PFOSA	16	18		1	113	50-150	06/16/2022 1426
PFPeS	15	17		1	111	50-150	06/16/2022 1426
PFHxS	15	16		1	113	50-150	06/16/2022 1426
PFBA	16	19		1	119	50-150	06/16/2022 1426
PFDA	16	18		1	110	50-150	06/16/2022 1426
PFDoA	16	17		1	108	50-150	06/16/2022 1426
PFHpA	16	19		1	116	50-150	06/16/2022 1426
PFHxA	16	18		1	110	50-150	06/16/2022 1426
PFNA	16	17		1	108	50-150	06/16/2022 1426
PFOA	16	17		1	104	50-150	06/16/2022 1426
PFPeA	16	18		1	113	50-150	06/16/2022 1426
PFTeDA	16	18		1	114	50-150	06/16/2022 1426
PFTrDA	16	16		1	102	50-150	06/16/2022 1426
PFUdA	16	18		1	112	50-150	06/16/2022 1426
PFOS	15	18		1	120	50-150	06/16/2022 1426

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		110	25-150
13C2_6:2FTS		117	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		92	25-150
13C3_PFBS		99	25-150
13C3_PFHxS		98	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		101	25-150
13C4_PFHpA		102	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ44951-002
Batch: 44951
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1112

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		102	25-150
13C7_PFUdA		99	25-150
13C8_PFOA		109	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XF07074-004DU
Batch: 44951
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1112

Parameter	Sample Amount (ng/L)	Result (ng/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
9Cl-PF3ONS	ND	ND		1	0.00	20	06/16/2022 1954
11Cl-PF3OUdS	ND	ND		1	0.00	20	06/16/2022 1954
8:2 FTS	ND	ND		1	0.00	20	06/16/2022 1954
6:2 FTS	ND	ND		1	0.00	20	06/16/2022 1954
4:2 FTS	ND	ND		1	0.00	20	06/16/2022 1954
GenX	ND	ND		1	0.00	20	06/16/2022 1954
ADONA	ND	ND		1	0.00	20	06/16/2022 1954
EtFOSAA	ND	ND		1	0.00	20	06/16/2022 1954
MeFOSAA	ND	ND		1	0.00	20	06/16/2022 1954
PFBS	2.5	2.8	J	1	8.6	20	06/16/2022 1954
PFDS	ND	ND		1	0.00	20	06/16/2022 1954
PFHpS	ND	ND		1	0.00	20	06/16/2022 1954
PFNS	ND	ND		1	0.00	20	06/16/2022 1954
PFOSA	ND	ND		1	0.00	20	06/16/2022 1954
PFPeS	ND	ND		1	0.00	20	06/16/2022 1954
PFHxS	1.8	1.4	J	1	20	20	06/16/2022 1954
PFBA	15	15		1	1.6	20	06/16/2022 1954
PFDA	1.6	1.6	J	1	2.3	20	06/16/2022 1954
PFDoA	ND	ND		1	0.00	20	06/16/2022 1954
PFHpA	18	19		1	6.6	20	06/16/2022 1954
PFHxA	19	19		1	0.52	20	06/16/2022 1954
PFNA	4.5	4.2		1	6.4	20	06/16/2022 1954
PFOA	29	29		1	1.4	20	06/16/2022 1954
PFPeA	22	22		1	0.63	20	06/16/2022 1954
PFTeDA	ND	ND		1	0.00	20	06/16/2022 1954
PFTrDA	ND	ND		1	0.00	20	06/16/2022 1954
PFUdA	ND	ND		1	0.00	20	06/16/2022 1954
PFOS	12	12		1	6.4	20	06/16/2022 1954

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	229	25-150
13C2_6:2FTS	N	198	25-150
13C2_8:2FTS		127	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		85	25-150
13C3_PFHxS		98	25-150
13C3-HFPO-DA		83	25-150
13C4_PFBA		55	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		76	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XF07074-004DU
Batch: 44951
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1112

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		104	25-150
13C7_PFUdA		100	25-150
13C8_PFOA		102	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		114	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45010-001
Batch: 45010
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1415

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/16/2022 2027
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/16/2022 2027
8:2 FTS	ND		1	8.0	1.6	ng/L	06/16/2022 2027
6:2 FTS	ND		1	8.0	2.0	ng/L	06/16/2022 2027
4:2 FTS	ND		1	8.0	0.87	ng/L	06/16/2022 2027
GenX	ND		1	8.0	2.1	ng/L	06/16/2022 2027
ADONA	ND		1	8.0	0.48	ng/L	06/16/2022 2027
EtFOSAA	ND		1	8.0	0.75	ng/L	06/16/2022 2027
MeFOSAA	ND		1	8.0	0.93	ng/L	06/16/2022 2027
PFBS	ND		1	4.0	0.41	ng/L	06/16/2022 2027
PFDS	ND		1	4.0	0.78	ng/L	06/16/2022 2027
PFHpS	ND		1	4.0	0.50	ng/L	06/16/2022 2027
PFNS	ND		1	4.0	0.71	ng/L	06/16/2022 2027
PFOSA	ND		1	4.0	0.61	ng/L	06/16/2022 2027
PFPeS	ND		1	4.0	0.59	ng/L	06/16/2022 2027
PFHxS	ND		1	4.0	0.55	ng/L	06/16/2022 2027
PFBA	ND		1	4.0	0.60	ng/L	06/16/2022 2027
PFDA	ND		1	4.0	0.52	ng/L	06/16/2022 2027
PFDoA	ND		1	4.0	0.47	ng/L	06/16/2022 2027
PFHpA	ND		1	4.0	0.45	ng/L	06/16/2022 2027
PFHxA	ND		1	4.0	0.69	ng/L	06/16/2022 2027
PFNA	ND		1	4.0	0.46	ng/L	06/16/2022 2027
PFOA	ND		1	4.0	0.83	ng/L	06/16/2022 2027
PFPeA	ND		1	4.0	0.54	ng/L	06/16/2022 2027
PFTeDA	ND		1	4.0	0.60	ng/L	06/16/2022 2027
PFTrDA	ND		1	4.0	0.53	ng/L	06/16/2022 2027
PFUdA	ND		1	4.0	0.63	ng/L	06/16/2022 2027
PFOS	ND		1	4.0	2.0	ng/L	06/16/2022 2027

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		103	25-150
13C2_6:2FTS		108	25-150
13C2_8:2FTS		95	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		92	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		96	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		101	25-150
13C4_PFHpA		102	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45010-001
Batch: 45010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1415

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		95	25-150
13C7_PFUdA		97	25-150
13C8_PFOA		107	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		92	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45010-002
Batch: 45010
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1415

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	16		1	106	50-150	06/16/2022 2038
11Cl-PF3OUdS	15	15		1	102	50-150	06/16/2022 2038
8:2 FTS	15	15		1	99	50-150	06/16/2022 2038
6:2 FTS	15	17		1	111	50-150	06/16/2022 2038
4:2 FTS	15	14		1	94	50-150	06/16/2022 2038
GenX	32	34		1	105	50-150	06/16/2022 2038
ADONA	15	16		1	108	50-150	06/16/2022 2038
EtFOSAA	16	17		1	106	50-150	06/16/2022 2038
MeFOSAA	16	18		1	112	50-150	06/16/2022 2038
PFBS	14	16		1	115	50-150	06/16/2022 2038
PFDS	15	17		1	110	50-150	06/16/2022 2038
PFHpS	15	18		1	117	50-150	06/16/2022 2038
PFNS	15	16		1	104	50-150	06/16/2022 2038
PFOSA	16	18		1	111	50-150	06/16/2022 2038
PFPeS	15	17		1	113	50-150	06/16/2022 2038
PFHxS	15	16		1	111	50-150	06/16/2022 2038
PFBA	16	19		1	117	50-150	06/16/2022 2038
PFDA	16	17		1	108	50-150	06/16/2022 2038
PFDoA	16	19		1	116	50-150	06/16/2022 2038
PFHpA	16	17		1	109	50-150	06/16/2022 2038
PFHxA	16	18		1	111	50-150	06/16/2022 2038
PFNA	16	18		1	110	50-150	06/16/2022 2038
PFOA	16	18		1	111	50-150	06/16/2022 2038
PFPeA	16	19		1	116	50-150	06/16/2022 2038
PFTeDA	16	17		1	106	50-150	06/16/2022 2038
PFTrDA	16	18		1	112	50-150	06/16/2022 2038
PFUdA	16	17		1	108	50-150	06/16/2022 2038
PFOS	15	16		1	109	50-150	06/16/2022 2038

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		119	25-150
13C2_6:2FTS		121	25-150
13C2_8:2FTS		115	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		110	25-150
13C3_PFBS		107	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		114	25-150
13C4_PFBA		113	25-150
13C4_PFHpA		119	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		112	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45010-002
Batch: 45010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1415

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		116	25-150
13C7_PFUdA		109	25-150
13C8_PFOA		121	25-150
13C8_PFOS		116	25-150
13C8_PFOSA		113	10-150
13C9_PFNA		117	25-150
d5-EtFOSAA		112	25-150
d3-MeFOSAA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XF07074-006MS
Batch: 45010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1415

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	14		1	110	50-150	06/16/2022 2121
11Cl-PF3OUdS	ND	13	13		1	98	50-150	06/16/2022 2121
8:2 FTS	ND	13	14		1	104	50-150	06/16/2022 2121
6:2 FTS	ND	13	16		1	125	50-150	06/16/2022 2121
4:2 FTS	ND	13	12		1	98	50-150	06/16/2022 2121
GenX	ND	27	27		1	101	50-150	06/16/2022 2121
ADONA	ND	13	13		1	105	50-150	06/16/2022 2121
EtFOSAA	ND	14	15		1	107	50-150	06/16/2022 2121
MeFOSAA	ND	14	16		1	118	50-150	06/16/2022 2121
PFBS	ND	12	14		1	120	50-150	06/16/2022 2121
PFDS	ND	13	14		1	106	50-150	06/16/2022 2121
PFHpS	ND	13	15		1	115	50-150	06/16/2022 2121
PFNS	ND	13	14		1	107	50-150	06/16/2022 2121
PFOSA	ND	14	15		1	109	50-150	06/16/2022 2121
PFPeS	ND	13	16		1	126	50-150	06/16/2022 2121
PFHxS	ND	12	14		1	111	50-150	06/16/2022 2121
PFBA	ND	14	16		1	121	50-150	06/16/2022 2121
PFDA	ND	14	16		1	115	50-150	06/16/2022 2121
PFDoA	ND	14	15		1	114	50-150	06/16/2022 2121
PFHpA	ND	14	16		1	115	50-150	06/16/2022 2121
PFHxA	ND	14	16		1	114	50-150	06/16/2022 2121
PFNA	ND	14	15		1	108	50-150	06/16/2022 2121
PFOA	ND	14	16		1	118	50-150	06/16/2022 2121
PFPeA	0.56	14	17		1	118	50-150	06/16/2022 2121
PFTeDA	ND	14	16		1	120	50-150	06/16/2022 2121
PFTrDA	ND	14	15		1	110	50-150	06/16/2022 2121
PFUdA	ND	14	15		1	107	50-150	06/16/2022 2121
PFOS	ND	13	15		1	116	50-150	06/16/2022 2121

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	153	25-150
13C2_6:2FTS		143	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		79	25-150
13C2_PFTeDA		78	25-150
13C3_PFBS		94	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		71	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		98	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XF07074-006MS
Batch: 45010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1415

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		93	25-150
13C7_PFUdA		90	25-150
13C8_PFOA		110	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		87	25-150
d3-MeFOSAA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XF07074-006MD
Batch: 45010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1415

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	13	13		1	105	3.9	50-150	30	06/16/2022 2132
11Cl-PF3OUdS	ND	13	12		1	94	3.5	50-150	30	06/16/2022 2132
8:2 FTS	ND	13	13		1	99	4.2	50-150	30	06/16/2022 2132
6:2 FTS	ND	13	15		1	115	7.3	50-150	30	06/16/2022 2132
4:2 FTS	ND	13	13		1	99	2.1	50-150	30	06/16/2022 2132
GenX	ND	27	27		1	99	1.3	50-150	30	06/16/2022 2132
ADONA	ND	13	13		1	102	2.2	50-150	30	06/16/2022 2132
EtFOSAA	ND	14	15		1	108	0.99	50-150	30	06/16/2022 2132
MeFOSAA	ND	14	15		1	111	5.7	50-150	30	06/16/2022 2132
PFBS	ND	12	13		1	111	7.0	50-150	30	06/16/2022 2132
PFDS	ND	13	13		1	102	3.2	50-150	30	06/16/2022 2132
PFHpS	ND	13	15		1	116	1.2	50-150	30	06/16/2022 2132
PFNS	ND	13	14		1	106	0.12	50-150	30	06/16/2022 2132
PFOSA	ND	14	15		1	108	0.60	50-150	30	06/16/2022 2132
PFPeS	ND	13	16		1	125	0.018	50-150	30	06/16/2022 2132
PFHxS	ND	12	14		1	109	1.3	50-150	30	06/16/2022 2132
PFBA	ND	14	16		1	116	3.7	50-150	30	06/16/2022 2132
PFDA	ND	14	15		1	111	2.5	50-150	30	06/16/2022 2132
PFDoA	ND	14	15		1	108	4.5	50-150	30	06/16/2022 2132
PFHpA	ND	14	15		1	109	4.9	50-150	30	06/16/2022 2132
PFHxA	ND	14	15		1	113	0.71	50-150	30	06/16/2022 2132
PFNA	ND	14	15		1	108	0.018	50-150	30	06/16/2022 2132
PFOA	ND	14	15		1	110	6.2	50-150	30	06/16/2022 2132
PFPeA	0.56	14	16		1	110	6.3	50-150	30	06/16/2022 2132
PFTeDA	ND	14	15		1	111	6.6	50-150	30	06/16/2022 2132
PFTrDA	ND	14	14		1	104	4.9	50-150	30	06/16/2022 2132
PFUdA	ND	14	15		1	107	0.23	50-150	30	06/16/2022 2132
PFOS	ND	13	14		1	114	1.0	50-150	30	06/16/2022 2132

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	156	25-150
13C2_6:2FTS		140	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		89	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		112	25-150
13C4_PFBA		73	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		106	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XF07074-006MD
Batch: 45010
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/15/2022 1415

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		100	25-150
13C7_PFUdA		98	25-150
13C8_PFOA		115	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		116	25-150
d5-EtFOSAA		95	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45374-001
Batch: 45374
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/19/2022 1125
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/19/2022 1125
8:2 FTS	ND		1	8.0	1.6	ng/L	06/19/2022 1125
6:2 FTS	ND		1	8.0	2.0	ng/L	06/19/2022 1125
4:2 FTS	ND		1	8.0	0.87	ng/L	06/19/2022 1125
GenX	ND		1	8.0	2.1	ng/L	06/19/2022 1125
ADONA	ND		1	8.0	0.48	ng/L	06/19/2022 1125
EtFOSAA	ND		1	8.0	0.75	ng/L	06/19/2022 1125
MeFOSAA	ND		1	8.0	0.93	ng/L	06/19/2022 1125
PFBS	ND		1	4.0	0.41	ng/L	06/19/2022 1125
PFDS	ND		1	4.0	0.78	ng/L	06/19/2022 1125
PFHpS	ND		1	4.0	0.50	ng/L	06/19/2022 1125
PFNS	ND		1	4.0	0.71	ng/L	06/19/2022 1125
PFOSA	ND		1	4.0	0.61	ng/L	06/19/2022 1125
PFPeS	ND		1	4.0	0.59	ng/L	06/19/2022 1125
PFHxS	ND		1	4.0	0.55	ng/L	06/19/2022 1125
PFBA	ND		1	4.0	0.60	ng/L	06/19/2022 1125
PFDA	ND		1	4.0	0.52	ng/L	06/19/2022 1125
PFDoA	ND		1	4.0	0.47	ng/L	06/19/2022 1125
PFHpA	ND		1	4.0	0.45	ng/L	06/19/2022 1125
PFHxA	ND		1	4.0	0.69	ng/L	06/19/2022 1125
PFNA	ND		1	4.0	0.46	ng/L	06/19/2022 1125
PFOA	ND		1	4.0	0.83	ng/L	06/19/2022 1125
PFPeA	ND		1	4.0	0.54	ng/L	06/19/2022 1125
PFTeDA	ND		1	4.0	0.60	ng/L	06/19/2022 1125
PFTrDA	ND		1	4.0	0.53	ng/L	06/19/2022 1125
PFUdA	ND		1	4.0	0.63	ng/L	06/19/2022 1125
PFOS	ND		1	4.0	2.0	ng/L	06/19/2022 1125

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		101	25-150
13C2_6:2FTS		106	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45374-001
Batch: 45374
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		106	25-150
13C7_PFUdA		108	25-150
13C8_PFOA		100	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		91	25-150
d3-MeFOSAA		93	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45374-002
Batch: 45374
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	17		1	112	50-150	06/19/2022 1138
11Cl-PF3OUdS	15	16		1	108	50-150	06/19/2022 1138
8:2 FTS	15	17		1	111	50-150	06/19/2022 1138
6:2 FTS	15	18		1	119	50-150	06/19/2022 1138
4:2 FTS	15	18		1	119	50-150	06/19/2022 1138
GenX	32	38		1	120	50-150	06/19/2022 1138
ADONA	15	18		1	118	50-150	06/19/2022 1138
EtFOSAA	16	19		1	119	50-150	06/19/2022 1138
MeFOSAA	16	18		1	111	50-150	06/19/2022 1138
PFBS	14	16		1	116	50-150	06/19/2022 1138
PFDS	15	17		1	109	50-150	06/19/2022 1138
PFHpS	15	19		1	122	50-150	06/19/2022 1138
PFNS	15	17		1	113	50-150	06/19/2022 1138
PFOSA	16	19		1	120	50-150	06/19/2022 1138
PFPeS	15	17		1	115	50-150	06/19/2022 1138
PFHxS	15	17		1	117	50-150	06/19/2022 1138
PFBA	16	19		1	121	50-150	06/19/2022 1138
PFDA	16	20		1	123	50-150	06/19/2022 1138
PFDoA	16	20		1	125	50-150	06/19/2022 1138
PFHpA	16	19		1	119	50-150	06/19/2022 1138
PFHxA	16	18		1	114	50-150	06/19/2022 1138
PFNA	16	19		1	116	50-150	06/19/2022 1138
PFOA	16	18		1	115	50-150	06/19/2022 1138
PFPeA	16	19		1	121	50-150	06/19/2022 1138
PFTeDA	16	19		1	118	50-150	06/19/2022 1138
PFTrDA	16	19		1	121	50-150	06/19/2022 1138
PFUdA	16	19		1	116	50-150	06/19/2022 1138
PFOS	15	17		1	115	50-150	06/19/2022 1138

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		67	25-150
13C2_6:2FTS		72	25-150
13C2_8:2FTS		65	25-150
13C2_PFDoA		63	25-150
13C2_PFTeDA		62	25-150
13C3_PFBS		69	25-150
13C3_PFHxS		69	25-150
13C3-HFPO-DA		71	25-150
13C4_PFBA		71	25-150
13C4_PFHpA		72	25-150
13C5_PFHxA		71	25-150
13C5_PFPeA		66	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45374-002
Batch: 45374
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		68	25-150
13C7_PFUdA		68	25-150
13C8_PFOA		68	25-150
13C8_PFOS		71	25-150
13C8_PFOSA		70	10-150
13C9_PFNA		72	25-150
d5-EtFOSAA		63	25-150
d3-MeFOSAA		67	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS - MB

Sample ID: XQ45585-001
Batch: 45585
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/20/2022 1638

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
PFBA	ND		1	4.0	0.60	ng/L	06/23/2022 2158

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		97	25-150
13C2_6:2FTS	N	186	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		118	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		109	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		111	25-150
13C6_PFDA		112	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		112	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45585-002
Batch: 45585
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/20/2022 1638

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
PFBA	16	17		1	108	50-150	06/23/2022 2209

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS	N	209	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		82	25-150
13C3_PFBS		125	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		118	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		113	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		100	25-150
13C8_PFOA		112	25-150
13C8_PFOS		122	25-150
13C8_PFOSA		124	10-150
13C9_PFNA		114	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

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www.pacelabs.com

Number 135284

Client: Arcadis	Report to Contact: Tiffany Linder, Kathlyn Hunt	Telephone No. / E-mail: 810-225-1928 / Tiffany.LinderArcadis.com; 447-777-5215 / Kathlyn.HuntArcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Novi; State: MI; Zip Code: 48377	Printed Name: Austin Westhuis		XF07074
Project Name: RACER Lansing			KES2
Project No.: 30128892.0370A	P.O. No.		Remarks / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Comp/Grab	Matrix: Aqueous	Soil	Non-aqueous	No of Containers by Preservative Type: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Other	PFAS (3A_modified_537.1_Anal_Ltd_Sample_List_Rev_0.5_PA)	Remarks / Cooler I.D.
MW-04-05(6)_060222	6/2/22	1610	G	X			2							X	
MW-20-131_060222	6/2/22	1650	G	X			2							X	
MW-12-11_060222	6/2/22	0935	G	X			2							X	
MW-20-132_060222	6/2/22	1035	G	X			2							X	
MW-21-136_060222	6/2/22	1215	G	X			2							X	
MW-21-137_060222	6/2/22	1330	G	X			6							X	MS/MSD
MW-21-138_060222	6/2/22	1445	G	X			2							X	
MW-12-12_060222	6/2/22	1605	G	X			2							X	
MW-13-36R_060222	6/2/22	1705	G	X			2							X	
MW-14-67_060322	6/3/22	1015	G	X			2							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Austin Westhuis/Arcadis			1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by: Fed Ex	6-7-22	1630	4. Laboratory Received by	6-7-22	1635

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on Ice (Circle): Yes / No; Ice Pack; Receipt Temp: 4.7 °C; Temp Blank: ☐ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy *Report EGLE 28 Compounds

Document Number: ME0192-01

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www.pacelabs.com

Number 135284

Client: Arcadis	Report to Contact: Tiffany Linder, Kaitlyn Hunt	Telephone No. / Email: 248-295-1428 / Tiffany.Linder@arcadis.com; 949-777-5615 / Kaitlyn.Hunt@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x [signature]	Analysis (Attach list if more space is needed)	Page 2 of 2
City: Novi; State: MI; Zip Code: 48377	Printed Name: Austin Westhuis		XF07074
Project Name: RACER Lansing			KES2
Project No.: 30112892.0370A	P.O. No.		Remarks / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Composite (C) or Grab (G)	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No. of Containers by Preservative Type: Unpres.	HNO3	HCl	H2SO4	NaOH	Ascorbic Acid	Other	VOC method 8260 list of 57 target analytes per QSM 5.1	Remarks / Cooler I.D.
PB-SB-07_060322	6/3/22	1200	G	X			2							X	
MW-04-06R_060322	6/3/22	1100	G	X			3							X	Limited Sample Volume (1 bottle)
MW-04-04R_060322	6/3/22	1335	G	X			3							X	Limited Sample Volume (1 bottle)
Dup-16_060322	6/3/22	—	G	X			3							X	Limited Sample Volume (1 bottle)

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Relinquished by	Date	Time	Received by	Date	Time
1.	[signature] / Austin Westhuis / Arcadis					
2.						
3.						
4.	FedEx	6-7-22	1630	[signature]	6-7-22	1630

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on Ice (Circle): Yes / No — Ice Pack — Receipt Temp: 4.7 °C — Temp Blank: ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy * Report EGLE 28 compounds

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Arcadis Cooler Inspected by/date: TEC / 06/07/2022 Lot #: XF07014

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

4.7 / 4.7 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼" or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***NO***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: KDRW Date: 06/07/2022

Comments:

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER Lansing

Project Number: 30112892

Lot Number:**XF07076**

Date Completed:06/21/2022

06/21/2022 5:03 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
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Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XF07076

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples was in compliance with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XF07076

Project Name: RACER Lansing

Project Number: 30112892

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-14-61_060122	Aqueous	06/01/2022 1030	06/07/2022
002	MW-15-72_060122	Aqueous	06/01/2022 1715	06/07/2022
003	MW-16-81_060222	Aqueous	06/02/2022 1315	06/07/2022
004	MW-12-09_060422	Aqueous	06/04/2022 1400	06/07/2022
005	MW-12-18_060422	Aqueous	06/04/2022 1450	06/07/2022
006	EB-01_060122	Aqueous	06/01/2022 1250	06/07/2022
007	Dup-01_060422	Aqueous	06/04/2022	06/07/2022

(7 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XF07076

Project Name: RACER Lansing

Project Number: 30112892

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-14-61_060122	Aqueous	PFBA	PFAS by ID	2.4	J	ng/L	5
002	MW-15-72_060122	Aqueous	PFBA	PFAS by ID	4.1		ng/L	7
002	MW-15-72_060122	Aqueous	PFHxA	PFAS by ID	1.7	J	ng/L	7
002	MW-15-72_060122	Aqueous	PFPeA	PFAS by ID	3.4		ng/L	7
003	MW-16-81_060222	Aqueous	PFBA	PFAS by ID	9.1		ng/L	9
003	MW-16-81_060222	Aqueous	PFHpA	PFAS by ID	1.2	J	ng/L	9
003	MW-16-81_060222	Aqueous	PFHxA	PFAS by ID	3.5		ng/L	9
003	MW-16-81_060222	Aqueous	PFPeA	PFAS by ID	4.8		ng/L	9
004	MW-12-09_060422	Aqueous	PFBS	PFAS by ID	1.7	J	ng/L	11
004	MW-12-09_060422	Aqueous	PFPeS	PFAS by ID	0.69	J	ng/L	11
004	MW-12-09_060422	Aqueous	PFHxS	PFAS by ID	3.5		ng/L	11
004	MW-12-09_060422	Aqueous	PFBA	PFAS by ID	11		ng/L	11
004	MW-12-09_060422	Aqueous	PFHpA	PFAS by ID	6.6		ng/L	11
004	MW-12-09_060422	Aqueous	PFHxA	PFAS by ID	9.5		ng/L	11
004	MW-12-09_060422	Aqueous	PFNA	PFAS by ID	0.47	J	ng/L	11
004	MW-12-09_060422	Aqueous	PFOA	PFAS by ID	15		ng/L	11
004	MW-12-09_060422	Aqueous	PFPeA	PFAS by ID	7.0		ng/L	11
004	MW-12-09_060422	Aqueous	PFOS	PFAS by ID	2.9	J	ng/L	11
005	MW-12-18_060422	Aqueous	PFBS	PFAS by ID	0.75	J	ng/L	13
005	MW-12-18_060422	Aqueous	PFBA	PFAS by ID	3.9		ng/L	13
005	MW-12-18_060422	Aqueous	PFPeA	PFAS by ID	0.77	J	ng/L	13
007	Dup-01_060422	Aqueous	PFBS	PFAS by ID	0.78	J	ng/L	17
007	Dup-01_060422	Aqueous	PFBA	PFAS by ID	3.9		ng/L	17
007	Dup-01_060422	Aqueous	PFPeA	PFAS by ID	0.83	J	ng/L	17

(24 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07076-001**

Description: **MW-14-61_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1030** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/19/2022 1345	LAB	06/17/2022 1613	45374

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.4**	**J**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		133	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		107	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		112	25-150
13C4_PFBA		60	25-150
13C4_PFHpA		115	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		101	25-150
13C6_PFDA		110	25-150
13C7_PFUdA		108	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07076-001**

Description: **MW-14-61_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1030** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		115	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		114	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07076-002**

Description: **MW-15-72_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1715** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/19/2022 1423	LAB	06/17/2022 1613	45374

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.35	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**4.1**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.7**	**J**	**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.4**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		150	25-150
13C2_6:2FTS		113	25-150
13C2_8:2FTS		105	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		98	25-150
13C3_PFBS		107	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		62	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		92	25-150
13C6_PFDA		110	25-150
13C7_PFUdA		109	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07076-002**

Description: **MW-15-72_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1715** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		118	25-150
d5-EtFOSAA		94	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07076-003**

Description: **MW-16-81_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1315** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/19/2022 1436	LAB	06/17/2022 1613	45374

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.35	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.1**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.2**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.5**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**4.8**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		144	25-150
13C2_6:2FTS		101	25-150
13C2_8:2FTS		81	25-150
13C2_PFDoA		78	25-150
13C2_PFTeDA		79	25-150
13C3_PFBS		90	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		91	25-150
13C4_PFBA		37	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		94	25-150
13C5_PFPeA		73	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		83	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07076-003**
Description: **MW-16-81_060222**
Matrix: **Aqueous**
Date Sampled: **06/02/2022 1315**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		92	25-150
13C8_PFOS		89	25-150
13C8_PFOSA		88	10-150
13C9_PFNA		93	25-150
d5-EtFOSAA		74	25-150
d3-MeFOSAA		82	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07076-004**

Description: **MW-12-09_060422** Matrix: **Aqueous**

Date Sampled: **06/04/2022 1400** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/19/2022 1514	LAB	06/17/2022 1613	45374

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.69**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.5**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.6**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**9.5**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.47**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**15**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**7.0**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.9**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		125	25-150
13C2_6:2FTS		103	25-150
13C2_8:2FTS		87	25-150
13C2_PFDoA		83	25-150
13C2_PFTeDA		77	25-150
13C3_PFBS		87	25-150
13C3_PFHxS		90	25-150
13C3-HFPO-DA		88	25-150
13C4_PFBA		67	25-150
13C4_PFHpA		87	25-150
13C5_PFHxA		87	25-150
13C5_PFPeA		83	25-150
13C6_PFDA		87	25-150
13C7_PFUdA		86	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07076-004**
Description: **MW-12-09_060422**
Matrix: **Aqueous**
Date Sampled: **06/04/2022 1400**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		88	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		90	10-150
13C9_PFNA		92	25-150
d5-EtFOSAA		81	25-150
d3-MeFOSAA		86	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07076-005**

Description: **MW-12-18_060422** Matrix: **Aqueous**

Date Sampled: **06/04/2022 1450** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/19/2022 1527	LAB	06/17/2022 1613	45374

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.75**	**J**	**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.9**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.77**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		74	25-150
13C2_6:2FTS		73	25-150
13C2_8:2FTS		69	25-150
13C2_PFDoA		68	25-150
13C2_PFTeDA		65	25-150
13C3_PFBS		69	25-150
13C3_PFHxS		72	25-150
13C3-HFPO-DA		73	25-150
13C4_PFBA		54	25-150
13C4_PFHpA		71	25-150
13C5_PFHxA		71	25-150
13C5_PFPeA		71	25-150
13C6_PFDA		71	25-150
13C7_PFUdA		69	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07076-005**
Description: **MW-12-18_060422**
Matrix: **Aqueous**
Date Sampled: **06/04/2022 1450**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		68	25-150
13C8_PFOS		71	25-150
13C8_PFOSA		70	10-150
13C9_PFNA		72	25-150
d5-EtFOSAA		66	25-150
d3-MeFOSAA		68	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07076-006**

Description: **EB-01_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1250** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/19/2022 1539	LAB	06/17/2022 1613	45374

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		86	25-150
13C2_6:2FTS		92	25-150
13C2_8:2FTS		83	25-150
13C2_PFDoA		80	25-150
13C2_PFTeDA		77	25-150
13C3_PFBS		83	25-150
13C3_PFHxS		87	25-150
13C3-HFPO-DA		90	25-150
13C4_PFBA		91	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		86	25-150
13C5_PFPeA		84	25-150
13C6_PFDA		60	25-150
13C7_PFUdA		85	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07076-006**

Description: **EB-01_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1250** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		83	25-150
13C8_PFOS		85	25-150
13C8_PFOSA		88	10-150
13C9_PFNA		88	25-150
d5-EtFOSAA		78	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07076-007**

Description: **Dup-01_060422** Matrix: **Aqueous**

Date Sampled: **06/04/2022** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/19/2022 1552	LAB	06/17/2022 1613	45374

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.78**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.9**		**3.6**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.83**	**J**	**3.6**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		120	25-150
13C2_6:2FTS		102	25-150
13C2_8:2FTS		100	25-150
13C2_PFDoA		94	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		69	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		98	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		99	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07076-007**
Description: **Dup-01_060422**
Matrix: **Aqueous**
Date Sampled: **06/04/2022**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		101	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ45374-001
Batch: 45374
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/19/2022 1125
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/19/2022 1125
8:2 FTS	ND		1	8.0	1.6	ng/L	06/19/2022 1125
6:2 FTS	ND		1	8.0	2.0	ng/L	06/19/2022 1125
4:2 FTS	ND		1	8.0	0.87	ng/L	06/19/2022 1125
GenX	ND		1	8.0	2.1	ng/L	06/19/2022 1125
ADONA	ND		1	8.0	0.48	ng/L	06/19/2022 1125
EtFOSAA	ND		1	8.0	0.75	ng/L	06/19/2022 1125
MeFOSAA	ND		1	8.0	0.93	ng/L	06/19/2022 1125
PFBS	ND		1	4.0	0.41	ng/L	06/19/2022 1125
PFDS	ND		1	4.0	0.78	ng/L	06/19/2022 1125
PFHpS	ND		1	4.0	0.50	ng/L	06/19/2022 1125
PFNS	ND		1	4.0	0.71	ng/L	06/19/2022 1125
PFOSA	ND		1	4.0	0.61	ng/L	06/19/2022 1125
PFPeS	ND		1	4.0	0.59	ng/L	06/19/2022 1125
PFHxS	ND		1	4.0	0.55	ng/L	06/19/2022 1125
PFBA	ND		1	4.0	0.60	ng/L	06/19/2022 1125
PFDA	ND		1	4.0	0.52	ng/L	06/19/2022 1125
PFDoA	ND		1	4.0	0.47	ng/L	06/19/2022 1125
PFHpA	ND		1	4.0	0.45	ng/L	06/19/2022 1125
PFHxA	ND		1	4.0	0.69	ng/L	06/19/2022 1125
PFNA	ND		1	4.0	0.46	ng/L	06/19/2022 1125
PFOA	ND		1	4.0	0.83	ng/L	06/19/2022 1125
PFPeA	ND		1	4.0	0.54	ng/L	06/19/2022 1125
PFTeDA	ND		1	4.0	0.60	ng/L	06/19/2022 1125
PFTrDA	ND		1	4.0	0.53	ng/L	06/19/2022 1125
PFUdA	ND		1	4.0	0.63	ng/L	06/19/2022 1125
PFOS	ND		1	4.0	2.0	ng/L	06/19/2022 1125

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		101	25-150
13C2_6:2FTS		106	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45374-001
Batch: 45374
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		106	25-150
13C7_PFUdA		108	25-150
13C8_PFOA		100	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		91	25-150
d3-MeFOSAA		93	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45374-002
Batch: 45374
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	17		1	112	50-150	06/19/2022 1138
11Cl-PF3OUdS	15	16		1	108	50-150	06/19/2022 1138
8:2 FTS	15	17		1	111	50-150	06/19/2022 1138
6:2 FTS	15	18		1	119	50-150	06/19/2022 1138
4:2 FTS	15	18		1	119	50-150	06/19/2022 1138
GenX	32	38		1	120	50-150	06/19/2022 1138
ADONA	15	18		1	118	50-150	06/19/2022 1138
EtFOSAA	16	19		1	119	50-150	06/19/2022 1138
MeFOSAA	16	18		1	111	50-150	06/19/2022 1138
PFBS	14	16		1	116	50-150	06/19/2022 1138
PFDS	15	17		1	109	50-150	06/19/2022 1138
PFHpS	15	19		1	122	50-150	06/19/2022 1138
PFNS	15	17		1	113	50-150	06/19/2022 1138
PFOSA	16	19		1	120	50-150	06/19/2022 1138
PFPeS	15	17		1	115	50-150	06/19/2022 1138
PFHxS	15	17		1	117	50-150	06/19/2022 1138
PFBA	16	19		1	121	50-150	06/19/2022 1138
PFDA	16	20		1	123	50-150	06/19/2022 1138
PFDoA	16	20		1	125	50-150	06/19/2022 1138
PFHpA	16	19		1	119	50-150	06/19/2022 1138
PFHxA	16	18		1	114	50-150	06/19/2022 1138
PFNA	16	19		1	116	50-150	06/19/2022 1138
PFOA	16	18		1	115	50-150	06/19/2022 1138
PFPeA	16	19		1	121	50-150	06/19/2022 1138
PFTeDA	16	19		1	118	50-150	06/19/2022 1138
PFTrDA	16	19		1	121	50-150	06/19/2022 1138
PFUdA	16	19		1	116	50-150	06/19/2022 1138
PFOS	15	17		1	115	50-150	06/19/2022 1138

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		67	25-150
13C2_6:2FTS		72	25-150
13C2_8:2FTS		65	25-150
13C2_PFDoA		63	25-150
13C2_PFTeDA		62	25-150
13C3_PFBS		69	25-150
13C3_PFHxS		69	25-150
13C3-HFPO-DA		71	25-150
13C4_PFBA		71	25-150
13C4_PFHpA		72	25-150
13C5_PFHxA		71	25-150
13C5_PFPeA		66	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45374-002
Batch: 45374
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		68	25-150
13C7_PFUdA		68	25-150
13C8_PFOA		68	25-150
13C8_PFOS		71	25-150
13C8_PFOSA		70	10-150
13C9_PFNA		72	25-150
d5-EtFOSAA		63	25-150
d3-MeFOSAA		67	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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PFAS by LC/MS/MS - MS

Sample ID: XF07076-003MS
Batch: 45374
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	14		1	108	50-150	06/19/2022 1449
11Cl-PF3OUdS	ND	13	13		1	100	50-150	06/19/2022 1449
8:2 FTS	ND	13	15		1	110	50-150	06/19/2022 1449
6:2 FTS	ND	13	15		1	115	50-150	06/19/2022 1449
4:2 FTS	ND	13	14		1	108	50-150	06/19/2022 1449
GenX	ND	28	32		1	115	50-150	06/19/2022 1449
ADONA	ND	13	14		1	108	50-150	06/19/2022 1449
EtFOSAA	ND	14	16		1	118	50-150	06/19/2022 1449
MeFOSAA	ND	14	14		1	104	50-150	06/19/2022 1449
PFBS	ND	12	13		1	110	50-150	06/19/2022 1449
PFDS	ND	13	14		1	108	50-150	06/19/2022 1449
PFHpS	ND	13	14		1	110	50-150	06/19/2022 1449
PFNS	ND	13	14		1	106	50-150	06/19/2022 1449
PFOSA	ND	14	16		1	118	50-150	06/19/2022 1449
PFPeS	ND	13	16		1	121	50-150	06/19/2022 1449
PFHxS	ND	13	14		1	111	50-150	06/19/2022 1449
PFBA	9.1	14	24		1	108	50-150	06/19/2022 1449
PFDA	ND	14	15		1	111	50-150	06/19/2022 1449
PFDoA	ND	14	16		1	113	50-150	06/19/2022 1449
PFHpA	1.2	14	17		1	112	50-150	06/19/2022 1449
PFHxA	3.5	14	18		1	107	50-150	06/19/2022 1449
PFNA	ND	14	15		1	110	50-150	06/19/2022 1449
PFOA	ND	14	15		1	110	50-150	06/19/2022 1449
PFPeA	4.8	14	20		1	108	50-150	06/19/2022 1449
PFTeDA	ND	14	16		1	114	50-150	06/19/2022 1449
PFTrDA	ND	14	15		1	110	50-150	06/19/2022 1449
PFUdA	ND	14	15		1	110	50-150	06/19/2022 1449
PFOS	ND	13	14		1	113	50-150	06/19/2022 1449

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	180	25-150
13C2_6:2FTS		113	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		37	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		80	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XF07076-003MS
Batch: 45374
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		97	25-150
13C7_PFUdA		98	25-150
13C8_PFOA		107	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		105	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		90	25-150
d3-MeFOSAA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XF07076-003MD
Batch: 45374
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	13	14		1	107	0.42	50-150	30	06/19/2022 1501
11Cl-PF3OUdS	ND	13	13		1	102	3.5	50-150	30	06/19/2022 1501
8:2 FTS	ND	13	13		1	99	10	50-150	30	06/19/2022 1501
6:2 FTS	ND	13	16		1	122	7.1	50-150	30	06/19/2022 1501
4:2 FTS	ND	13	14		1	108	1.5	50-150	30	06/19/2022 1501
GenX	ND	28	32		1	113	0.14	50-150	30	06/19/2022 1501
ADONA	ND	13	14		1	109	2.6	50-150	30	06/19/2022 1501
EtFOSAA	ND	14	15		1	109	6.6	50-150	30	06/19/2022 1501
MeFOSAA	ND	14	15		1	104	1.9	50-150	30	06/19/2022 1501
PFBS	ND	12	14		1	112	3.2	50-150	30	06/19/2022 1501
PFDS	ND	13	15		1	108	1.1	50-150	30	06/19/2022 1501
PFHpS	ND	13	16		1	118	8.4	50-150	30	06/19/2022 1501
PFNS	ND	13	14		1	105	0.77	50-150	30	06/19/2022 1501
PFOSA	ND	14	17		1	118	1.4	50-150	30	06/19/2022 1501
PFPeS	ND	13	15		1	116	2.9	50-150	30	06/19/2022 1501
PFHxS	ND	13	14		1	112	2.0	50-150	30	06/19/2022 1501
PFBA	9.1	14	26		1	118	6.5	50-150	30	06/19/2022 1501
PFDA	ND	14	17		1	122	10	50-150	30	06/19/2022 1501
PFDoA	ND	14	16		1	113	1.2	50-150	30	06/19/2022 1501
PFHpA	1.2	14	17		1	112	1.1	50-150	30	06/19/2022 1501
PFHxA	3.5	14	18		1	103	1.8	50-150	30	06/19/2022 1501
PFNA	ND	14	16		1	115	5.7	50-150	30	06/19/2022 1501
PFOA	ND	14	16		1	117	7.2	50-150	30	06/19/2022 1501
PFPeA	4.8	14	20		1	107	0.38	50-150	30	06/19/2022 1501
PFTeDA	ND	14	16		1	116	2.6	50-150	30	06/19/2022 1501
PFTrDA	ND	14	16		1	115	5.5	50-150	30	06/19/2022 1501
PFUdA	ND	14	16		1	114	5.3	50-150	30	06/19/2022 1501
PFOS	ND	13	15		1	113	1.2	50-150	30	06/19/2022 1501

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		105	25-150
13C2_6:2FTS		72	25-150
13C2_8:2FTS		65	25-150
13C2_PFDoA		67	25-150
13C2_PFTeDA		65	25-150
13C3_PFBS		70	25-150
13C3_PFHxS		72	25-150
13C3-HFPO-DA		72	25-150
13C4_PFBA		31	25-150
13C4_PFHpA		74	25-150
13C5_PFHxA		73	25-150
13C5_PFPeA		59	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XF07076-003MD
Batch: 45374
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/17/2022 1613

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		66	25-150
13C7_PFUdA		68	25-150
13C8_PFOA		71	25-150
13C8_PFOS		71	25-150
13C8_PFOSA		70	10-150
13C9_PFNA		71	25-150
d5-EtFOSAA		62	25-150
d3-MeFOSAA		65	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

Plant 2

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 135285

Client: Arcadis	Report to Contact: Kaitlyn Hunt	Telephone No. / E-mail: 947 777 5215 / Kaitlyn.Hunt@arcadis.com	Quote No.
Address: 28550 Cabot Dr Suite 500	Sampler's Signature: x Donald Richmond	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Novi	State: MI	Zip Code: 48377	Printed Name: Donald Richmond		
Project Name: Racer Lansing			
Project No.: 30112892	P.O. No.		

XF07076
KBS2

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab / Composite	Matrix: Aqueous	Solid	Non-Aqueous	No. of Containers by Preservative Type: Unpres	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Filter Filtered	PFAS 537 modified 533 (analytes present on SOP)	Remarks / Cooler I.D.
MW-14-61_060122	6/1/22	1030	G	X			X							X	
MW-15-72_060122	6/1/22	1715	G	X			X							X	
MW-16-81_060222	6/2/22	1315	G	X			X							X	← MS/MSD Taken
MW-12-09_060422	6/4/22	1400	G	X			X							X	
MW-12-18_060422	6/4/22	1450	G	X			X							X	
EB-01_060122	6/1/22	1250	G	X			X							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☐ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by			1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by: FedEx	6-1-22	1630	4. Laboratory Received by	6-7-22	1630

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on Ice (Circle): (Yes) No — Ice Pack — Receipt Temp: 4.7 °C — Temp Blank: ☐ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

* Report EGLE 28 compounds

Document Number: MED03N2-01

PACE ANALYTICAL SERVICES, LLC

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Arcadis
Cooler Inspected by/date: TEC / 06/07/2022
Lot #: XF07076

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

4.7 / 4.7 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: KDRW Date: 06/07/2022

Comments: Excess: Dup-01_060M22 not listed on COC

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Tiffany Linder

Project Name: RACER Lansing

Project Number: 30112892.0370A

Lot Number:**XF07078**

Date Completed:06/24/2022

Kathy Smith

06/24/2022 4:10 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XF07078

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples was in compliance with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Sample XF07078-005, XF07078-009, XF07078-010, XF07078-011, XF07078-012, XF07078-014, XF07078-015, XF07078-016, XF07078-018, XF07078-019, XF07078-020 had surrogates recovered outside of the acceptance limits due to confirmed matrix interference.

Sample Summary
Arcadis U.S., Inc.
Lot Number: XF07078
Project Name: RACER Lansing
Project Number: 30112892.0370A

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-22-143_060122	Aqueous	06/01/2022 1045	06/07/2022
002	MW-22-144_060122	Aqueous	06/01/2022 1200	06/07/2022
003	MW-22-145_060122	Aqueous	06/01/2022 1235	06/07/2022
004	Dup-17_060122	Aqueous	06/01/2022	06/07/2022
005	MW-22-146_060122	Aqueous	06/01/2022 1315	06/07/2022
006	MW-22-147_060122	Aqueous	06/01/2022 1400	06/07/2022
007	MW-22-148_060122	Aqueous	06/01/2022 1430	06/07/2022
008	EB-02_060122	Aqueous	06/01/2022 1445	06/07/2022
009	MW-22-149_060122	Aqueous	06/01/2022 1340	06/07/2022
010	MW-22-150_060122	Aqueous	06/01/2022 1105	06/07/2022
011	MW-22-151_060122	Aqueous	06/01/2022 1225	06/07/2022
012	MW-22-152_060122	Aqueous	06/01/2022 1440	06/07/2022
013	EB-03_060122	Aqueous	06/01/2022 1000	06/07/2022
014	MW-14-70_060222	Aqueous	06/02/2022 0955	06/07/2022
015	MW-12-13_060222	Aqueous	06/02/2022 1055	06/07/2022
016	MW-21-133_060222	Aqueous	06/02/2022 1150	06/07/2022
017	MW-21-134_060222	Aqueous	06/02/2022 1250	06/07/2022
018	MW-21-135_060222	Aqueous	06/02/2022 1430	06/07/2022
019	MW-12-10R_060222	Aqueous	06/02/2022 1520	06/07/2022
020	Dup-15_060222	Aqueous	06/02/2022	06/07/2022

(20 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XF07078

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-22-143_060122	Aqueous	PFBS	PFAS by ID	1.0	J	ng/L	7
001	MW-22-143_060122	Aqueous	PFBA	PFAS by ID	9.7		ng/L	7
001	MW-22-143_060122	Aqueous	PFHpA	PFAS by ID	5.9		ng/L	7
001	MW-22-143_060122	Aqueous	PFHxA	PFAS by ID	16		ng/L	7
001	MW-22-143_060122	Aqueous	PFOA	PFAS by ID	4.1		ng/L	7
001	MW-22-143_060122	Aqueous	PFPeA	PFAS by ID	12		ng/L	7
002	MW-22-144_060122	Aqueous	PFBS	PFAS by ID	2.3	J	ng/L	9
002	MW-22-144_060122	Aqueous	PFHxS	PFAS by ID	2.2	J	ng/L	9
002	MW-22-144_060122	Aqueous	PFBA	PFAS by ID	5.4		ng/L	9
002	MW-22-144_060122	Aqueous	PFHpA	PFAS by ID	4.5		ng/L	9
002	MW-22-144_060122	Aqueous	PFHxA	PFAS by ID	10		ng/L	9
002	MW-22-144_060122	Aqueous	PFOA	PFAS by ID	7.5		ng/L	9
002	MW-22-144_060122	Aqueous	PFPeA	PFAS by ID	9.9		ng/L	9
003	MW-22-145_060122	Aqueous	PFBS	PFAS by ID	3.0	J	ng/L	11
003	MW-22-145_060122	Aqueous	PFPeS	PFAS by ID	0.54	J	ng/L	11
003	MW-22-145_060122	Aqueous	PFHxS	PFAS by ID	1.9	J	ng/L	11
003	MW-22-145_060122	Aqueous	PFBA	PFAS by ID	5.5		ng/L	11
003	MW-22-145_060122	Aqueous	PFHpA	PFAS by ID	5.8		ng/L	11
003	MW-22-145_060122	Aqueous	PFHxA	PFAS by ID	9.7		ng/L	11
003	MW-22-145_060122	Aqueous	PFNA	PFAS by ID	0.75	J	ng/L	11
003	MW-22-145_060122	Aqueous	PFOA	PFAS by ID	14		ng/L	11
003	MW-22-145_060122	Aqueous	PFPeA	PFAS by ID	9.5		ng/L	11
003	MW-22-145_060122	Aqueous	PFOS	PFAS by ID	6.8		ng/L	11
004	Dup-17_060122	Aqueous	PFBS	PFAS by ID	2.8	J	ng/L	13
004	Dup-17_060122	Aqueous	PFPeS	PFAS by ID	0.51	J	ng/L	13
004	Dup-17_060122	Aqueous	PFHxS	PFAS by ID	2.1	J	ng/L	13
004	Dup-17_060122	Aqueous	PFBA	PFAS by ID	5.6		ng/L	13
004	Dup-17_060122	Aqueous	PFHpA	PFAS by ID	6.0		ng/L	13
004	Dup-17_060122	Aqueous	PFHxA	PFAS by ID	8.7		ng/L	13
004	Dup-17_060122	Aqueous	PFNA	PFAS by ID	0.79	J	ng/L	13
004	Dup-17_060122	Aqueous	PFOA	PFAS by ID	14		ng/L	13
004	Dup-17_060122	Aqueous	PFPeA	PFAS by ID	8.8		ng/L	13
004	Dup-17_060122	Aqueous	PFOS	PFAS by ID	6.9		ng/L	13
005	MW-22-146_060122	Aqueous	PFBS	PFAS by ID	6.0		ng/L	15
005	MW-22-146_060122	Aqueous	PFHxS	PFAS by ID	1.2	J	ng/L	15
005	MW-22-146_060122	Aqueous	PFBA	PFAS by ID	16		ng/L	15
005	MW-22-146_060122	Aqueous	PFHpA	PFAS by ID	1.0	J	ng/L	15
005	MW-22-146_060122	Aqueous	PFHxA	PFAS by ID	5.8		ng/L	15
005	MW-22-146_060122	Aqueous	PFOA	PFAS by ID	5.8		ng/L	15
005	MW-22-146_060122	Aqueous	PFPeA	PFAS by ID	4.9		ng/L	15
005	MW-22-146_060122	Aqueous	PFOS	PFAS by ID	1.9	J	ng/L	15
006	MW-22-147_060122	Aqueous	PFBS	PFAS by ID	3.2	J	ng/L	17
006	MW-22-147_060122	Aqueous	PFHxS	PFAS by ID	1.4	J	ng/L	17

Detection Summary (Continued)

Lot Number: XF07078

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
006	MW-22-147_060122	Aqueous	PFBA	PFAS by ID	6.1		ng/L	17
006	MW-22-147_060122	Aqueous	PFHpA	PFAS by ID	1.4	J	ng/L	17
006	MW-22-147_060122	Aqueous	PFHxA	PFAS by ID	2.7	J	ng/L	17
006	MW-22-147_060122	Aqueous	PFOA	PFAS by ID	3.7		ng/L	17
006	MW-22-147_060122	Aqueous	PFPeA	PFAS by ID	2.9	J	ng/L	17
006	MW-22-147_060122	Aqueous	PFOS	PFAS by ID	2.2	J	ng/L	17
007	MW-22-148_060122	Aqueous	PFBS	PFAS by ID	1.0	J	ng/L	19
007	MW-22-148_060122	Aqueous	PFBA	PFAS by ID	0.88	J	ng/L	19
009	MW-22-149_060122	Aqueous	PFBS	PFAS by ID	1.4	J	ng/L	23
009	MW-22-149_060122	Aqueous	PFHxS	PFAS by ID	0.91	J	ng/L	23
009	MW-22-149_060122	Aqueous	PFBA	PFAS by ID	0.91	J	ng/L	23
009	MW-22-149_060122	Aqueous	PFHpA	PFAS by ID	0.41	J	ng/L	23
009	MW-22-149_060122	Aqueous	PFOA	PFAS by ID	1.1	J	ng/L	23
010	MW-22-150_060122	Aqueous	PFOSA	PFAS by ID	1.6	J	ng/L	25
010	MW-22-150_060122	Aqueous	PFBA	PFAS by ID	2.9	J	ng/L	25
010	MW-22-150_060122	Aqueous	PFHxA	PFAS by ID	1.2	J	ng/L	25
010	MW-22-150_060122	Aqueous	PFPeA	PFAS by ID	1.7	J	ng/L	25
011	MW-22-151_060122	Aqueous	6:2 FTS	PFAS by ID	5.3	JQ	ng/L	27
011	MW-22-151_060122	Aqueous	PFBS	PFAS by ID	8.4		ng/L	27
011	MW-22-151_060122	Aqueous	PFBA	PFAS by ID	10		ng/L	27
011	MW-22-151_060122	Aqueous	PFHpA	PFAS by ID	2.7	J	ng/L	27
011	MW-22-151_060122	Aqueous	PFHxA	PFAS by ID	6.2		ng/L	27
011	MW-22-151_060122	Aqueous	PFNA	PFAS by ID	0.39	J	ng/L	27
011	MW-22-151_060122	Aqueous	PFOA	PFAS by ID	7.7		ng/L	27
011	MW-22-151_060122	Aqueous	PFPeA	PFAS by ID	14		ng/L	27
011	MW-22-151_060122	Aqueous	PFOS	PFAS by ID	3.4		ng/L	27
012	MW-22-152_060122	Aqueous	PFBS	PFAS by ID	2.1	J	ng/L	29
012	MW-22-152_060122	Aqueous	PFHxS	PFAS by ID	1.8	J	ng/L	29
012	MW-22-152_060122	Aqueous	PFBA	PFAS by ID	4.0		ng/L	29
012	MW-22-152_060122	Aqueous	PFHpA	PFAS by ID	0.99	J	ng/L	29
012	MW-22-152_060122	Aqueous	PFHxA	PFAS by ID	2.6	J	ng/L	29
012	MW-22-152_060122	Aqueous	PFOA	PFAS by ID	2.5	J	ng/L	29
012	MW-22-152_060122	Aqueous	PFPeA	PFAS by ID	3.0	J	ng/L	29
014	MW-14-70_060222	Aqueous	PFBS	PFAS by ID	7.9		ng/L	33
014	MW-14-70_060222	Aqueous	PFHxS	PFAS by ID	3.0	J	ng/L	33
014	MW-14-70_060222	Aqueous	PFBA	PFAS by ID	44		ng/L	33
014	MW-14-70_060222	Aqueous	PFHpA	PFAS by ID	46		ng/L	33
014	MW-14-70_060222	Aqueous	PFHxA	PFAS by ID	80		ng/L	33
014	MW-14-70_060222	Aqueous	PFNA	PFAS by ID	0.44	J	ng/L	33
014	MW-14-70_060222	Aqueous	PFOA	PFAS by ID	34		ng/L	33
014	MW-14-70_060222	Aqueous	PFPeA	PFAS by ID	100		ng/L	33
015	MW-12-13_060222	Aqueous	PFBS	PFAS by ID	2.7	J	ng/L	35
015	MW-12-13_060222	Aqueous	PFBA	PFAS by ID	26		ng/L	35
015	MW-12-13_060222	Aqueous	PFHpA	PFAS by ID	15		ng/L	35
015	MW-12-13_060222	Aqueous	PFHxA	PFAS by ID	54		ng/L	35
015	MW-12-13_060222	Aqueous	PFOA	PFAS by ID	2.3	J	ng/L	35
015	MW-12-13_060222	Aqueous	PFPeA	PFAS by ID	38		ng/L	35
016	MW-21-133_060222	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	37

Detection Summary (Continued)

Lot Number: XF07078

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
016	MW-21-133_060222	Aqueous	PFPeS	PFAS by ID	0.54	J	ng/L	37
016	MW-21-133_060222	Aqueous	PFHxS	PFAS by ID	1.7	J	ng/L	37
016	MW-21-133_060222	Aqueous	PFBA	PFAS by ID	14		ng/L	37
016	MW-21-133_060222	Aqueous	PFHpA	PFAS by ID	17		ng/L	37
016	MW-21-133_060222	Aqueous	PFHxA	PFAS by ID	24		ng/L	37
016	MW-21-133_060222	Aqueous	PFNA	PFAS by ID	1.1	J	ng/L	37
016	MW-21-133_060222	Aqueous	PFOA	PFAS by ID	43		ng/L	37
016	MW-21-133_060222	Aqueous	PFPeA	PFAS by ID	22		ng/L	37
016	MW-21-133_060222	Aqueous	PFOS	PFAS by ID	4.6		ng/L	37
017	MW-21-134_060222	Aqueous	PFBS	PFAS by ID	1.9	J	ng/L	39
017	MW-21-134_060222	Aqueous	PFPeS	PFAS by ID	0.77	J	ng/L	39
017	MW-21-134_060222	Aqueous	PFHxS	PFAS by ID	2.0	J	ng/L	39
017	MW-21-134_060222	Aqueous	PFBA	PFAS by ID	13		ng/L	39
017	MW-21-134_060222	Aqueous	PFHpA	PFAS by ID	15		ng/L	39
017	MW-21-134_060222	Aqueous	PFHxA	PFAS by ID	22		ng/L	39
017	MW-21-134_060222	Aqueous	PFOA	PFAS by ID	23		ng/L	39
017	MW-21-134_060222	Aqueous	PFPeA	PFAS by ID	21		ng/L	39
017	MW-21-134_060222	Aqueous	PFOS	PFAS by ID	4.2		ng/L	39
018	MW-21-135_060222	Aqueous	PFBS	PFAS by ID	1.9	J	ng/L	41
018	MW-21-135_060222	Aqueous	PFPeS	PFAS by ID	1.2	J	ng/L	41
018	MW-21-135_060222	Aqueous	PFHxS	PFAS by ID	1.6	J	ng/L	41
018	MW-21-135_060222	Aqueous	PFBA	PFAS by ID	12		ng/L	41
018	MW-21-135_060222	Aqueous	PFHpA	PFAS by ID	47		ng/L	41
018	MW-21-135_060222	Aqueous	PFHxA	PFAS by ID	39		ng/L	41
018	MW-21-135_060222	Aqueous	PFNA	PFAS by ID	1.1	J	ng/L	41
018	MW-21-135_060222	Aqueous	PFOA	PFAS by ID	38		ng/L	41
018	MW-21-135_060222	Aqueous	PFPeA	PFAS by ID	39		ng/L	41
018	MW-21-135_060222	Aqueous	PFOS	PFAS by ID	2.1	J	ng/L	41
019	MW-12-10R_060222	Aqueous	PFBS	PFAS by ID	5.5		ng/L	43
019	MW-12-10R_060222	Aqueous	PFBA	PFAS by ID	9.6		ng/L	43
019	MW-12-10R_060222	Aqueous	PFHpA	PFAS by ID	3.5		ng/L	43
019	MW-12-10R_060222	Aqueous	PFHxA	PFAS by ID	4.5		ng/L	43
019	MW-12-10R_060222	Aqueous	PFNA	PFAS by ID	0.76	J	ng/L	43
019	MW-12-10R_060222	Aqueous	PFOA	PFAS by ID	8.9		ng/L	43
019	MW-12-10R_060222	Aqueous	PFPeA	PFAS by ID	5.3		ng/L	43
019	MW-12-10R_060222	Aqueous	PFOS	PFAS by ID	7.6		ng/L	43
020	Dup-15_060222	Aqueous	PFBS	PFAS by ID	7.9		ng/L	45
020	Dup-15_060222	Aqueous	PFHxS	PFAS by ID	1.4	J	ng/L	45
020	Dup-15_060222	Aqueous	PFBA	PFAS by ID	9.4		ng/L	45
020	Dup-15_060222	Aqueous	PFHpA	PFAS by ID	3.9		ng/L	45
020	Dup-15_060222	Aqueous	PFHxA	PFAS by ID	4.7		ng/L	45
020	Dup-15_060222	Aqueous	PFNA	PFAS by ID	0.63	J	ng/L	45
020	Dup-15_060222	Aqueous	PFOA	PFAS by ID	8.8		ng/L	45
020	Dup-15_060222	Aqueous	PFPeA	PFAS by ID	5.3		ng/L	45
020	Dup-15_060222	Aqueous	PFOS	PFAS by ID	7.7		ng/L	45

(136 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-001**

Description: **MW-22-143_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1045** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2230	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.0**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.7**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**5.9**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**16**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**4.1**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**12**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		124	25-150
13C2_6:2FTS		108	25-150
13C2_8:2FTS		83	25-150
13C2_PFDoA		87	25-150
13C2_PFTeDA		75	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		92	25-150
13C3-HFPO-DA		85	25-150
13C4_PFBA		77	25-150
13C4_PFHpA		88	25-150
13C5_PFHxA		88	25-150
13C5_PFPeA		89	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		88	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF07078-001**
Description: **MW-22-143_060122**		Matrix: **Aqueous**
Date Sampled: **06/01/2022 1045**	Project Name: **RACER Lansing**	
Date Received: **06/07/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		84	25-150
13C8_PFOS		92	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		93	25-150
d5-EtFOSAA		84	25-150
d3-MeFOSAA		88	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-002**

Description: **MW-22-144_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1200** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2240	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.3	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.3**	**J**	**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.2**	**J**	**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.4**		**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**4.5**		**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**10**		**3.6**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.5**		**3.6**	**0.76**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**9.9**		**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		111	25-150
13C2_6:2FTS		124	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		109	25-150
13C2_PFTeDA		103	25-150
13C3_PFBS		110	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		116	25-150
13C6_PFDA		95	25-150
13C7_PFUdA		109	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-002**
Description: **MW-22-144_060122**
Matrix: **Aqueous**
Date Sampled: **06/01/2022 1200**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		112	25-150
13C8_PFOSA		117	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-003**

Description: **MW-22-145_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1235** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2251	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.0**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.54**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.9**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.5**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**5.8**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**9.7**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.75**	**J**	**3.4**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**14**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**9.5**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**6.8**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		94	25-150
13C2_6:2FTS		75	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		94	25-150
13C3_PFBS		120	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		106	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		105	25-150
13C6_PFDA		106	25-150
13C7_PFUdA		99	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-003**
Description: **MW-22-145_060122**
Matrix: **Aqueous**
Date Sampled: **06/01/2022 1235**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		98	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		97	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-004**

Description: **Dup-17_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2302	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.7	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.8**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.51**	**J**	**3.4**	**0.50**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.1**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.6**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.0**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**8.7**		**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.79**	**J**	**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**14**		**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**8.8**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**6.9**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		96	25-150
13C2_6:2FTS		122	25-150
13C2_8:2FTS		110	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		94	25-150
13C3_PFBS		112	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		112	25-150
13C6_PFDA		109	25-150
13C7_PFUdA		99	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-004**
Description: **Dup-17_060122**
Matrix: **Aqueous**
Date Sampled: **06/01/2022**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		101	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		100	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-005**

Description: **MW-22-146_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1315** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2312	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**6.0**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**16**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.0**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**5.8**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.8**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**4.9**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1.9**	**J**	**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	154	25-150
13C2_6:2FTS		133	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		111	25-150
13C2_PFTeDA		97	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		64	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		94	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		95	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-005**
Description: **MW-22-146_060122**
Matrix: **Aqueous**
Date Sampled: **06/01/2022 1315**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		101	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-006**

Description: **MW-22-147_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1400** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2323	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.2**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.4**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**6.1**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.4**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.7**	**J**	**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**3.7**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.9**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.2**	**J**	**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		150	25-150
13C2_6:2FTS		145	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		91	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		115	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		84	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		106	25-150
13C7_PFUdA		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-006**
Description: **MW-22-147_060122**
Matrix: **Aqueous**
Date Sampled: **06/01/2022 1400**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	25-150
13C8_PFOS		116	25-150
13C8_PFOSA		112	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		89	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-007**

Description: **MW-22-148_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1430** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2333	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.0**	**J**	**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**0.88**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		101	25-150
13C2_6:2FTS		116	25-150
13C2_8:2FTS		106	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		104	25-150
13C3_PFBS		126	25-150
13C3_PFHxS		121	25-150
13C3-HFPO-DA		106	25-150
13C4_PFBA		112	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		112	25-150
13C5_PFPeA		117	25-150
13C6_PFDA		116	25-150
13C7_PFUdA		110	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-007**
Description: **MW-22-148_060122**
Matrix: **Aqueous**
Date Sampled: **06/01/2022 1430**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		106	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		116	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		109	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-008**

Description: **EB-02_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1445** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2344	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		94	25-150
13C2_6:2FTS		113	25-150
13C2_8:2FTS		100	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		113	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		112	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		105	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF07078-008**
Description: **EB-02_060122**		Matrix: **Aqueous**
Date Sampled: **06/01/2022 1445**	Project Name: **RACER Lansing**	
Date Received: **06/07/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		98	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		92	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-009**

Description: **MW-22-149_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1340** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0016	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.91**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**0.91**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.41**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		85	25-150
13C2_6:2FTS	N	182	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		91	25-150
13C2_PFTeDA		86	25-150
13C3_PFBS		106	25-150
13C3_PFHxS		96	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		95	25-150
13C6_PFDA		97	25-150
13C7_PFUdA		93	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-009**
Description: **MW-22-149_060122**
Matrix: **Aqueous**
Date Sampled: **06/01/2022 1340**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		95	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		87	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-010**

Description: **MW-22-150_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1105** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0027	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.35	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**1.6**	**J**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.9**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.70	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.7**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	198	25-150
13C2_6:2FTS	N	268	25-150
13C2_8:2FTS		100	25-150
13C2_PFDoA		92	25-150
13C2_PFTeDA		94	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		77	25-150
13C4_PFBA		58	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		84	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		119	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF07078-010**
Description: **MW-22-150_060122**		Matrix: **Aqueous**
Date Sampled: **06/01/2022 1105**	Project Name: **RACER Lansing**	
Date Received: **06/07/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		102	25-150
d5-EtFOSAA		114	25-150
d3-MeFOSAA		91	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-011**

Description: **MW-22-151_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1225** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0058	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**5.3**	**JQ**	**6.8**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**8.4**		**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**10**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.7**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**6.2**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.39**	**J**	**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.7**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**14**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**3.4**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	207	25-150
13C2_6:2FTS	N	212	25-150
13C2_8:2FTS	N	169	25-150
13C2_PFDoA		91	25-150
13C2_PFTeDA		80	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		70	25-150
13C4_PFBA		55	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		88	25-150
13C5_PFPeA		76	25-150
13C6_PFDA		117	25-150
13C7_PFUdA		101	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-011**
Description: **MW-22-151_060122**
Matrix: **Aqueous**
Date Sampled: **06/01/2022 1225**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		89	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		116	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-012**

Description: **MW-22-152_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1440** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0109	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.1**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**4.0**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.99**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.6**	**J**	**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.5**	**J**	**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.0**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	Q	3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		130	25-150
13C2_6:2FTS		147	25-150
13C2_8:2FTS		100	25-150
13C2_PFDoA		74	25-150
13C2_PFTeDA	N	21	25-150
13C3_PFBS		119	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		101	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		113	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		90	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-012**

Description: **MW-22-152_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1440** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		83	25-150
d3-MeFOSAA		99	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-013**

Description: **EB-03_060122** Matrix: **Aqueous**

Date Sampled: **06/01/2022 1000** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0120	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		97	25-150
13C2_6:2FTS		72	25-150
13C2_8:2FTS		99	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		82	25-150
13C3_PFBS		118	25-150
13C3_PFHxS		127	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		114	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		107	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		101	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-013**
Description: **EB-03_060122**
Matrix: **Aqueous**
Date Sampled: **06/01/2022 1000**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-014**

Description: **MW-14-70_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 0955** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0130	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**7.9**		**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.0**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**44**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**46**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**80**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.44**	**J**	**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**34**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**100**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	184	25-150
13C2_6:2FTS		143	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		91	25-150
13C2_PFTeDA		85	25-150
13C3_PFBS		90	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		79	25-150
13C4_PFBA		50	25-150
13C4_PFHpA		99	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		75	25-150
13C6_PFDA		56	25-150
13C7_PFUdA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-014**
Description: **MW-14-70_060222**
Matrix: **Aqueous**
Date Sampled: **06/02/2022 0955**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		91	25-150
13C8_PFOS		94	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		96	25-150
d5-EtFOSAA		94	25-150
d3-MeFOSAA		89	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-015**

Description: **MW-12-13_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1055** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0141	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.7**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**26**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**15**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**54**		**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.3**	**J**	**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**38**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	157	25-150
13C2_6:2FTS		65	25-150
13C2_8:2FTS		95	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		107	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		90	25-150
13C4_PFBA		78	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		95	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		92	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-015**

Description: **MW-12-13_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1055** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		102	25-150
d5-EtFOSAA		94	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-016**

Description: **MW-21-133_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1150** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0152	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.54**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.7**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**14**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**17**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**24**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**43**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**22**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.6**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		148	25-150
13C2_6:2FTS	N	163	25-150
13C2_8:2FTS		117	25-150
13C2_PFDoA		95	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		110	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		89	25-150
13C4_PFBA		88	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		98	25-150
13C6_PFDA		115	25-150
13C7_PFUdA		99	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-016**

Description: **MW-21-133_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1150** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		111	25-150
13C8_PFOSA		116	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-017**

Description: **MW-21-134_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1250** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0202	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.7	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.9**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.77**	**J**	**3.4**	**0.50**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**13**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**15**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**22**		**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**23**		**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**21**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.2**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		144	25-150
13C2_6:2FTS		125	25-150
13C2_8:2FTS		124	25-150
13C2_PFDoA		122	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		128	25-150
13C3_PFHxS		119	25-150
13C3-HFPO-DA		115	25-150
13C4_PFBA		100	25-150
13C4_PFHpA		117	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		118	25-150
13C6_PFDA		143	25-150
13C7_PFUdA		123	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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L = LCS/LCSD failure
H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-017**
Description: **MW-21-134_060222**
Matrix: **Aqueous**
Date Sampled: **06/02/2022 1250**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		118	25-150
13C8_PFOSA		137	10-150
13C9_PFNA		116	25-150
d5-EtFOSAA		116	25-150
d3-MeFOSAA		110	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-018**

Description: **MW-21-135_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1430** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0213	LAB	06/20/2022 1638	45585

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.9**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.6**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**12**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**47**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**39**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**38**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**39**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.1**	**J**	**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	169	25-150
13C2_6:2FTS		102	25-150
13C2_8:2FTS		117	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		97	25-150
13C3_PFBS		114	25-150
13C3_PFHxS		119	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		89	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		110	25-150
13C7_PFUdA		101	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-018**
Description: **MW-21-135_060222**
Matrix: **Aqueous**
Date Sampled: **06/02/2022 1430**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		108	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		116	10-150
13C9_PFNA		113	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		101	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-019**

Description: **MW-12-10R_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1520** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/22/2022 2007	ASD	06/21/2022 1155	45642

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**5.5**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.6**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.5**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**4.5**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.76**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**8.9**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.3**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**7.6**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	255	25-150
13C2_6:2FTS	N	198	25-150
13C2_8:2FTS		120	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		91	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		78	25-150
13C4_PFBA		50	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		95	25-150
13C5_PFPeA		74	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-019**

Description: **MW-12-10R_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022 1520** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		107	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF07078-020**

Description: **Dup-15_060222** Matrix: **Aqueous**

Date Sampled: **06/02/2022** Project Name: **RACER Lansing**

Date Received: **06/07/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/22/2022 2018	ASD	06/21/2022 1155	45642

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.6	0.40	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.6	0.55	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.6	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.6	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.6	0.72	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.6	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.6	0.40	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.6	0.62	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.6	0.77	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**7.9**		**3.3**	**0.34**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.3	0.64	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.3	0.41	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.3	0.59	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.3	0.51	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.3	0.49	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.4**	**J**	**3.3**	**0.46**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.4**		**3.3**	**0.50**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.3	0.43	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.3	0.39	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.9**		**3.3**	**0.37**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**4.7**		**3.3**	**0.57**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.63**	**J**	**3.3**	**0.38**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**8.8**		**3.3**	**0.69**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.3**		**3.3**	**0.45**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.3	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.3	0.44	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.3	0.52	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**7.7**		**3.3**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	257	25-150
13C2_6:2FTS	N	205	25-150
13C2_8:2FTS		118	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		89	25-150
13C3_PFHxS		93	25-150
13C3-HFPO-DA		79	25-150
13C4_PFBA		47	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		90	25-150
13C5_PFPeA		70	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF07078-020**
Description: **Dup-15_060222**
Matrix: **Aqueous**
Date Sampled: **06/02/2022**
Project Name: **RACER Lansing**
Date Received: **06/07/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		101	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ45585-001
Batch: 45585
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/20/2022 1638

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/23/2022 2158
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/23/2022 2158
8:2 FTS	ND		1	8.0	1.6	ng/L	06/23/2022 2158
6:2 FTS	ND		1	8.0	2.0	ng/L	06/23/2022 2158
4:2 FTS	ND		1	8.0	0.87	ng/L	06/23/2022 2158
GenX	ND		1	8.0	2.1	ng/L	06/23/2022 2158
ADONA	ND		1	8.0	0.48	ng/L	06/23/2022 2158
EtFOSAA	ND		1	8.0	0.75	ng/L	06/23/2022 2158
MeFOSAA	ND		1	8.0	0.93	ng/L	06/23/2022 2158
PFBS	ND		1	4.0	0.41	ng/L	06/23/2022 2158
PFDS	ND		1	4.0	0.78	ng/L	06/23/2022 2158
PFHpS	ND		1	4.0	0.50	ng/L	06/23/2022 2158
PFNS	ND		1	4.0	0.71	ng/L	06/23/2022 2158
PFOSA	ND		1	4.0	0.61	ng/L	06/23/2022 2158
PFPeS	ND		1	4.0	0.59	ng/L	06/23/2022 2158
PFHxS	ND		1	4.0	0.55	ng/L	06/23/2022 2158
PFBA	ND		1	4.0	0.60	ng/L	06/23/2022 2158
PFDA	ND		1	4.0	0.52	ng/L	06/23/2022 2158
PFDoA	ND		1	4.0	0.47	ng/L	06/23/2022 2158
PFHpA	ND		1	4.0	0.45	ng/L	06/23/2022 2158
PFHxA	ND		1	4.0	0.69	ng/L	06/23/2022 2158
PFNA	ND		1	4.0	0.46	ng/L	06/23/2022 2158
PFOA	ND		1	4.0	0.83	ng/L	06/23/2022 2158
PFPeA	ND		1	4.0	0.54	ng/L	06/23/2022 2158
PFTeDA	ND		1	4.0	0.60	ng/L	06/23/2022 2158
PFTrDA	ND		1	4.0	0.53	ng/L	06/23/2022 2158
PFUdA	ND		1	4.0	0.63	ng/L	06/23/2022 2158
PFOS	ND		1	4.0	2.0	ng/L	06/23/2022 2158

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		97	25-150
13C2_6:2FTS	N	186	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		118	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		109	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		111	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45585-001
Batch: 45585
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/20/2022 1638

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		112	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		112	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45585-002
Batch: 45585
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/20/2022 1638

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	95	50-150	06/23/2022 2209
11Cl-PF3OUdS	15	13		1	84	50-150	06/23/2022 2209
8:2 FTS	15	15		1	100	50-150	06/23/2022 2209
6:2 FTS	15	18		1	117	50-150	06/23/2022 2209
4:2 FTS	15	16		1	106	50-150	06/23/2022 2209
GenX	32	33		1	104	50-150	06/23/2022 2209
ADONA	15	16		1	106	50-150	06/23/2022 2209
EtFOSAA	16	16		1	99	50-150	06/23/2022 2209
MeFOSAA	16	19		1	116	50-150	06/23/2022 2209
PFBS	14	14		1	102	50-150	06/23/2022 2209
PFDS	15	13		1	86	50-150	06/23/2022 2209
PFHpS	15	18		1	117	50-150	06/23/2022 2209
PFNS	15	14		1	90	50-150	06/23/2022 2209
PFOSA	16	15		1	96	50-150	06/23/2022 2209
PFPeS	15	15		1	100	50-150	06/23/2022 2209
PFHxS	15	15		1	103	50-150	06/23/2022 2209
PFBA	16	17		1	108	50-150	06/23/2022 2209
PFDA	16	19		1	119	50-150	06/23/2022 2209
PFDoA	16	17		1	109	50-150	06/23/2022 2209
PFHpA	16	17		1	107	50-150	06/23/2022 2209
PFHxA	16	17		1	103	50-150	06/23/2022 2209
PFNA	16	18		1	113	50-150	06/23/2022 2209
PFOA	16	18		1	112	50-150	06/23/2022 2209
PFPeA	16	18		1	113	50-150	06/23/2022 2209
PFTeDA	16	17		1	103	50-150	06/23/2022 2209
PFTrDA	16	16		1	99	50-150	06/23/2022 2209
PFUdA	16	18		1	112	50-150	06/23/2022 2209
PFOS	15	14		1	96	50-150	06/23/2022 2209

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS	N	209	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		82	25-150
13C3_PFBS		125	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		118	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		113	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45585-002
Batch: 45585
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/20/2022 1638

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		114	25-150
13C7_PFUdA		100	25-150
13C8_PFOA		112	25-150
13C8_PFOS		122	25-150
13C8_PFOSA		124	10-150
13C9_PFNA		114	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XF07078-010MS
Batch: 45585
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/20/2022 1638

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	14		1	109	50-150	06/24/2022 0037
11Cl-PF3OUdS	ND	13	13		1	100	50-150	06/24/2022 0037
8:2 FTS	ND	14	15		1	112	50-150	06/24/2022 0037
6:2 FTS	ND	13	14		1	107	50-150	06/24/2022 0037
4:2 FTS	ND	13	14		1	109	50-150	06/24/2022 0037
GenX	ND	28	35		1	122	50-150	06/24/2022 0037
ADONA	ND	13	14		1	105	50-150	06/24/2022 0037
EtFOSAA	ND	14	18		1	130	50-150	06/24/2022 0037
MeFOSAA	ND	14	19		1	131	50-150	06/24/2022 0037
PFBS	ND	13	15		1	117	50-150	06/24/2022 0037
PFDS	ND	14	15		1	111	50-150	06/24/2022 0037
PFHpS	ND	14	15		1	108	50-150	06/24/2022 0037
PFNS	ND	14	13		1	97	50-150	06/24/2022 0037
PFOSA	1.6	14	16		1	105	50-150	06/24/2022 0037
PFPeS	ND	13	16		1	120	50-150	06/24/2022 0037
PFHxS	ND	13	15		1	114	50-150	06/24/2022 0037
PFBA	2.9	14	19		1	114	50-150	06/24/2022 0037
PFDA	ND	14	15		1	109	50-150	06/24/2022 0037
PFDoA	ND	14	17		1	116	50-150	06/24/2022 0037
PFHpA	ND	14	15		1	106	50-150	06/24/2022 0037
PFHxA	1.2	14	17		1	111	50-150	06/24/2022 0037
PFNA	ND	14	15		1	109	50-150	06/24/2022 0037
PFOA	ND	14	16		1	115	50-150	06/24/2022 0037
PFPeA	1.7	14	18		1	113	50-150	06/24/2022 0037
PFTeDA	ND	14	15		1	108	50-150	06/24/2022 0037
PFTrDA	ND	14	15		1	104	50-150	06/24/2022 0037
PFUdA	ND	14	15		1	103	50-150	06/24/2022 0037
PFOS	ND	13	15		1	113	50-150	06/24/2022 0037

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	226	25-150
13C2_6:2FTS	N	251	25-150
13C2_8:2FTS		110	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		102	25-150
13C3_PFBS		109	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		89	25-150
13C4_PFBA		59	25-150
13C4_PFHpA		116	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		88	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XF07078-010MS
Batch: 45585
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/20/2022 1638

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		114	25-150
13C7_PFUdA		119	25-150
13C8_PFOA		110	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		119	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		109	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XF07078-010MD
Batch: 45585
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/20/2022 1638

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	12	13		1	107	9.5	50-150	30	06/24/2022 0048
11Cl-PF3OUdS	ND	12	12		1	93	14	50-150	30	06/24/2022 0048
8:2 FTS	ND	13	14		1	112	7.6	50-150	30	06/24/2022 0048
6:2 FTS	ND	13	14		1	110	3.7	50-150	30	06/24/2022 0048
4:2 FTS	ND	12	13		1	108	7.7	50-150	30	06/24/2022 0048
GenX	ND	26	34		1	127	2.6	50-150	30	06/24/2022 0048
ADONA	ND	12	13		1	102	10	50-150	30	06/24/2022 0048
EtFOSAA	ND	13	15		1	117	18	50-150	30	06/24/2022 0048
MeFOSAA	ND	13	15		1	110	25	50-150	30	06/24/2022 0048
PFBS	ND	12	12		1	104	19	50-150	30	06/24/2022 0048
PFDS	ND	13	12		1	93	24	50-150	30	06/24/2022 0048
PFHpS	ND	13	13		1	103	12	50-150	30	06/24/2022 0048
PFNS	ND	13	13		1	100	4.7	50-150	30	06/24/2022 0048
PFOSA	1.6	13	16		1	107	4.6	50-150	30	06/24/2022 0048
PFPeS	ND	12	14		1	116	10	50-150	30	06/24/2022 0048
PFHxS	ND	12	14		1	116	5.4	50-150	30	06/24/2022 0048
PFBA	2.9	13	17		1	109	10	50-150	30	06/24/2022 0048
PFDA	ND	13	13		1	101	14	50-150	30	06/24/2022 0048
PFDoA	ND	13	15		1	110	12	50-150	30	06/24/2022 0048
PFHpA	ND	13	13		1	101	12	50-150	30	06/24/2022 0048
PFHxA	1.2	13	15		1	106	11	50-150	30	06/24/2022 0048
PFNA	ND	13	16		1	120	3.1	50-150	30	06/24/2022 0048
PFOA	ND	13	14		1	108	13	50-150	30	06/24/2022 0048
PFPeA	1.7	13	17		1	117	3.8	50-150	30	06/24/2022 0048
PFTeDA	ND	13	15		1	114	1.9	50-150	30	06/24/2022 0048
PFTrDA	ND	13	14		1	104	7.1	50-150	30	06/24/2022 0048
PFUdA	ND	13	15		1	111	0.011	50-150	30	06/24/2022 0048
PFOS	ND	12	13		1	104	16	50-150	30	06/24/2022 0048

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	218	25-150
13C2_6:2FTS	N	229	25-150
13C2_8:2FTS		99	25-150
13C2_PFDoA		94	25-150
13C2_PFTeDA		83	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		73	25-150
13C4_PFBA		54	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		76	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XF07078-010MD
Batch: 45585
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/20/2022 1638

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		109	25-150
13C7_PFUdA		96	25-150
13C8_PFOA		95	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		102	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45642-001
Batch: 45642
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1155

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/22/2022 1912
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/22/2022 1912
8:2 FTS	ND		1	8.0	1.6	ng/L	06/22/2022 1912
6:2 FTS	ND		1	8.0	2.0	ng/L	06/22/2022 1912
4:2 FTS	ND		1	8.0	0.87	ng/L	06/22/2022 1912
GenX	ND		1	8.0	2.1	ng/L	06/22/2022 1912
ADONA	ND		1	8.0	0.48	ng/L	06/22/2022 1912
EtFOSAA	ND		1	8.0	0.75	ng/L	06/22/2022 1912
MeFOSAA	ND		1	8.0	0.93	ng/L	06/22/2022 1912
PFBS	ND		1	4.0	0.41	ng/L	06/22/2022 1912
PFDS	ND		1	4.0	0.78	ng/L	06/22/2022 1912
PFHpS	ND		1	4.0	0.50	ng/L	06/22/2022 1912
PFNS	ND		1	4.0	0.71	ng/L	06/22/2022 1912
PFOSA	ND		1	4.0	0.61	ng/L	06/22/2022 1912
PFPeS	ND		1	4.0	0.59	ng/L	06/22/2022 1912
PFHxS	ND		1	4.0	0.55	ng/L	06/22/2022 1912
PFBA	ND		1	4.0	0.60	ng/L	06/22/2022 1912
PFDA	ND		1	4.0	0.52	ng/L	06/22/2022 1912
PFDoA	ND		1	4.0	0.47	ng/L	06/22/2022 1912
PFHpA	ND		1	4.0	0.45	ng/L	06/22/2022 1912
PFHxA	ND		1	4.0	0.69	ng/L	06/22/2022 1912
PFNA	ND		1	4.0	0.46	ng/L	06/22/2022 1912
PFOA	ND		1	4.0	0.83	ng/L	06/22/2022 1912
PFPeA	ND		1	4.0	0.54	ng/L	06/22/2022 1912
PFTeDA	ND		1	4.0	0.60	ng/L	06/22/2022 1912
PFTrDA	ND		1	4.0	0.53	ng/L	06/22/2022 1912
PFUdA	ND		1	4.0	0.63	ng/L	06/22/2022 1912
PFOS	ND		1	4.0	2.0	ng/L	06/22/2022 1912

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		100	25-150
13C2_6:2FTS		123	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		104	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45642-001
Batch: 45642
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1155

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		107	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		117	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		105	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45642-002
Batch: 45642
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1155

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	13		1	89	50-150	06/22/2022 1923
11Cl-PF3OUdS	15	13		1	89	50-150	06/22/2022 1923
8:2 FTS	15	13		1	84	50-150	06/22/2022 1923
6:2 FTS	15	15		1	96	50-150	06/22/2022 1923
4:2 FTS	15	14		1	92	50-150	06/22/2022 1923
GenX	32	32		1	99	50-150	06/22/2022 1923
ADONA	15	14		1	90	50-150	06/22/2022 1923
EtFOSAA	16	15		1	92	50-150	06/22/2022 1923
MeFOSAA	16	16		1	99	50-150	06/22/2022 1923
PFBS	14	14		1	98	50-150	06/22/2022 1923
PFDS	15	14		1	90	50-150	06/22/2022 1923
PFHpS	15	15		1	97	50-150	06/22/2022 1923
PFNS	15	13		1	87	50-150	06/22/2022 1923
PFOSA	16	15		1	95	50-150	06/22/2022 1923
PFPeS	15	14		1	94	50-150	06/22/2022 1923
PFHxS	15	14		1	93	50-150	06/22/2022 1923
PFBA	16	15		1	96	50-150	06/22/2022 1923
PFDA	16	14		1	91	50-150	06/22/2022 1923
PFDoA	16	15		1	91	50-150	06/22/2022 1923
PFHpA	16	15		1	92	50-150	06/22/2022 1923
PFHxA	16	14		1	88	50-150	06/22/2022 1923
PFNA	16	14		1	87	50-150	06/22/2022 1923
PFOA	16	14		1	90	50-150	06/22/2022 1923
PFPeA	16	15		1	93	50-150	06/22/2022 1923
PFTeDA	16	15		1	96	50-150	06/22/2022 1923
PFTrDA	16	14		1	87	50-150	06/22/2022 1923
PFUdA	16	14		1	88	50-150	06/22/2022 1923
PFOS	15	14		1	92	50-150	06/22/2022 1923

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		108	25-150
13C2_6:2FTS		122	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		104	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		105	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45642-002
Batch: 45642
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1155

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		105	25-150
13C7_PFUdA		110	25-150
13C8_PFOA		113	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical

Plant 6

PACE ANALYTICAL SERVICES, LLC

106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 135284

Client: Arcadis	Report to Contact: Tiffany Lindner, Kaitlyn Hunt	Telephone No. / Email: 810-225-1923 / Tiffany.Lindner@arcadis.com; 947-777-5815 / Kaitlyn.Hunt@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Novi / State: MI / Zip Code: 48377	Printed Name: Austin Westhuis		
Project Name: RACER Lansing			XF07078
Project No.: 30112892.0370A	P.O. No.		KESZ

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab / Composite	Matrix: Aqueous	Soils	Wipe / Other	No. of Containers by Preservative Type: Unpres.	HNO3	HCl	NaOH	SO4 to 2	Field Filtered	PFAS analyzed (537 mod., 28 PFAS compounds, Arcadis SOP)								Remarks / Cooler I.D.
MW-22-143_060122	6/1/22	1045	G	X			2						X								
MW-22-144_060122	6/1/22	1200	G	X			2						X								
MW-22-145_060122	6/1/22	1235	G	X			2						X								
Dup-17_060122	6/1/22	—	G	X			2						X								
MW-22-146_060122	6/1/22	1315	G	X			2						X								
MW-22-147_060122	6/1/22	1400	G	X			2						X								
MW-22-148_060122	6/1/22	1430	G	X			2						X								
EB-02_060122	6/1/22	1445	G	X			2						X								
MW-22-149_060122	6/1/22	1340	G	X			2						X								
MW-22-150_060122	6/1/22	1105	G	X			6						X								MS/MSD

Turn Around Time Required (Prior lab approval required for expedited TAT.): X Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client X Disposal by Lab

Possible Hazard Identification: X Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by			1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by FedEx	6-1-22	1630	4. Laboratory received by	6/2/22	1630

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on ice (Circle) (Yes) No — Ice Pack — Receipt Temp. 3.2 °C — Temp Blank Y N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

* Report EGLE 28 Compounds

Document Number: ME003N2-01

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www.pacelabs.com

Number 135284

Client: Arcadis	Report to Contact: Tiffany Linder, Kathryn Hunt	Telephone No. / E-mail: 616-956-6063, tiffany.linder@arcadis.com, 847-777-5215, kathryn.hunt@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Analysis (Attach list if more space is needed)	Page 2 of 2
City: Novi / State: MI / Zip Code: 48377	Printed Name: Austin Westhuis		XF07078
Project Name: RACER Lansing			KE52
Project No.: 30112592.0370A	P.O. No.		Remarks / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab (G) or Composite (C)	Matrix: Aqueous	Matrix: Solid	Matrix: Non-aqueous	No of Containers by Preservative Type: Unpres	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Field Filtered	PFAS n/a (modified 537.1 Anion, WAX, 1.3ppt MDL per EPA 537.1)
MW-22-151_060122	6/1/22	1225	G	X			2							X
MW-22-152_060122	6/1/22	1440	G	X			2							X
EB-03_060122	6/1/22	1000	G	X			2							X
MW-14-70_060222	6/2/22	0955	G	X			2							X
MW-12-13_060222	6/2/22	1055	G	X			2							X
MW-21-133_060222	6/2/22	1150	G	X			2							X
MW-21-134_060222	6/2/22	1250	G	X			2							X
MW-21-135_060222	6/2/22	1430	G	X			2							X
MW-12-10R_060222	6/2/22	1520	G	X			2							X
Dup-15_060222	6/2/22	—	G	X			2							X

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify):

	Date	Time		Date	Time
1. Relinquished by			1. Received by		
2. Relinquished by			2. Received by		
3. Relinquished by			3. Received by		
4. Relinquished by FedEx	6-7-22	1630	4. Laboratory received by	6-7-22	1630

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on Ice (Circle): Yes / No — Ice Pack — Receipt Temp 3.2 °C — Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy * Report EGLE 28 Compounds

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: Arcadis Cooler Inspected by/date: TEC / 06/07/2022 Lot #: XF07078

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.2 / 3.2 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # NA. Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: KDRW Date: 06/07/2022

Comments:

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Tiffany Linder

Project Name: RACER Lansing

Project Number: 30112892.0370A

Lot Number:**XF11002**

Date Completed:06/27/2022

Kathy Smith

06/28/2022 7:51 AM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XF11002

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples was in compliance with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Surrogate recovery for the following samples was outside the upper control limit: XF11002-001, XF11002-002, XF11002-003, XF11002-005. These samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Surrogate recovery for the following sample was outside control limits: XF11002-004. Re-extraction and/or re-analysis was performed with concurring results. The original analysis has been reported.

Surrogate recovery for the following samples was outside control limits: XF11002-006, XF11002-007. Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XF11002

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-14-58R_060722	Aqueous	06/07/2022 1155	06/10/2022
002	MW-14-59_060722	Aqueous	06/07/2022 1045	06/10/2022
003	MW-14-60_060722	Aqueous	06/07/2022 0935	06/10/2022
004	MW-14-62_060722	Aqueous	06/07/2022 1450	06/10/2022
005	MW-21-139_060722	Aqueous	06/07/2022 1325	06/10/2022
006	MW-20-130_060722	Aqueous	06/07/2022 1050	06/10/2022
007	DUP-03_060722	Aqueous	06/07/2022	06/10/2022
008	EB-04_060722	Aqueous	06/07/2022 1010	06/10/2022
009	EB-05_060722	Aqueous	06/07/2022 1455	06/10/2022

(9 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XF11002

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-14-58R_060722	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	6
001	MW-14-58R_060722	Aqueous	PFHxS	PFAS by ID	2.4	J	ng/L	6
001	MW-14-58R_060722	Aqueous	PFBA	PFAS by ID	9.8		ng/L	6
001	MW-14-58R_060722	Aqueous	PFHpA	PFAS by ID	6.8		ng/L	6
001	MW-14-58R_060722	Aqueous	PFHxA	PFAS by ID	8.8		ng/L	6
001	MW-14-58R_060722	Aqueous	PFOA	PFAS by ID	15		ng/L	6
001	MW-14-58R_060722	Aqueous	PFPeA	PFAS by ID	7.1		ng/L	6
001	MW-14-58R_060722	Aqueous	PFOS	PFAS by ID	2.4	J	ng/L	6
002	MW-14-59_060722	Aqueous	PFBS	PFAS by ID	1.7	J	ng/L	8
002	MW-14-59_060722	Aqueous	PFHxS	PFAS by ID	1.1	J	ng/L	8
002	MW-14-59_060722	Aqueous	PFBA	PFAS by ID	8.6		ng/L	8
002	MW-14-59_060722	Aqueous	PFHpA	PFAS by ID	2.5	J	ng/L	8
002	MW-14-59_060722	Aqueous	PFHxA	PFAS by ID	4.8		ng/L	8
002	MW-14-59_060722	Aqueous	PFOA	PFAS by ID	9.0		ng/L	8
002	MW-14-59_060722	Aqueous	PFPeA	PFAS by ID	3.5	J	ng/L	8
003	MW-14-60_060722	Aqueous	PFBS	PFAS by ID	2.5	J	ng/L	10
003	MW-14-60_060722	Aqueous	PFHpS	PFAS by ID	0.87	J	ng/L	10
003	MW-14-60_060722	Aqueous	PFOSA	PFAS by ID	1.3	J	ng/L	10
003	MW-14-60_060722	Aqueous	PFHxS	PFAS by ID	6.3		ng/L	10
003	MW-14-60_060722	Aqueous	PFBA	PFAS by ID	26		ng/L	10
003	MW-14-60_060722	Aqueous	PFDA	PFAS by ID	1.7	J	ng/L	10
003	MW-14-60_060722	Aqueous	PFHpA	PFAS by ID	18		ng/L	10
003	MW-14-60_060722	Aqueous	PFHxA	PFAS by ID	29		ng/L	10
003	MW-14-60_060722	Aqueous	PFNA	PFAS by ID	3.6		ng/L	10
003	MW-14-60_060722	Aqueous	PFOA	PFAS by ID	39		ng/L	10
003	MW-14-60_060722	Aqueous	PFPeA	PFAS by ID	20		ng/L	10
003	MW-14-60_060722	Aqueous	PFOS	PFAS by ID	33		ng/L	10
004	MW-14-62_060722	Aqueous	8:2 FTS	PFAS by ID	3.9	JQ	ng/L	12
004	MW-14-62_060722	Aqueous	6:2 FTS	PFAS by ID	18	Q	ng/L	12
004	MW-14-62_060722	Aqueous	EtFOSAA	PFAS by ID	1.5	J	ng/L	12
004	MW-14-62_060722	Aqueous	MeFOSAA	PFAS by ID	0.82	J	ng/L	12
004	MW-14-62_060722	Aqueous	PFBS	PFAS by ID	1.6	J	ng/L	12
004	MW-14-62_060722	Aqueous	PFHpS	PFAS by ID	1.2	J	ng/L	12
004	MW-14-62_060722	Aqueous	PFOSA	PFAS by ID	3.1	J	ng/L	12
004	MW-14-62_060722	Aqueous	PFPeS	PFAS by ID	1.0	J	ng/L	12
004	MW-14-62_060722	Aqueous	PFHxS	PFAS by ID	6.6		ng/L	12
004	MW-14-62_060722	Aqueous	PFBA	PFAS by ID	15		ng/L	12
004	MW-14-62_060722	Aqueous	PFDA	PFAS by ID	2.4	J	ng/L	12
004	MW-14-62_060722	Aqueous	PFHpA	PFAS by ID	19		ng/L	12
004	MW-14-62_060722	Aqueous	PFHxA	PFAS by ID	21		ng/L	12
004	MW-14-62_060722	Aqueous	PFNA	PFAS by ID	7.7		ng/L	12
004	MW-14-62_060722	Aqueous	PFOA	PFAS by ID	52		ng/L	12
004	MW-14-62_060722	Aqueous	PFPeA	PFAS by ID	17		ng/L	12

Detection Summary (Continued)

Lot Number: XF11002

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
004	MW-14-62_060722	Aqueous	PFOS	PFAS by ID	52		ng/L	12
005	MW-21-139_060722	Aqueous	8:2 FTS	PFAS by ID	12		ng/L	14
005	MW-21-139_060722	Aqueous	6:2 FTS	PFAS by ID	29		ng/L	14
005	MW-21-139_060722	Aqueous	PFBS	PFAS by ID	29		ng/L	14
005	MW-21-139_060722	Aqueous	PFHpS	PFAS by ID	12		ng/L	14
005	MW-21-139_060722	Aqueous	PFOSA	PFAS by ID	0.73	J	ng/L	14
005	MW-21-139_060722	Aqueous	PFPeS	PFAS by ID	29		ng/L	14
005	MW-21-139_060722	Aqueous	PFHxS	PFAS by ID	180		ng/L	14
005	MW-21-139_060722	Aqueous	PFBA	PFAS by ID	25		ng/L	14
005	MW-21-139_060722	Aqueous	PFDA	PFAS by ID	2.1	J	ng/L	14
005	MW-21-139_060722	Aqueous	PFHpA	PFAS by ID	37		ng/L	14
005	MW-21-139_060722	Aqueous	PFHxA	PFAS by ID	66		ng/L	14
005	MW-21-139_060722	Aqueous	PFNA	PFAS by ID	6.5		ng/L	14
005	MW-21-139_060722	Aqueous	PFOA	PFAS by ID	49		ng/L	14
005	MW-21-139_060722	Aqueous	PFPeA	PFAS by ID	56		ng/L	14
005	MW-21-139_060722	Aqueous	PFOS	PFAS by ID	680		ng/L	14
006	MW-20-130_060722	Aqueous	PFBS	PFAS by ID	8.7		ng/L	16
006	MW-20-130_060722	Aqueous	PFPeS	PFAS by ID	2.7	J	ng/L	16
006	MW-20-130_060722	Aqueous	PFHxS	PFAS by ID	1.6	J	ng/L	16
006	MW-20-130_060722	Aqueous	PFBA	PFAS by ID	7.6		ng/L	16
006	MW-20-130_060722	Aqueous	PFHpA	PFAS by ID	3.9		ng/L	16
006	MW-20-130_060722	Aqueous	PFHxA	PFAS by ID	18		ng/L	16
006	MW-20-130_060722	Aqueous	PFOA	PFAS by ID	1.2	J	ng/L	16
006	MW-20-130_060722	Aqueous	PFPeA	PFAS by ID	9.6		ng/L	16
007	DUP-03_060722	Aqueous	PFBS	PFAS by ID	9.6		ng/L	18
007	DUP-03_060722	Aqueous	PFPeS	PFAS by ID	2.9	J	ng/L	18
007	DUP-03_060722	Aqueous	PFHxS	PFAS by ID	2.0	J	ng/L	18
007	DUP-03_060722	Aqueous	PFBA	PFAS by ID	7.6		ng/L	18
007	DUP-03_060722	Aqueous	PFHpA	PFAS by ID	3.7		ng/L	18
007	DUP-03_060722	Aqueous	PFHxA	PFAS by ID	18		ng/L	18
007	DUP-03_060722	Aqueous	PFOA	PFAS by ID	1.3	J	ng/L	18
007	DUP-03_060722	Aqueous	PFPeA	PFAS by ID	10		ng/L	18

(75 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-001**

Description: **MW-14-58R_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 1155** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/22/2022 2313	ASD	06/21/2022 1155	45642

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.4**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.8**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.8**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**8.8**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**15**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**7.1**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.4**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	222	25-150
13C2_6:2FTS	N	202	25-150
13C2_8:2FTS		141	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		84	25-150
13C3_PFHxS		87	25-150
13C3-HFPO-DA		70	25-150
13C4_PFBA		40	25-150
13C4_PFHpA		87	25-150
13C5_PFHxA		80	25-150
13C5_PFPeA		59	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		109	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-001**

Description: **MW-14-58R_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 1155** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		99	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		107	25-150
d3-MeFOSAA		110	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-002**

Description: **MW-14-59_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 1045** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/22/2022 2324	ASD	06/21/2022 1155	45642

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.4	0.51	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.4	0.70	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.4	1.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.4	2.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.4	0.92	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.4	2.2	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.4	0.51	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.4	0.79	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.4	0.98	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.7**	**J**	**4.2**	**0.44**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.2	0.82	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.2	0.53	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.2	0.75	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.2	0.65	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.2	0.63	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.1**	**J**	**4.2**	**0.58**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.6**		**4.2**	**0.63**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.2	0.55	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.2	0.50	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.5**	**J**	**4.2**	**0.47**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**4.8**		**4.2**	**0.73**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.2	0.49	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**9.0**		**4.2**	**0.87**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.5**	**J**	**4.2**	**0.57**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.2	0.63	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.2	0.56	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.2	0.66	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.2	2.1	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	228	25-150
13C2_6:2FTS	N	171	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		59	25-150
13C2_PFTeDA		49	25-150
13C3_PFBS		90	25-150
13C3_PFHxS		92	25-150
13C3-HFPO-DA		80	25-150
13C4_PFBA		55	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		90	25-150
13C5_PFPeA		72	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		83	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-002**

Description: **MW-14-59_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 1045** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		78	25-150
d3-MeFOSAA		89	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-003**

Description: **MW-14-60_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 0935** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/22/2022 2335	ASD	06/21/2022 1155	45642

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.5**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.87**	**J**	**3.4**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**1.3**	**J**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**6.3**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**26**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.7**	**J**	**3.4**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**18**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**29**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**3.6**		**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**39**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**20**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**33**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	236	25-150
13C2_6:2FTS	N	297	25-150
13C2_8:2FTS	N	337	25-150
13C2_PFDoA		126	25-150
13C2_PFTeDA		92	25-150
13C3_PFBS		86	25-150
13C3_PFHxS		92	25-150
13C3-HFPO-DA		77	25-150
13C4_PFBA		50	25-150
13C4_PFHpA		90	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		63	25-150
13C6_PFDA		123	25-150
13C7_PFUdA		133	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-003**

Description: **MW-14-60_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 0935** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		90	25-150
13C8_PFOSA		93	10-150
13C9_PFNA		56	25-150
d5-EtFOSAA		144	25-150
d3-MeFOSAA		130	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-004**

Description: **MW-14-62_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 1450** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2049	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	**39108-34-4**	**PFAS by ID SOP**	**3.9**	**JQ**	**6.9**	**1.4**	**ng/L**	**1**
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**18**	**Q**	**6.9**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	**2991-50-6**	**PFAS by ID SOP**	**1.5**	**J**	**6.9**	**0.65**	**ng/L**	**1**
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	**2355-31-9**	**PFAS by ID SOP**	**0.82**	**J**	**6.9**	**0.81**	**ng/L**	**1**
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.6**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**3.1**	**J**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**1.0**	**J**	**3.5**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**6.6**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**15**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**2.4**	**J**	**3.5**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**19**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**21**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**7.7**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**52**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**17**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**52**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	266	25-150
13C2_6:2FTS	N	277	25-150
13C2_8:2FTS	N	297	25-150
13C2_PFDoA		124	25-150
13C2_PFTeDA		104	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		86	25-150
13C4_PFBA		39	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		82	25-150
13C6_PFDA		135	25-150
13C7_PFUdA		128	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11002-004**
Description: **MW-14-62_060722**
Matrix: **Aqueous**
Date Sampled: **06/07/2022 1450**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		113	25-150
13C8_PFOSA		119	10-150
13C9_PFNA		118	25-150
d5-EtFOSAA		146	25-150
d3-MeFOSAA		130	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-005**

Description: **MW-21-139_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 1325** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2111	ASD	06/21/2022 1757	45720
2	SOP SPE	PFAS by ID SOP	5	06/24/2022 1320	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	**39108-34-4**	**PFAS by ID SOP**	**12**		**6.9**	**1.4**	**ng/L**	**1**
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**29**		**6.9**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**29**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**12**		**3.5**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.73**	**J**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**29**		**3.5**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**180**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**25**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**2.1**	**J**	**3.5**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**37**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**66**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**6.5**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**49**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**56**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**680**		**17**	**8.7**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	163	25-150		118	25-150
13C2_6:2FTS		130	25-150		101	25-150
13C2_8:2FTS		112	25-150		110	25-150
13C2_PFDoA		94	25-150		92	25-150
13C2_PFTeDA		95	25-150		92	25-150
13C3_PFBS		107	25-150		103	25-150
13C3_PFHxS		107	25-150		96	25-150
13C3-HFPO-DA		105	25-150		100	25-150
13C4_PFBA		96	25-150		103	25-150
13C4_PFHpA		99	25-150		101	25-150
13C5_PFHxA		109	25-150		98	25-150
13C5_PFPeA		104	25-150		99	25-150
13C6_PFDA		103	25-150		91	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-005**

Description: **MW-21-139_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 1325** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		99	25-150		91	25-150
13C8_PFOA		104	25-150		101	25-150
13C8_PFOS		101	25-150		90	25-150
13C8_PFOSA		105	10-150		102	10-150
13C9_PFNA		106	25-150		102	25-150
d5-EtFOSAA		103	25-150		96	25-150
d3-MeFOSAA		99	25-150		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-006**

Description: **MW-20-130_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 1050** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2122	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**8.7**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**2.7**	**J**	**3.5**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.6**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.6**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.9**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**18**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**9.6**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	Q	3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	190	25-150
13C2_6:2FTS		114	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		56	25-150
13C2_PFTeDA	N	12	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		68	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		86	25-150
13C6_PFDA		91	25-150
13C7_PFUdA		75	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF11002-006**
Description: **MW-20-130_060722**		Matrix: **Aqueous**
Date Sampled: **06/07/2022 1050**	Project Name: **RACER Lansing**	
Date Received: **06/10/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		84	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		80	25-150
d3-MeFOSAA		85	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-007**

Description: **DUP-03_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2133	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**9.6**		**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**2.9**	**J**	**3.6**	**0.53**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.0**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.6**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.7**		**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**18**		**3.6**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.3**	**J**	**3.6**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**10**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	Q	3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	187	25-150
13C2_6:2FTS		108	25-150
13C2_8:2FTS		88	25-150
13C2_PFDoA		37	25-150
13C2_PFTeDA	N	4.2	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		68	25-150
13C4_PFHpA		94	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		89	25-150
13C6_PFDA		87	25-150
13C7_PFUdA		64	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF11002-007**
Description: **DUP-03_060722**		Matrix: **Aqueous**
Date Sampled: **06/07/2022**	Project Name: **RACER Lansing**	
Date Received: **06/10/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		53	10-150
13C9_PFNA		98	25-150
d5-EtFOSAA		71	25-150
d3-MeFOSAA		79	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-008**

Description: **EB-04_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 1010** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2144	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		104	25-150
13C2_6:2FTS		110	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		111	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		107	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11002-008**
Description: **EB-04_060722**
Matrix: **Aqueous**
Date Sampled: **06/07/2022 1010**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		115	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11002-009**

Description: **EB-05_060722** Matrix: **Aqueous**

Date Sampled: **06/07/2022 1455** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2155	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		104	25-150
13C2_6:2FTS		124	25-150
13C2_8:2FTS		100	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		104	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF11002-009**
Description: **EB-05_060722**		Matrix: **Aqueous**
Date Sampled: **06/07/2022 1455**	Project Name: **RACER Lansing**	
Date Received: **06/10/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ45642-001
Batch: 45642
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1155

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/22/2022 1912
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/22/2022 1912
8:2 FTS	ND		1	8.0	1.6	ng/L	06/22/2022 1912
6:2 FTS	ND		1	8.0	2.0	ng/L	06/22/2022 1912
4:2 FTS	ND		1	8.0	0.87	ng/L	06/22/2022 1912
GenX	ND		1	8.0	2.1	ng/L	06/22/2022 1912
ADONA	ND		1	8.0	0.48	ng/L	06/22/2022 1912
EtFOSAA	ND		1	8.0	0.75	ng/L	06/22/2022 1912
MeFOSAA	ND		1	8.0	0.93	ng/L	06/22/2022 1912
PFBS	ND		1	4.0	0.41	ng/L	06/22/2022 1912
PFDS	ND		1	4.0	0.78	ng/L	06/22/2022 1912
PFHpS	ND		1	4.0	0.50	ng/L	06/22/2022 1912
PFNS	ND		1	4.0	0.71	ng/L	06/22/2022 1912
PFOSA	ND		1	4.0	0.61	ng/L	06/22/2022 1912
PFPeS	ND		1	4.0	0.59	ng/L	06/22/2022 1912
PFHxS	ND		1	4.0	0.55	ng/L	06/22/2022 1912
PFBA	ND		1	4.0	0.60	ng/L	06/22/2022 1912
PFDA	ND		1	4.0	0.52	ng/L	06/22/2022 1912
PFDoA	ND		1	4.0	0.47	ng/L	06/22/2022 1912
PFHpA	ND		1	4.0	0.45	ng/L	06/22/2022 1912
PFHxA	ND		1	4.0	0.69	ng/L	06/22/2022 1912
PFNA	ND		1	4.0	0.46	ng/L	06/22/2022 1912
PFOA	ND		1	4.0	0.83	ng/L	06/22/2022 1912
PFPeA	ND		1	4.0	0.54	ng/L	06/22/2022 1912
PFTeDA	ND		1	4.0	0.60	ng/L	06/22/2022 1912
PFTrDA	ND		1	4.0	0.53	ng/L	06/22/2022 1912
PFUdA	ND		1	4.0	0.63	ng/L	06/22/2022 1912
PFOS	ND		1	4.0	2.0	ng/L	06/22/2022 1912

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		100	25-150
13C2_6:2FTS		123	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		104	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45642-001
Batch: 45642
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1155

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		107	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		117	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		105	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45642-002
Batch: 45642
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1155

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	13		1	89	50-150	06/22/2022 1923
11Cl-PF3OUdS	15	13		1	89	50-150	06/22/2022 1923
8:2 FTS	15	13		1	84	50-150	06/22/2022 1923
6:2 FTS	15	15		1	96	50-150	06/22/2022 1923
4:2 FTS	15	14		1	92	50-150	06/22/2022 1923
GenX	32	32		1	99	50-150	06/22/2022 1923
ADONA	15	14		1	90	50-150	06/22/2022 1923
EtFOSAA	16	15		1	92	50-150	06/22/2022 1923
MeFOSAA	16	16		1	99	50-150	06/22/2022 1923
PFBS	14	14		1	98	50-150	06/22/2022 1923
PFDS	15	14		1	90	50-150	06/22/2022 1923
PFHpS	15	15		1	97	50-150	06/22/2022 1923
PFNS	15	13		1	87	50-150	06/22/2022 1923
PFOSA	16	15		1	95	50-150	06/22/2022 1923
PFPeS	15	14		1	94	50-150	06/22/2022 1923
PFHxS	15	14		1	93	50-150	06/22/2022 1923
PFBA	16	15		1	96	50-150	06/22/2022 1923
PFDA	16	14		1	91	50-150	06/22/2022 1923
PFDoA	16	15		1	91	50-150	06/22/2022 1923
PFHpA	16	15		1	92	50-150	06/22/2022 1923
PFHxA	16	14		1	88	50-150	06/22/2022 1923
PFNA	16	14		1	87	50-150	06/22/2022 1923
PFOA	16	14		1	90	50-150	06/22/2022 1923
PFPeA	16	15		1	93	50-150	06/22/2022 1923
PFTeDA	16	15		1	96	50-150	06/22/2022 1923
PFTrDA	16	14		1	87	50-150	06/22/2022 1923
PFUdA	16	14		1	88	50-150	06/22/2022 1923
PFOS	15	14		1	92	50-150	06/22/2022 1923

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		108	25-150
13C2_6:2FTS		122	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		104	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		105	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45642-002
Batch: 45642
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1155

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		105	25-150
13C7_PFUdA		110	25-150
13C8_PFOA		113	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45720-001
Batch: 45720
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/23/2022 2027
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/23/2022 2027
8:2 FTS	ND		1	8.0	1.6	ng/L	06/23/2022 2027
6:2 FTS	ND		1	8.0	2.0	ng/L	06/23/2022 2027
4:2 FTS	ND		1	8.0	0.87	ng/L	06/23/2022 2027
GenX	ND		1	8.0	2.1	ng/L	06/23/2022 2027
ADONA	ND		1	8.0	0.48	ng/L	06/23/2022 2027
EtFOSAA	ND		1	8.0	0.75	ng/L	06/23/2022 2027
MeFOSAA	ND		1	8.0	0.93	ng/L	06/23/2022 2027
PFBS	ND		1	4.0	0.41	ng/L	06/23/2022 2027
PFDS	ND		1	4.0	0.78	ng/L	06/23/2022 2027
PFHpS	ND		1	4.0	0.50	ng/L	06/23/2022 2027
PFNS	ND		1	4.0	0.71	ng/L	06/23/2022 2027
PFOSA	ND		1	4.0	0.61	ng/L	06/23/2022 2027
PFPeS	ND		1	4.0	0.59	ng/L	06/23/2022 2027
PFHxS	ND		1	4.0	0.55	ng/L	06/23/2022 2027
PFBA	ND		1	4.0	0.60	ng/L	06/23/2022 2027
PFDA	ND		1	4.0	0.52	ng/L	06/23/2022 2027
PFDoA	ND		1	4.0	0.47	ng/L	06/23/2022 2027
PFHpA	ND		1	4.0	0.45	ng/L	06/23/2022 2027
PFHxA	ND		1	4.0	0.69	ng/L	06/23/2022 2027
PFNA	ND		1	4.0	0.46	ng/L	06/23/2022 2027
PFOA	ND		1	4.0	0.83	ng/L	06/23/2022 2027
PFPeA	ND		1	4.0	0.54	ng/L	06/23/2022 2027
PFTeDA	ND		1	4.0	0.60	ng/L	06/23/2022 2027
PFTrDA	ND		1	4.0	0.53	ng/L	06/23/2022 2027
PFUdA	ND		1	4.0	0.63	ng/L	06/23/2022 2027
PFOS	ND		1	4.0	2.0	ng/L	06/23/2022 2027

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		94	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		87	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		102	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45720-001
Batch: 45720
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		88	25-150
13C8_PFOA		100	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		92	25-150
d3-MeFOSAA		90	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45720-002
Batch: 45720
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	13		1	86	50-150	06/23/2022 2038
11Cl-PF3OUdS	15	12		1	82	50-150	06/23/2022 2038
8:2 FTS	15	15		1	95	50-150	06/23/2022 2038
6:2 FTS	15	14		1	92	50-150	06/23/2022 2038
4:2 FTS	15	12		1	81	50-150	06/23/2022 2038
GenX	32	31		1	97	50-150	06/23/2022 2038
ADONA	15	13		1	84	50-150	06/23/2022 2038
EtFOSAA	16	15		1	96	50-150	06/23/2022 2038
MeFOSAA	16	15		1	95	50-150	06/23/2022 2038
PFBS	14	13		1	93	50-150	06/23/2022 2038
PFDS	15	14		1	90	50-150	06/23/2022 2038
PFHpS	15	14		1	95	50-150	06/23/2022 2038
PFNS	15	13		1	87	50-150	06/23/2022 2038
PFOSA	16	15		1	91	50-150	06/23/2022 2038
PFPeS	15	13		1	88	50-150	06/23/2022 2038
PFHxS	15	12		1	83	50-150	06/23/2022 2038
PFBA	16	15		1	92	50-150	06/23/2022 2038
PFDA	16	14		1	87	50-150	06/23/2022 2038
PFDoA	16	14		1	90	50-150	06/23/2022 2038
PFHpA	16	15		1	92	50-150	06/23/2022 2038
PFHxA	16	15		1	91	50-150	06/23/2022 2038
PFNA	16	14		1	86	50-150	06/23/2022 2038
PFOA	16	15		1	94	50-150	06/23/2022 2038
PFPeA	16	14		1	89	50-150	06/23/2022 2038
PFTeDA	16	14		1	89	50-150	06/23/2022 2038
PFTrDA	16	13		1	78	50-150	06/23/2022 2038
PFUdA	16	14		1	86	50-150	06/23/2022 2038
PFOS	15	13		1	86	50-150	06/23/2022 2038

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		101	25-150
13C2_6:2FTS		128	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		86	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		111	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		106	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45720-002
Batch: 45720
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		108	25-150
13C7_PFUdA		105	25-150
13C8_PFOA		109	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XF11002-004MS
Batch: 45720
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	12		1	90	50-150	06/23/2022 2100
11Cl-PF3OUdS	ND	13	11		1	81	50-150	06/23/2022 2100
8:2 FTS	3.9	13	16		1	88	50-150	06/23/2022 2100
6:2 FTS	18	13	32		1	108	50-150	06/23/2022 2100
4:2 FTS	ND	13	12		1	91	50-150	06/23/2022 2100
GenX	ND	28	27		1	99	50-150	06/23/2022 2100
ADONA	ND	13	10		1	80	50-150	06/23/2022 2100
EtFOSAA	1.5	14	14		1	90	50-150	06/23/2022 2100
MeFOSAA	0.82	14	14		1	99	50-150	06/23/2022 2100
PFBS	1.6	12	13		1	94	50-150	06/23/2022 2100
PFDS	ND	13	13		1	96	50-150	06/23/2022 2100
PFHpS	1.2	13	13		1	91	50-150	06/23/2022 2100
PFNS	ND	13	13		1	98	50-150	06/23/2022 2100
PFOSA	3.1	14	16		1	94	50-150	06/23/2022 2100
PFPeS	1.0	13	15		1	106	50-150	06/23/2022 2100
PFHxS	6.6	13	18		1	92	50-150	06/23/2022 2100
PFBA	15	14	28		1	93	50-150	06/23/2022 2100
PFDA	2.4	14	15		1	91	50-150	06/23/2022 2100
PFDoA	ND	14	13		1	92	50-150	06/23/2022 2100
PFHpA	19	14	33		1	98	50-150	06/23/2022 2100
PFHxA	21	14	32		1	81	50-150	06/23/2022 2100
PFNA	7.7	14	19		1	85	50-150	06/23/2022 2100
PFOA	52	14	66		1	100	50-150	06/23/2022 2100
PFPeA	17	14	31		1	101	50-150	06/23/2022 2100
PFTeDA	ND	14	13		1	91	50-150	06/23/2022 2100
PFTrDA	ND	14	12		1	87	50-150	06/23/2022 2100
PFUdA	ND	14	12		1	88	50-150	06/23/2022 2100
PFOS	52	13	66		1	108	50-150	06/23/2022 2100

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	256	25-150
13C2_6:2FTS	N	265	25-150
13C2_8:2FTS	N	288	25-150
13C2_PFDoA		120	25-150
13C2_PFTeDA		100	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		83	25-150
13C4_PFBA		33	25-150
13C4_PFHpA		94	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		79	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XF11002-004MS
Batch: 45720
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		126	25-150
13C7_PFUdA		129	25-150
13C8_PFOA		101	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		113	10-150
13C9_PFNA		118	25-150
d5-EtFOSAA		147	25-150
d3-MeFOSAA		132	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical® Plant 2

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 135284

Client: Arcadis	Report to Contact: Tiffany Linder, Kaitlyn Hunt	Telephone No. / Email: 810-225-1928 / Tiffany.Linder@arcadis.com; 947-777-0415 / Kaitlyn.Hunt@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x Austin Westhuis	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Novi; State: MI; Zip Code: 48377	Printed Name: Austin Westhuis	PFAS via modified 537 Mod: Isotope Dil Method for DSM 3.1	XF11002 KE52
Project Name: PACER Lansing			
Project No.: 30112892.0370A	P.O. No.		Remarks / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Soil/Gas G=Grab C=Composite	Matrix: Aqueous; Soil; Non-Aqueous	No of Containers by Preservative Type: Unpres; H2SO4; HNO3; HCl; NaOH; Na2S2O3; Field Filtered	PFAS via modified 537 Mod: Isotope Dil Method for DSM 3.1
MW-14-58R_060722	6/7/22	1155	G	X	2	X
MW-14-59_060722	6/7/22	1045	G	X	2	X
MW-14-60_060722	6/7/22	0935	G	X	2	X
MW-14-62_060722	6/7/22	1450	G	X	2	X
MW-21-139_060722	6/7/22	1325	G	X	2	X
MW-20-130_060722	6/7/22	1050	G	X	2	X
Dup-03_060722	6/7/22	———	G	X	2	X
EB-04_060722	6/7/22	1010	G	X	2	X
EB-05_060722	6/7/22	1455	G	X	2	X

Turn Around Time Required (Prior lab approval required for expedited TAT.): X Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client X Disposal by Lab

Possible Hazard Identification: X Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Austin Westhuis / Arcadis	6/8/22		1. Received by: FedEx	6/8/22	
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	Date 6-10-22	Time 1615	4. Laboratory received by	Date 6-10-22	Time 1615

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on ice (Circle): (Yes) No Ice Pack — Receipt Temp. 4.2 °C — Temp Blank: X Y ☐ N

* Report EGLE 28 Compounds

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: MEX73N2-01

PACE ANALYTICAL SERVICES, LLC

PaceAnalytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: ARCADIS Cooler Inspected by/date: TEC / 06/10/2022 Lot #: XF1102

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

4.2 / 4.2 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☒ Temperature Blank ☒ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☑ Yes	☐ No		21. Was the quote number listed on the container label? If yes, Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L. (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: TEC Date: 06/10/2022

Comments:

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Tiffany Linder

Project Name: RACER Lansing

Project Number: 30112892.0370A

Lot Number:**XF11003**

Date Completed:06/27/2022

Kathy Smith

06/28/2022 7:56 AM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XF11003

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples was in compliance with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Surrogate recovery for the following samples was outside the upper control limit: XF11003-005, XF11003-006, XF11003-007, XF11003-008, XF11003-009. These samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XF11003

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-02-04(3)_060822	Aqueous	06/08/2022 1045	06/11/2022
002	MW-18-94_060822	Aqueous	06/08/2022 1225	06/11/2022
003	MW-18-97_060822	Aqueous	06/08/2022 1330	06/11/2022
004	MW-23_060822	Aqueous	06/08/2022 1440	06/11/2022
005	MW-18-91_060822	Aqueous	06/08/2022 0935	06/11/2022
006	MW-18-89_060822	Aqueous	06/08/2022 1330	06/11/2022
007	MW-18-90_060822	Aqueous	06/08/2022 1440	06/11/2022
008	DUP-09_060822	Aqueous	06/08/2022	06/11/2022
009	MW-18-99_060822	Aqueous	06/08/2022 1600	06/11/2022
010	MW-18-100_060822	Aqueous	06/08/2022 1640	06/11/2022
011	DUP-10_060822	Aqueous	06/08/2022	06/11/2022

(11 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XF11003

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-02-04(3)_060822	Aqueous	PFBS	PFAS by ID	0.78	J	ng/L	6
001	MW-02-04(3)_060822	Aqueous	PFBA	PFAS by ID	8.1		ng/L	6
001	MW-02-04(3)_060822	Aqueous	PFHxA	PFAS by ID	2.9	J	ng/L	6
001	MW-02-04(3)_060822	Aqueous	PFPeA	PFAS by ID	5.3		ng/L	6
002	MW-18-94_060822	Aqueous	PFBA	PFAS by ID	5.0		ng/L	8
002	MW-18-94_060822	Aqueous	PFPeA	PFAS by ID	0.72	J	ng/L	8
003	MW-18-97_060822	Aqueous	PFHxS	PFAS by ID	0.47	J	ng/L	10
003	MW-18-97_060822	Aqueous	PFBA	PFAS by ID	0.99	J	ng/L	10
003	MW-18-97_060822	Aqueous	PFPeA	PFAS by ID	0.47	J	ng/L	10
004	MW-23_060822	Aqueous	PFBA	PFAS by ID	1.7	J	ng/L	12
004	MW-23_060822	Aqueous	PFHpA	PFAS by ID	0.44	J	ng/L	12
004	MW-23_060822	Aqueous	PFOA	PFAS by ID	0.99	J	ng/L	12
004	MW-23_060822	Aqueous	PFPeA	PFAS by ID	0.68	J	ng/L	12
004	MW-23_060822	Aqueous	PFOS	PFAS by ID	3.1	J	ng/L	12
005	MW-18-91_060822	Aqueous	PFBS	PFAS by ID	2.9	J	ng/L	14
005	MW-18-91_060822	Aqueous	PFDS	PFAS by ID	2.0	J	ng/L	14
005	MW-18-91_060822	Aqueous	PFHpS	PFAS by ID	0.69	J	ng/L	14
005	MW-18-91_060822	Aqueous	PFHxS	PFAS by ID	2.1	J	ng/L	14
005	MW-18-91_060822	Aqueous	PFBA	PFAS by ID	8.2		ng/L	14
005	MW-18-91_060822	Aqueous	PFDA	PFAS by ID	0.97	J	ng/L	14
005	MW-18-91_060822	Aqueous	PFHpA	PFAS by ID	2.4	J	ng/L	14
005	MW-18-91_060822	Aqueous	PFHxA	PFAS by ID	2.7	J	ng/L	14
005	MW-18-91_060822	Aqueous	PFNA	PFAS by ID	1.2	J	ng/L	14
005	MW-18-91_060822	Aqueous	PFOA	PFAS by ID	7.1		ng/L	14
005	MW-18-91_060822	Aqueous	PFPeA	PFAS by ID	3.4	J	ng/L	14
005	MW-18-91_060822	Aqueous	PFOS	PFAS by ID	41		ng/L	14
006	MW-18-89_060822	Aqueous	PFBS	PFAS by ID	1.0	J	ng/L	16
006	MW-18-89_060822	Aqueous	PFHpS	PFAS by ID	1.6	J	ng/L	16
006	MW-18-89_060822	Aqueous	PFHxS	PFAS by ID	3.8		ng/L	16
006	MW-18-89_060822	Aqueous	PFBA	PFAS by ID	8.5		ng/L	16
006	MW-18-89_060822	Aqueous	PFDA	PFAS by ID	0.61	J	ng/L	16
006	MW-18-89_060822	Aqueous	PFHpA	PFAS by ID	3.2	J	ng/L	16
006	MW-18-89_060822	Aqueous	PFHxA	PFAS by ID	5.3		ng/L	16
006	MW-18-89_060822	Aqueous	PFNA	PFAS by ID	0.78	J	ng/L	16
006	MW-18-89_060822	Aqueous	PFOA	PFAS by ID	10		ng/L	16
006	MW-18-89_060822	Aqueous	PFPeA	PFAS by ID	5.4		ng/L	16
006	MW-18-89_060822	Aqueous	PFOS	PFAS by ID	74		ng/L	16
007	MW-18-90_060822	Aqueous	PFBS	PFAS by ID	1.5	J	ng/L	18
007	MW-18-90_060822	Aqueous	PFHpS	PFAS by ID	22		ng/L	18
007	MW-18-90_060822	Aqueous	PFOSA	PFAS by ID	0.77	J	ng/L	18
007	MW-18-90_060822	Aqueous	PFPeS	PFAS by ID	2.5	J	ng/L	18
007	MW-18-90_060822	Aqueous	PFHxS	PFAS by ID	18		ng/L	18
007	MW-18-90_060822	Aqueous	PFBA	PFAS by ID	9.3		ng/L	18

Detection Summary (Continued)

Lot Number: XF11003

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
007	MW-18-90_060822	Aqueous	PFDA	PFAS by ID	1.8	J	ng/L	18
007	MW-18-90_060822	Aqueous	PFHpA	PFAS by ID	4.1		ng/L	18
007	MW-18-90_060822	Aqueous	PFHxA	PFAS by ID	5.1		ng/L	18
007	MW-18-90_060822	Aqueous	PFNA	PFAS by ID	1.5	J	ng/L	18
007	MW-18-90_060822	Aqueous	PFOA	PFAS by ID	17		ng/L	18
007	MW-18-90_060822	Aqueous	PFPeA	PFAS by ID	3.6		ng/L	18
007	MW-18-90_060822	Aqueous	PFOS	PFAS by ID	960		ng/L	18
008	DUP-09_060822	Aqueous	PFBS	PFAS by ID	1.5	J	ng/L	20
008	DUP-09_060822	Aqueous	PFHpS	PFAS by ID	22		ng/L	20
008	DUP-09_060822	Aqueous	PFOSA	PFAS by ID	0.72	J	ng/L	20
008	DUP-09_060822	Aqueous	PFPeS	PFAS by ID	3.3	J	ng/L	20
008	DUP-09_060822	Aqueous	PFHxS	PFAS by ID	18		ng/L	20
008	DUP-09_060822	Aqueous	PFBA	PFAS by ID	7.8		ng/L	20
008	DUP-09_060822	Aqueous	PFDA	PFAS by ID	1.8	J	ng/L	20
008	DUP-09_060822	Aqueous	PFHpA	PFAS by ID	4.0		ng/L	20
008	DUP-09_060822	Aqueous	PFHxA	PFAS by ID	5.4		ng/L	20
008	DUP-09_060822	Aqueous	PFNA	PFAS by ID	1.5	J	ng/L	20
008	DUP-09_060822	Aqueous	PFOA	PFAS by ID	16		ng/L	20
008	DUP-09_060822	Aqueous	PFPeA	PFAS by ID	3.3	J	ng/L	20
008	DUP-09_060822	Aqueous	PFOS	PFAS by ID	1000		ng/L	20
009	MW-18-99_060822	Aqueous	PFBS	PFAS by ID	0.90	J	ng/L	22
009	MW-18-99_060822	Aqueous	PFDS	PFAS by ID	0.84	J	ng/L	22
009	MW-18-99_060822	Aqueous	PFHpS	PFAS by ID	1.1	J	ng/L	22
009	MW-18-99_060822	Aqueous	PFHxS	PFAS by ID	1.3	J	ng/L	22
009	MW-18-99_060822	Aqueous	PFBA	PFAS by ID	12		ng/L	22
009	MW-18-99_060822	Aqueous	PFDA	PFAS by ID	0.89	J	ng/L	22
009	MW-18-99_060822	Aqueous	PFHpA	PFAS by ID	2.7	J	ng/L	22
009	MW-18-99_060822	Aqueous	PFHxA	PFAS by ID	4.1		ng/L	22
009	MW-18-99_060822	Aqueous	PFNA	PFAS by ID	1.3	J	ng/L	22
009	MW-18-99_060822	Aqueous	PFOA	PFAS by ID	5.5		ng/L	22
009	MW-18-99_060822	Aqueous	PFPeA	PFAS by ID	3.4	J	ng/L	22
009	MW-18-99_060822	Aqueous	PFOS	PFAS by ID	78		ng/L	22
010	MW-18-100_060822	Aqueous	PFBS	PFAS by ID	1.4	J	ng/L	24
010	MW-18-100_060822	Aqueous	PFHxS	PFAS by ID	3.0	J	ng/L	24
010	MW-18-100_060822	Aqueous	PFBA	PFAS by ID	7.5		ng/L	24
010	MW-18-100_060822	Aqueous	PFHpA	PFAS by ID	1.6	J	ng/L	24
010	MW-18-100_060822	Aqueous	PFHxA	PFAS by ID	3.4	J	ng/L	24
010	MW-18-100_060822	Aqueous	PFOA	PFAS by ID	2.9	J	ng/L	24
010	MW-18-100_060822	Aqueous	PFPeA	PFAS by ID	2.2	J	ng/L	24
011	DUP-10_060822	Aqueous	PFBS	PFAS by ID	0.98	J	ng/L	26
011	DUP-10_060822	Aqueous	PFBA	PFAS by ID	7.9		ng/L	26
011	DUP-10_060822	Aqueous	PFHxA	PFAS by ID	2.8	J	ng/L	26
011	DUP-10_060822	Aqueous	PFPeA	PFAS by ID	5.4		ng/L	26

(86 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-001**

Description: **MW-02-04(3)_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1045** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2206	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.7	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.78**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.1**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.9**	**J**	**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.70	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.3**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		111	25-150
13C2_6:2FTS		114	25-150
13C2_8:2FTS		104	25-150
13C2_PFDoA		90	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		92	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		93	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-001**

Description: **MW-02-04(3)_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1045** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-002**

Description: **MW-18-94_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1225** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2216	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.3	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.69	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.7	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.7	0.51	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.0**		**3.7**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	0.41	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.7	0.63	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.7	0.76	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.72**	**J**	**3.7**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		103	25-150
13C2_6:2FTS		111	25-150
13C2_8:2FTS		99	25-150
13C2_PFDoA		95	25-150
13C2_PFTeDA		94	25-150
13C3_PFBS		106	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		91	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-002**

Description: **MW-18-94_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1225** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		101	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-003**

Description: **MW-18-97_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1330** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2227	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.35	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.47**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**0.99**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.47**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		105	25-150
13C2_6:2FTS		87	25-150
13C2_8:2FTS		83	25-150
13C2_PFDoA		89	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		84	25-150
13C3_PFHxS		86	25-150
13C3-HFPO-DA		84	25-150
13C4_PFBA		82	25-150
13C4_PFHpA		77	25-150
13C5_PFHxA		86	25-150
13C5_PFPeA		86	25-150
13C6_PFDA		85	25-150
13C7_PFUdA		83	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF11003-003**
Description: **MW-18-97_060822**		Matrix: **Aqueous**
Date Sampled: **06/08/2022 1330**	Project Name: **RACER Lansing**	
Date Received: **06/11/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		83	25-150
13C8_PFOS		86	25-150
13C8_PFOSA		86	10-150
13C9_PFNA		92	25-150
d5-EtFOSAA		78	25-150
d3-MeFOSAA		79	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-004**

Description: **MW-23_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1440** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2238	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.7**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.44**	**J**	**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.99**	**J**	**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.68**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**3.1**	**J**	**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		139	25-150
13C2_6:2FTS		118	25-150
13C2_8:2FTS		118	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		80	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		106	25-150
13C4_PFBA		100	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		104	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		110	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11003-004**
Description: **MW-23_060822**
Matrix: **Aqueous**
Date Sampled: **06/08/2022 1440**
Project Name: **RACER Lansing**
Date Received: **06/11/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-005**

Description: **MW-18-91_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 0935** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2311	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.9**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	**335-77-3**	**PFAS by ID SOP**	**2.0**	**J**	**3.6**	**0.70**	**ng/L**	**1**
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.69**	**J**	**3.6**	**0.45**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.1**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.2**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.97**	**J**	**3.6**	**0.47**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.4**	**J**	**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.7**	**J**	**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.2**	**J**	**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.1**		**3.6**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.4**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**41**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	256	25-150
13C2_6:2FTS	N	231	25-150
13C2_8:2FTS	N	235	25-150
13C2_PFDoA		109	25-150
13C2_PFTeDA		74	25-150
13C3_PFBS		98	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		85	25-150
13C4_PFBA		61	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		77	25-150
13C6_PFDA		120	25-150
13C7_PFUdA		112	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF11003-005**
Description: **MW-18-91_060822**		Matrix: **Aqueous**
Date Sampled: **06/08/2022 0935**	Project Name: **RACER Lansing**	
Date Received: **06/11/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		120	25-150
d5-EtFOSAA		133	25-150
d3-MeFOSAA		128	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-006**

Description: **MW-18-89_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1330** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2322	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.0**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**1.6**	**J**	**3.5**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.8**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.5**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.61**	**J**	**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.2**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**5.3**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.78**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**10**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.4**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**74**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	250	25-150
13C2_6:2FTS	N	187	25-150
13C2_8:2FTS	N	152	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		88	25-150
13C4_PFBA		70	25-150
13C4_PFHpA		99	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		86	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF11003-006**
Description: **MW-18-89_060822**		Matrix: **Aqueous**
Date Sampled: **06/08/2022 1330**	Project Name: **RACER Lansing**	
Date Received: **06/11/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		117	25-150
d5-EtFOSAA		111	25-150
d3-MeFOSAA		112	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-007**

Description: **MW-18-90_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1440** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2333	ASD	06/21/2022 1757	45720
2	SOP SPE	PFAS by ID SOP	10	06/24/2022 1331	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.5**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**22**		**3.4**	**0.42**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.77**	**J**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**2.5**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**18**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.3**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.8**	**J**	**3.4**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**4.1**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**5.1**		**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.5**	**J**	**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**17**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.6**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**960**		**34**	**17**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	272	25-150		144	25-150
13C2_6:2FTS	N	228	25-150		108	25-150
13C2_8:2FTS	N	258	25-150		106	25-150
13C2_PFDoA		118	25-150		99	25-150
13C2_PFTeDA		105	25-150		94	25-150
13C3_PFBS		104	25-150		110	25-150
13C3_PFHxS		115	25-150		107	25-150
13C3-HFPO-DA		91	25-150		101	25-150
13C4_PFBA		59	25-150		60	25-150
13C4_PFHpA		102	25-150		104	25-150
13C5_PFHxA		106	25-150		109	25-150
13C5_PFPeA		96	25-150		105	25-150
13C6_PFDA		133	25-150		104	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-007**

Description: **MW-18-90_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1440** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		126	25-150		99	25-150
13C8_PFOA		105	25-150		98	25-150
13C8_PFOS		116	25-150		103	25-150
13C8_PFOSA		123	10-150		105	10-150
13C9_PFNA		119	25-150		112	25-150
d5-EtFOSAA		143	25-150		105	25-150
d3-MeFOSAA		134	25-150		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-008**

Description: **DUP-09_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/23/2022 2355	ASD	06/21/2022 1757	45720
2	SOP SPE	PFAS by ID SOP	10	06/24/2022 1353	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.5**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**22**		**3.4**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.72**	**J**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**3.3**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**18**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.8**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.8**	**J**	**3.4**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**4.0**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**5.4**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.5**	**J**	**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**16**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.3**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1000**		**34**	**17**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	266	25-150	N	151	25-150
13C2_6:2FTS	N	206	25-150		98	25-150
13C2_8:2FTS	N	228	25-150		99	25-150
13C2_PFDoA		115	25-150		85	25-150
13C2_PFTeDA		99	25-150		86	25-150
13C3_PFBS		100	25-150		95	25-150
13C3_PFHxS		108	25-150		96	25-150
13C3-HFPO-DA		92	25-150		91	25-150
13C4_PFBA		60	25-150		60	25-150
13C4_PFHpA		103	25-150		97	25-150
13C5_PFHxA		107	25-150		95	25-150
13C5_PFPeA		91	25-150		94	25-150
13C6_PFDA		125	25-150		91	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-008**

Description: **DUP-09_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		114	25-150		86	25-150
13C8_PFOA		107	25-150		94	25-150
13C8_PFOS		107	25-150		94	25-150
13C8_PFOSA		117	10-150		101	10-150
13C9_PFNA		117	25-150		101	25-150
d5-EtFOSAA		129	25-150		89	25-150
d3-MeFOSAA		123	25-150		99	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-009**

Description: **MW-18-99_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1600** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0006	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.3	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.90**	**J**	**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	**335-77-3**	**PFAS by ID SOP**	**0.84**	**J**	**3.6**	**0.71**	**ng/L**	**1**
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**1.1**	**J**	**3.6**	**0.45**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.3**	**J**	**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**12**		**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.89**	**J**	**3.6**	**0.48**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.7**	**J**	**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**4.1**		**3.6**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.3**	**J**	**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.5**		**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.4**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**78**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	202	25-150
13C2_6:2FTS	N	154	25-150
13C2_8:2FTS		124	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		92	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		83	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		96	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF11003-009**
Description: **MW-18-99_060822**		Matrix: **Aqueous**
Date Sampled: **06/08/2022 1600**	Project Name: **RACER Lansing**	
Date Received: **06/11/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		111	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-010**

Description: **MW-18-100_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1640** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0017	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.0**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.5**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.6**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.4**	**J**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.9**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.2**	**J**	**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		120	25-150
13C2_6:2FTS		129	25-150
13C2_8:2FTS		122	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		110	25-150
13C3_PFBS		112	25-150
13C3_PFHxS		118	25-150
13C3-HFPO-DA		118	25-150
13C4_PFBA		111	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		114	25-150
13C5_PFPeA		118	25-150
13C6_PFDA		116	25-150
13C7_PFUdA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-010**

Description: **MW-18-100_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022 1640** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		110	25-150
13C8_PFOS		115	25-150
13C8_PFOSA		115	10-150
13C9_PFNA		115	25-150
d5-EtFOSAA		112	25-150
d3-MeFOSAA		108	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-011**

Description: **DUP-10_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 0028	ASD	06/21/2022 1757	45720

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.98**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.9**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.8**	**J**	**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.4**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		109	25-150
13C2_6:2FTS		121	25-150
13C2_8:2FTS		106	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		100	25-150
13C3_PFBS		112	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		112	25-150
13C4_PFBA		96	25-150
13C4_PFHpA		99	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		108	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11003-011**

Description: **DUP-10_060822** Matrix: **Aqueous**

Date Sampled: **06/08/2022** Project Name: **RACER Lansing**

Date Received: **06/11/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		111	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ45720-001
Batch: 45720
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/23/2022 2027
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/23/2022 2027
8:2 FTS	ND		1	8.0	1.6	ng/L	06/23/2022 2027
6:2 FTS	ND		1	8.0	2.0	ng/L	06/23/2022 2027
4:2 FTS	ND		1	8.0	0.87	ng/L	06/23/2022 2027
GenX	ND		1	8.0	2.1	ng/L	06/23/2022 2027
ADONA	ND		1	8.0	0.48	ng/L	06/23/2022 2027
EtFOSAA	ND		1	8.0	0.75	ng/L	06/23/2022 2027
MeFOSAA	ND		1	8.0	0.93	ng/L	06/23/2022 2027
PFBS	ND		1	4.0	0.41	ng/L	06/23/2022 2027
PFDS	ND		1	4.0	0.78	ng/L	06/23/2022 2027
PFHpS	ND		1	4.0	0.50	ng/L	06/23/2022 2027
PFNS	ND		1	4.0	0.71	ng/L	06/23/2022 2027
PFOSA	ND		1	4.0	0.61	ng/L	06/23/2022 2027
PFPeS	ND		1	4.0	0.59	ng/L	06/23/2022 2027
PFHxS	ND		1	4.0	0.55	ng/L	06/23/2022 2027
PFBA	ND		1	4.0	0.60	ng/L	06/23/2022 2027
PFDA	ND		1	4.0	0.52	ng/L	06/23/2022 2027
PFDoA	ND		1	4.0	0.47	ng/L	06/23/2022 2027
PFHpA	ND		1	4.0	0.45	ng/L	06/23/2022 2027
PFHxA	ND		1	4.0	0.69	ng/L	06/23/2022 2027
PFNA	ND		1	4.0	0.46	ng/L	06/23/2022 2027
PFOA	ND		1	4.0	0.83	ng/L	06/23/2022 2027
PFPeA	ND		1	4.0	0.54	ng/L	06/23/2022 2027
PFTeDA	ND		1	4.0	0.60	ng/L	06/23/2022 2027
PFTrDA	ND		1	4.0	0.53	ng/L	06/23/2022 2027
PFUdA	ND		1	4.0	0.63	ng/L	06/23/2022 2027
PFOS	ND		1	4.0	2.0	ng/L	06/23/2022 2027

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		94	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		87	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		102	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45720-001
Batch: 45720
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		88	25-150
13C8_PFOA		100	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		92	25-150
d3-MeFOSAA		90	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45720-002
Batch: 45720
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	13		1	86	50-150	06/23/2022 2038
11Cl-PF3OUdS	15	12		1	82	50-150	06/23/2022 2038
8:2 FTS	15	15		1	95	50-150	06/23/2022 2038
6:2 FTS	15	14		1	92	50-150	06/23/2022 2038
4:2 FTS	15	12		1	81	50-150	06/23/2022 2038
GenX	32	31		1	97	50-150	06/23/2022 2038
ADONA	15	13		1	84	50-150	06/23/2022 2038
EtFOSAA	16	15		1	96	50-150	06/23/2022 2038
MeFOSAA	16	15		1	95	50-150	06/23/2022 2038
PFBS	14	13		1	93	50-150	06/23/2022 2038
PFDS	15	14		1	90	50-150	06/23/2022 2038
PFHpS	15	14		1	95	50-150	06/23/2022 2038
PFNS	15	13		1	87	50-150	06/23/2022 2038
PFOSA	16	15		1	91	50-150	06/23/2022 2038
PFPeS	15	13		1	88	50-150	06/23/2022 2038
PFHxS	15	12		1	83	50-150	06/23/2022 2038
PFBA	16	15		1	92	50-150	06/23/2022 2038
PFDA	16	14		1	87	50-150	06/23/2022 2038
PFDoA	16	14		1	90	50-150	06/23/2022 2038
PFHpA	16	15		1	92	50-150	06/23/2022 2038
PFHxA	16	15		1	91	50-150	06/23/2022 2038
PFNA	16	14		1	86	50-150	06/23/2022 2038
PFOA	16	15		1	94	50-150	06/23/2022 2038
PFPeA	16	14		1	89	50-150	06/23/2022 2038
PFTeDA	16	14		1	89	50-150	06/23/2022 2038
PFTrDA	16	13		1	78	50-150	06/23/2022 2038
PFUdA	16	14		1	86	50-150	06/23/2022 2038
PFOS	15	13		1	86	50-150	06/23/2022 2038

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		101	25-150
13C2_6:2FTS		128	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		86	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		111	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		106	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45720-002
Batch: 45720
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		108	25-150
13C7_PFUdA		105	25-150
13C8_PFOA		109	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XF11003-007DU
Batch: 45720
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Parameter	Sample Amount (ng/L)	Result (ng/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
9Cl-PF3ONS	ND	ND		1	0.00	20	06/23/2022 2344
11Cl-PF3OUdS	ND	ND		1	0.00	20	06/23/2022 2344
8:2 FTS	ND	ND		1	0.00	20	06/23/2022 2344
6:2 FTS	ND	ND		1	0.00	20	06/23/2022 2344
4:2 FTS	ND	ND		1	0.00	20	06/23/2022 2344
GenX	ND	ND		1	0.00	20	06/23/2022 2344
ADONA	ND	ND		1	0.00	20	06/23/2022 2344
EtFOSAA	ND	ND		1	0.00	20	06/23/2022 2344
MeFOSAA	ND	ND		1	0.00	20	06/23/2022 2344
PFBS	1.5	2.2	+	1	43	20	06/23/2022 2344
PFDS	ND	ND		1	0.00	20	06/23/2022 2344
PFHpS	22	26		1	14	20	06/23/2022 2344
PFNS	ND	ND		1	0.00	20	06/23/2022 2344
PFOSA	0.77	0.75	J	1	2.1	20	06/23/2022 2344
PFPeS	2.5	2.9	J	1	16	20	06/23/2022 2344
PFHxS	18	20		1	8.0	20	06/23/2022 2344
PFBA	9.3	8.8		1	4.9	20	06/23/2022 2344
PFDA	1.8	1.7	J	1	2.1	20	06/23/2022 2344
PFDoA	ND	ND		1	0.00	20	06/23/2022 2344
PFHpA	4.1	4.4		1	7.2	20	06/23/2022 2344
PFHxA	5.1	5.1		1	1.4	20	06/23/2022 2344
PFNA	1.5	1.6	J	1	12	20	06/23/2022 2344
PFOA	17	17		1	1.7	20	06/23/2022 2344
PFPeA	3.6	ND		1	0.00	20	06/23/2022 2344
PFTeDA	ND	ND		1	0.00	20	06/23/2022 2344
PFTrDA	ND	ND		1	0.00	20	06/23/2022 2344
PFUdA	ND	ND		1	0.00	20	06/23/2022 2344
PFOS	960	1000		1	7.6	20	06/24/2022 1342

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	261	25-150
13C2_6:2FTS	N	198	25-150
13C2_8:2FTS	N	245	25-150
13C2_PFDoA		120	25-150
13C2_PFTeDA		102	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		89	25-150
13C4_PFBA		60	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XF11003-007DU
Batch: 45720
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/21/2022 1757

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		126	25-150
13C7_PFUdA		125	25-150
13C8_PFOA		102	25-150
13C8_PFOS		88	25-150
13C8_PFOSA		115	10-150
13C9_PFNA		115	25-150
d5-EtFOSAA		134	25-150
d3-MeFOSAA		126	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 135284

Pace Analytical® Plant 3

Report to Contact: Tiffany Linder, Kaitlyn Hunt
Telephone No. / Email: 810-225-1935 / Tiffany.Linder@arcadis.com; 517-777-5215 / kaitlyn.hunt@arcadis.com
Quote No
Page 1 of 2

Company: Arcadis
Address: 3550 Cabot Drive, Suite 500
City: Novi | State: MI | Zip Code: 48377
Sampler's Signature: x
Printed Name: Austin Westhuis
Analysis (Attach list if more space is needed): PFAS by WI MOD Hendrix 537 Isotope Dil. 1.0 ng/L 3-1

XF11003
KES2

Project Name: RACER Lansing
Project No.: 30112892.03.70A
P.O. No.:
Remarks / Cooler I.D.:

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Composite (C) or Grab (G)	Matrix: Aqueous	Matrix: Soil	Matrix: Wipe/Other	No of Containers by Preservative Type: Unpres.	HNO3	H2SO4	HCl	NaOH	Na2S2O3	Field Filtered	PFAS by WI MOD Hendrix 537 Isotope Dil. 1.0 ng/L 3-1
MW-02-04(3)_060822	6/8/22	1045	G	X			2							X
MW-18-94_060822	6/8/22	1225	G	X			2							X
MW-18-97_060822	6/8/22	1330	G	X			2							X
MW-23_060822	6/8/22	1440	G	X			2							X
Dup-10_060822	6/8/22	—	G	X			2							X

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)
Sample Disposal: ☐ Return to Client ☒ Disposal by Lab
Possible Hazard Identification: ☒ Non Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown
QC Requirements (Specify)

1. Relinquished by: Austin Westhuis/Arcadis	Date: 6/8/22	Time:	1. Received by: FedEx	Date: 6/8/22	Time:
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	Date: 6-10-22	Time: 1615	4. Laboratory received by: Jodi Allen	Date: 6-10-22	Time: 1615

LAB USE ONLY: Received on Ice (Circle): (Yes) No | Ice Pack | Receipt Temp. 4.2 °C | Temp Blank: Y N

- All samples are retained for four weeks from receipt unless other arrangements are made.

Document Number: ME003N2-01

WW-Return to laboratory with Sample(s); PINK-Field/Client Copy

* Report EGLE 28 compounds

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Plant 3

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 135284

Client: Arcadis	Report to Contact: Tiffany Linder, Kaitlyn Hurst	Telephone No. / E-mail: 810-923-1928 / tiffany.linder@arcadis.com; 947-777-5315 / kaitlyn.hurst@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x Monica Dostert	Analysis (Attach list if more space is needed)	Page 2 of 2
City: Novi; State: MI; Zip Code: 48377	Printed Name: Monica Dostert		XF11003
Project Name: RACER Lansing			KFSz
Project No: 30112892.0370A	P.O. No.		Remarks / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Matrix: Drinking Water / Groundwater / Wastewater / Soil / Solid / Other	No. of Containers by Preservative Type: Unpres. / HNO3 / HCl / H2SO4 / NaOH / Na2S2O3 / Field Filtered	PFAS 533 Method (Mod. w/ isotope dilution)
MW-18-91-060822	6/8/22	935	G / X	2	X
MW-18-89-060822	6/8/22	1330	G / X	2	X
MW-18-90-060822	6/8/22	1440	G / X	2	X
DUP-09-060822	6/8/22	—	G / X	2	X
MW-18-99-060822	6/8/22	1600	G / X	2	X
MW-18-100-060822	6/8/22	1640	G / X	2	X

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Austin Westhuis / Arcadis	6/8/22		1. Received by: FedEx	6/8/22	
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	6-10-22	1615	4. Laboratory received by	6-10-22	1615

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on Ice (Circle): (Yes) No Ice Pack — Receipt Temp: 4.2 °C — Temp Blank: ☒ Y ☐ N

* Report EGLE 28 compounds

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME033N2-01

PACE ANALYTICAL SERVICES, LLC

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: ARCADIS Cooler Inspected by/date: TEC / 06/10/2022 Lot #: XF1103

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

4.2 / 4.2 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☑ Yes	☐ No		21. Was the quote number listed on the container label? If yes, Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA.
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA

SR barcode labels applied by: TEC Date: 06/10/2022

Comments: DUP-10-060822 not on COC

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Tiffany Linder

Project Name: RACER Lansing

Project Number: 30112892.0370A

Lot Number:**XF11006**

Date Completed:06/29/2022

Kathy Smith

06/29/2022 9:54 AM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Case Narrative
Arcadis U.S., Inc.
Lot Number: XF11006

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples was in compliance with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). For undiluted analysis. For undiluted analysis, the extract is prepared for injection by adding 182 uL of sample extract + 8 uL of reagent water + 10 uL of internal standard solution to a polypropylene autosampler vial. An extra correction factor of 0.91 (182 uL / 200 uL = 0.91) applies. The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1/0.91.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Surrogate recovery for the following samples was outside the upper control limit: XF11006-002, XF11006-006, XF11006-008, XF11006-009, XF11006-010, XF11006-011, XF11006-012, XF11006-014, XF11006-015, XF11006-016, XF11006-017, XF11006-018, XF11006-019, XF11006-020. This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Surrogate recovery for the following sample was outside control limits: XF11006-013. Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

The MS/MSD associated with sample XF11006-016 had compounds recovered outside of the acceptance limits. The LCS was recovered within the required acceptance limits; therefore, this demonstrates a matrix effect and data quality is not impacted.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XF11006

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-19-114_060922	Aqueous	06/09/2022 1000	06/10/2022
002	MW-18-105_060922	Aqueous	06/09/2022 1055	06/10/2022
003	MW-18-104_060922	Aqueous	06/09/2022 1150	06/10/2022
004	MW-18-103_060922	Aqueous	06/09/2022 1245	06/10/2022
005	MW-18-102_060922	Aqueous	06/09/2022 1345	06/10/2022
006	MW-18-106_060922	Aqueous	06/09/2022 1500	06/10/2022
007	EB-06_060922	Aqueous	06/09/2022 1525	06/10/2022
008	MW-19-111_060922	Aqueous	06/09/2022 1100	06/10/2022
009	MW-19-108_060922	Aqueous	06/09/2022 1150	06/10/2022
010	MW-18-92_060922	Aqueous	06/09/2022 1235	06/10/2022
011	MW-19-107_060922	Aqueous	06/09/2022 1325	06/10/2022
012	UNK-15_060922	Aqueous	06/09/2022 1035	06/10/2022
013	MW-19-112_060922	Aqueous	06/09/2022 1705	06/10/2022
014	MW-18-98_060922	Aqueous	06/09/2022 1135	06/10/2022
015	MW-18-95_060922	Aqueous	06/09/2022 1300	06/10/2022
016	MW-18-88_060922	Aqueous	06/09/2022 1405	06/10/2022
017	CH-14-RO_060922	Aqueous	06/09/2022 1610	06/10/2022
018	DUP-07_060922	Aqueous	06/09/2022	06/10/2022
019	MW-91-2R_060922	Aqueous	06/09/2022 1340	06/10/2022
020	MW-18-101_060922	Aqueous	06/09/2022 1515	06/10/2022
021	MW-18-93_060922	Aqueous	06/09/2022 1705	06/10/2022
022	EB-07_060922	Aqueous	06/09/2022 1730	06/10/2022

(22 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XF11006

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-19-114_060922	Aqueous	PFBS	PFAS by ID	1.2	J	ng/L	7
001	MW-19-114_060922	Aqueous	PFHxS	PFAS by ID	0.68	J	ng/L	7
001	MW-19-114_060922	Aqueous	PFOS	PFAS by ID	2.3	J	ng/L	7
002	MW-18-105_060922	Aqueous	PFBS	PFAS by ID	5.6		ng/L	9
002	MW-18-105_060922	Aqueous	PFPeS	PFAS by ID	0.54	J	ng/L	9
002	MW-18-105_060922	Aqueous	PFHxS	PFAS by ID	2.0	J	ng/L	9
002	MW-18-105_060922	Aqueous	PFBA	PFAS by ID	5.1		ng/L	9
002	MW-18-105_060922	Aqueous	PFOA	PFAS by ID	1.7	J	ng/L	9
002	MW-18-105_060922	Aqueous	PFPeA	PFAS by ID	1.0	J	ng/L	9
002	MW-18-105_060922	Aqueous	PFOS	PFAS by ID	9.5		ng/L	9
003	MW-18-104_060922	Aqueous	PFBS	PFAS by ID	1.6	J	ng/L	11
003	MW-18-104_060922	Aqueous	PFHxS	PFAS by ID	1.4	J	ng/L	11
003	MW-18-104_060922	Aqueous	PFBA	PFAS by ID	1.2	J	ng/L	11
003	MW-18-104_060922	Aqueous	PFOS	PFAS by ID	5.7		ng/L	11
004	MW-18-103_060922	Aqueous	PFBS	PFAS by ID	6.2		ng/L	13
004	MW-18-103_060922	Aqueous	PFPeS	PFAS by ID	5.2		ng/L	13
004	MW-18-103_060922	Aqueous	PFHxS	PFAS by ID	44		ng/L	13
004	MW-18-103_060922	Aqueous	PFBA	PFAS by ID	3.6		ng/L	13
004	MW-18-103_060922	Aqueous	PFOS	PFAS by ID	2.9	J	ng/L	13
006	MW-18-106_060922	Aqueous	PFBS	PFAS by ID	2.3	J	ng/L	17
006	MW-18-106_060922	Aqueous	PFPeS	PFAS by ID	0.57	J	ng/L	17
006	MW-18-106_060922	Aqueous	PFHxS	PFAS by ID	3.7		ng/L	17
006	MW-18-106_060922	Aqueous	PFBA	PFAS by ID	1.6	J	ng/L	17
006	MW-18-106_060922	Aqueous	PFHpA	PFAS by ID	0.43	J	ng/L	17
006	MW-18-106_060922	Aqueous	PFOA	PFAS by ID	0.84	J	ng/L	17
006	MW-18-106_060922	Aqueous	PFPeA	PFAS by ID	0.77	J	ng/L	17
006	MW-18-106_060922	Aqueous	PFOS	PFAS by ID	4.3		ng/L	17
008	MW-19-111_060922	Aqueous	PFBS	PFAS by ID	1.4	J	ng/L	21
008	MW-19-111_060922	Aqueous	PFHxS	PFAS by ID	1.5	J	ng/L	21
008	MW-19-111_060922	Aqueous	PFBA	PFAS by ID	2.5	J	ng/L	21
008	MW-19-111_060922	Aqueous	PFHpA	PFAS by ID	0.98	J	ng/L	21
008	MW-19-111_060922	Aqueous	PFOA	PFAS by ID	7.1		ng/L	21
009	MW-19-108_060922	Aqueous	PFBS	PFAS by ID	1.3	J	ng/L	23
009	MW-19-108_060922	Aqueous	PFHxS	PFAS by ID	1.2	J	ng/L	23
009	MW-19-108_060922	Aqueous	PFBA	PFAS by ID	1.6	J	ng/L	23
009	MW-19-108_060922	Aqueous	PFHpA	PFAS by ID	0.51	J	ng/L	23
009	MW-19-108_060922	Aqueous	PFHxA	PFAS by ID	0.90	J	ng/L	23
009	MW-19-108_060922	Aqueous	PFOA	PFAS by ID	5.2		ng/L	23
009	MW-19-108_060922	Aqueous	PFOS	PFAS by ID	5.8		ng/L	23
010	MW-18-92_060922	Aqueous	PFBS	PFAS by ID	0.72	J	ng/L	25
010	MW-18-92_060922	Aqueous	PFOSA	PFAS by ID	0.53	J	ng/L	25
010	MW-18-92_060922	Aqueous	PFBA	PFAS by ID	1.0	J	ng/L	25
010	MW-18-92_060922	Aqueous	PFOA	PFAS by ID	1.1	J	ng/L	25

Detection Summary (Continued)

Lot Number: XF11006

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
011	MW-19-107_060922	Aqueous	PFBS	PFAS by ID	2.1	J	ng/L	27
011	MW-19-107_060922	Aqueous	PFPeS	PFAS by ID	0.61	J	ng/L	27
011	MW-19-107_060922	Aqueous	PFHxS	PFAS by ID	4.6		ng/L	27
011	MW-19-107_060922	Aqueous	PFBA	PFAS by ID	2.9	J	ng/L	27
011	MW-19-107_060922	Aqueous	PFHpA	PFAS by ID	0.59	J	ng/L	27
011	MW-19-107_060922	Aqueous	PFOA	PFAS by ID	3.6		ng/L	27
011	MW-19-107_060922	Aqueous	PFPeA	PFAS by ID	1.5	J	ng/L	27
011	MW-19-107_060922	Aqueous	PFOS	PFAS by ID	2.0	J	ng/L	27
012	UNK-15_060922	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	29
012	UNK-15_060922	Aqueous	PFHpS	PFAS by ID	12		ng/L	29
012	UNK-15_060922	Aqueous	PFPeS	PFAS by ID	2.2	J	ng/L	29
012	UNK-15_060922	Aqueous	PFHxS	PFAS by ID	15		ng/L	29
012	UNK-15_060922	Aqueous	PFBA	PFAS by ID	14		ng/L	29
012	UNK-15_060922	Aqueous	PFDA	PFAS by ID	2.9	J	ng/L	29
012	UNK-15_060922	Aqueous	PFHpA	PFAS by ID	8.2		ng/L	29
012	UNK-15_060922	Aqueous	PFHxA	PFAS by ID	11		ng/L	29
012	UNK-15_060922	Aqueous	PFNA	PFAS by ID	5.3		ng/L	29
012	UNK-15_060922	Aqueous	PFOA	PFAS by ID	32		ng/L	29
012	UNK-15_060922	Aqueous	PFPeA	PFAS by ID	14		ng/L	29
012	UNK-15_060922	Aqueous	PFOS	PFAS by ID	1100		ng/L	29
013	MW-19-112_060922	Aqueous	PFBA	PFAS by ID	2.2	JQ	ng/L	31
013	MW-19-112_060922	Aqueous	PFHxA	PFAS by ID	1.4	J	ng/L	31
013	MW-19-112_060922	Aqueous	PFPeA	PFAS by ID	4.2		ng/L	31
014	MW-18-98_060922	Aqueous	PFBS	PFAS by ID	0.60	J	ng/L	33
014	MW-18-98_060922	Aqueous	PFHpS	PFAS by ID	1.6	J	ng/L	33
014	MW-18-98_060922	Aqueous	PFHxS	PFAS by ID	0.60	J	ng/L	33
014	MW-18-98_060922	Aqueous	PFBA	PFAS by ID	7.1		ng/L	33
014	MW-18-98_060922	Aqueous	PFHpA	PFAS by ID	4.2		ng/L	33
014	MW-18-98_060922	Aqueous	PFHxA	PFAS by ID	4.9		ng/L	33
014	MW-18-98_060922	Aqueous	PFNA	PFAS by ID	3.1	J	ng/L	33
014	MW-18-98_060922	Aqueous	PFOA	PFAS by ID	24		ng/L	33
014	MW-18-98_060922	Aqueous	PFPeA	PFAS by ID	2.4	J	ng/L	33
014	MW-18-98_060922	Aqueous	PFOS	PFAS by ID	97		ng/L	33
015	MW-18-95_060922	Aqueous	PFBS	PFAS by ID	1.5	J	ng/L	35
015	MW-18-95_060922	Aqueous	PFHxS	PFAS by ID	1.0	J	ng/L	35
015	MW-18-95_060922	Aqueous	PFBA	PFAS by ID	6.0		ng/L	35
015	MW-18-95_060922	Aqueous	PFNA	PFAS by ID	0.64	J	ng/L	35
015	MW-18-95_060922	Aqueous	PFOA	PFAS by ID	2.7	J	ng/L	35
015	MW-18-95_060922	Aqueous	PFTeDA	PFAS by ID	0.76	J	ng/L	35
015	MW-18-95_060922	Aqueous	PFOS	PFAS by ID	28		ng/L	35
016	MW-18-88_060922	Aqueous	PFBS	PFAS by ID	2.4	J	ng/L	37
016	MW-18-88_060922	Aqueous	PFHpS	PFAS by ID	1.7	J	ng/L	37
016	MW-18-88_060922	Aqueous	PFPeS	PFAS by ID	0.69	J	ng/L	37
016	MW-18-88_060922	Aqueous	PFHxS	PFAS by ID	4.1		ng/L	37
016	MW-18-88_060922	Aqueous	PFBA	PFAS by ID	13		ng/L	37
016	MW-18-88_060922	Aqueous	PFHpA	PFAS by ID	0.66	J	ng/L	37
016	MW-18-88_060922	Aqueous	PFHxA	PFAS by ID	1.3	J	ng/L	37
016	MW-18-88_060922	Aqueous	PFOA	PFAS by ID	7.8		ng/L	37

Detection Summary (Continued)

Lot Number: XF11006

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
016	MW-18-88_060922	Aqueous	PFPeA	PFAS by ID	1.2	J	ng/L	37
016	MW-18-88_060922	Aqueous	PFOS	PFAS by ID	200	S	ng/L	37
017	CH-14-RO_060922	Aqueous	PFBS	PFAS by ID	110		ng/L	39
017	CH-14-RO_060922	Aqueous	PFHpS	PFAS by ID	160		ng/L	39
017	CH-14-RO_060922	Aqueous	PFPeS	PFAS by ID	330		ng/L	39
017	CH-14-RO_060922	Aqueous	PFHxS	PFAS by ID	1600		ng/L	39
017	CH-14-RO_060922	Aqueous	PFBA	PFAS by ID	17		ng/L	39
017	CH-14-RO_060922	Aqueous	PFHpA	PFAS by ID	19		ng/L	39
017	CH-14-RO_060922	Aqueous	PFHxA	PFAS by ID	39		ng/L	39
017	CH-14-RO_060922	Aqueous	PFNA	PFAS by ID	0.89	J	ng/L	39
017	CH-14-RO_060922	Aqueous	PFOA	PFAS by ID	130		ng/L	39
017	CH-14-RO_060922	Aqueous	PFPeA	PFAS by ID	15		ng/L	39
017	CH-14-RO_060922	Aqueous	PFOS	PFAS by ID	10000		ng/L	39
018	DUP-07_060922	Aqueous	PFBS	PFAS by ID	110		ng/L	41
018	DUP-07_060922	Aqueous	PFHpS	PFAS by ID	150		ng/L	41
018	DUP-07_060922	Aqueous	PFNS	PFAS by ID	0.61	J	ng/L	41
018	DUP-07_060922	Aqueous	PFPeS	PFAS by ID	320		ng/L	41
018	DUP-07_060922	Aqueous	PFHxS	PFAS by ID	1800		ng/L	41
018	DUP-07_060922	Aqueous	PFBA	PFAS by ID	17		ng/L	41
018	DUP-07_060922	Aqueous	PFHpA	PFAS by ID	18		ng/L	41
018	DUP-07_060922	Aqueous	PFHxA	PFAS by ID	39		ng/L	41
018	DUP-07_060922	Aqueous	PFOA	PFAS by ID	120		ng/L	41
018	DUP-07_060922	Aqueous	PFPeA	PFAS by ID	13		ng/L	41
018	DUP-07_060922	Aqueous	PFOS	PFAS by ID	9700		ng/L	41
019	MW-91-2R_060922	Aqueous	PFBA	PFAS by ID	7.3		ng/L	43
020	MW-18-101_060922	Aqueous	PFBA	PFAS by ID	3.8		ng/L	45
020	MW-18-101_060922	Aqueous	PFPeA	PFAS by ID	0.56	J	ng/L	45

(118 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-001**

Description: **MW-19-114_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1000** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1535	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.4	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.69	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.86	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.2**	**J**	**3.7**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.68**	**J**	**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	0.41	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.7	0.63	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.7	0.76	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	0.50	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.3**	**J**	**3.7**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		122	25-150
13C2_6:2FTS		141	25-150
13C2_8:2FTS		106	25-150
13C2_PFDoA		94	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		98	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		89	25-150
13C4_PFHpA		102	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF11006-001**
Description: **MW-19-114_060922**		Matrix: **Aqueous**
Date Sampled: **06/09/2022 1000**	Project Name: **RACER Lansing**	
Date Received: **06/10/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		101	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-002**

Description: **MW-18-105_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1055** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1546	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.3	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**5.6**		**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.54**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.0**	**J**	**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.1**		**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.7**	**J**	**3.6**	**0.76**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.0**	**J**	**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**9.5**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	159	25-150
13C2_6:2FTS	N	175	25-150
13C2_8:2FTS		114	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		75	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		99	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		101	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-002**
Description: **MW-18-105_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1055**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		108	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		108	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-003**

Description: **MW-18-104_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1150** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1556	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.6**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**5.7**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		130	25-150
13C2_6:2FTS		129	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		101	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		77	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		108	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-003**
Description: **MW-18-104_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1150**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		105	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		107	25-150
d3-MeFOSAA		108	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-004**

Description: **MW-18-103_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1245** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1607	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**6.2**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**5.2**		**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**44**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.6**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.9**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		132	25-150
13C2_6:2FTS		125	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		80	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		112	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-004**
Description: **MW-18-103_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1245**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-005**

Description: **MW-18-102_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1345** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1618	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.3	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		128	25-150
13C2_6:2FTS		142	25-150
13C2_8:2FTS		118	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		103	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		94	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		112	25-150
13C5_PFPeA		117	25-150
13C6_PFDA		109	25-150
13C7_PFUdA		110	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-005**
Description: **MW-18-102_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1345**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		111	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		116	25-150
d5-EtFOSAA		110	25-150
d3-MeFOSAA		113	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-006**

Description: **MW-18-106_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1500** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1629	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.3**	**J**	**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.57**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.7**		**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.6**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.43**	**J**	**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.84**	**J**	**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.77**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.3**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		132	25-150
13C2_6:2FTS	N	152	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		97	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		85	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		107	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		101	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-006**
Description: **MW-18-106_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1500**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		108	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-007**

Description: **EB-06_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1525** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1640	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		111	25-150
13C2_6:2FTS		139	25-150
13C2_8:2FTS		110	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		102	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		108	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-007**

Description: **EB-06_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1525** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		110	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		101	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-008**

Description: **MW-19-111_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1100** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1651	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.4**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.5**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.5**	**J**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.98**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.1**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	190	25-150
13C2_6:2FTS	N	160	25-150
13C2_8:2FTS		114	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		102	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		59	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		94	25-150
13C6_PFDA		106	25-150
13C7_PFUdA		109	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-008**
Description: **MW-19-111_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1100**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		114	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		105	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		111	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-009**

Description: **MW-19-108_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1150** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1702	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.62	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.4	0.81	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.70	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.87	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.3**	**J**	**3.7**	**0.39**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.72	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.66	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.6**	**J**	**3.7**	**0.56**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.51**	**J**	**3.7**	**0.42**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.90**	**J**	**3.7**	**0.64**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.2**		**3.7**	**0.77**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	0.51	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**5.8**		**3.7**	**1.9**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	219	25-150
13C2_6:2FTS		129	25-150
13C2_8:2FTS		106	25-150
13C2_PFDoA		84	25-150
13C2_PFTeDA		82	25-150
13C3_PFBS		94	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		55	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		85	25-150
13C6_PFDA		96	25-150
13C7_PFUdA		88	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-009**
Description: **MW-19-108_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1150**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		98	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		107	25-150
d5-EtFOSAA		94	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-010**

Description: **MW-18-92_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1235** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1713	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.72**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.53**	**J**	**3.4**	**0.53**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.0**	**J**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	174	25-150
13C2_6:2FTS		138	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		95	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		92	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		62	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		91	25-150
13C6_PFDA		96	25-150
13C7_PFUdA		99	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF11006-010**
Description: **MW-18-92_060922**		Matrix: **Aqueous**
Date Sampled: **06/09/2022 1235**	Project Name: **RACER Lansing**	
Date Received: **06/10/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		99	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-011**

Description: **MW-19-107_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1325** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1746	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.7	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.1**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.61**	**J**	**3.4**	**0.50**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**4.6**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.9**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.59**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.58	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**3.6**		**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.5**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	218	25-150
13C2_6:2FTS	N	182	25-150
13C2_8:2FTS		117	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		59	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-011**

Description: **MW-19-107_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1325** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		110	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-012**

Description: **UNK-15_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1035** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1757	ASD	06/22/2022 1001	45775
2	SOP SPE	PFAS by ID SOP	5	06/27/2022 1152	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**12**		**3.4**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**2.2**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**15**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**14**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**2.9**	**J**	**3.4**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**8.2**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**11**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**5.3**		**3.4**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**32**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**14**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1100**		**17**	**8.6**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	250	25-150	N	197	25-150
13C2_6:2FTS	N	196	25-150		134	25-150
13C2_8:2FTS	N	190	25-150		142	25-150
13C2_PFDoA		107	25-150		134	25-150
13C2_PFTeDA		100	25-150		118	25-150
13C3_PFBS		90	25-150		118	25-150
13C3_PFHxS		105	25-150		128	25-150
13C3-HFPO-DA		80	25-150		108	25-150
13C4_PFBA		60	25-150		113	25-150
13C4_PFHpA		101	25-150		117	25-150
13C5_PFHxA		93	25-150		125	25-150
13C5_PFPeA		76	25-150		117	25-150
13C6_PFDA		119	25-150		120	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-012**

Description: **UNK-15_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1035** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		112	25-150		125	25-150
13C8_PFOA		98	25-150		115	25-150
13C8_PFOS		105	25-150		119	25-150
13C8_PFOSA		109	10-150		120	10-150
13C9_PFNA		110	25-150		113	25-150
d5-EtFOSAA		120	25-150		136	25-150
d3-MeFOSAA		124	25-150		128	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-013**

Description: **MW-19-112_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1705** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1808	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.2**	**JQ**	**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.4**	**J**	**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**4.2**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	237	25-150
13C2_6:2FTS	N	194	25-150
13C2_8:2FTS		125	25-150
13C2_PFDoA		87	25-150
13C2_PFTeDA		64	25-150
13C3_PFBS		72	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		75	25-150
13C4_PFBA	N	21	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		83	25-150
13C5_PFPeA		53	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-013**
Description: **MW-19-112_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1705**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		106	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		92	10-150
13C9_PFNA		113	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-014**

Description: **MW-18-98_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1135** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1819	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.60**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**1.6**	**J**	**3.4**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.60**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.1**		**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**4.2**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**4.9**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**3.1**	**J**	**3.4**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**24**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.4**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**97**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	219	25-150
13C2_6:2FTS		140	25-150
13C2_8:2FTS		115	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		96	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		115	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		80	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		104	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-014**
Description: **MW-18-98_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1135**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		106	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		105	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		113	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-015**

Description: **MW-18-95_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1300** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1829	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.5	0.62	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.5	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.5	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.5	0.82	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.5	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.5	0.71	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.5	0.88	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.5**	**J**	**3.8**	**0.39**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.73	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.47	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.67	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.56	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.0**	**J**	**3.8**	**0.52**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**6.0**		**3.8**	**0.56**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.8	0.49	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.8	0.42	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.8	0.65	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.64**	**J**	**3.8**	**0.43**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.7**	**J**	**3.8**	**0.78**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.8	0.51	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	**376-06-7**	**PFAS by ID SOP**	**0.76**	**J**	**3.8**	**0.56**	**ng/L**	**1**
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.59	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**28**		**3.8**	**1.9**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	268	25-150
13C2_6:2FTS	N	234	25-150
13C2_8:2FTS	N	203	25-150
13C2_PFDoA		111	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		73	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		119	25-150
13C7_PFUdA		120	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-015**
Description: **MW-18-95_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1300**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		106	25-150
13C8_PFOS		111	25-150
13C8_PFOSA		114	10-150
13C9_PFNA		127	25-150
d5-EtFOSAA		129	25-150
d3-MeFOSAA		131	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
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Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-016**

Description: **MW-18-88_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1405** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1840	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.6	0.40	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.6	0.55	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.6	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.6	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.6	0.73	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.6	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.6	0.40	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.6	0.62	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.6	0.77	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.4**	**J**	**3.3**	**0.34**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.3	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**1.7**	**J**	**3.3**	**0.41**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.3	0.59	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.3	0.51	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.69**	**J**	**3.3**	**0.49**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**4.1**		**3.3**	**0.46**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**13**		**3.3**	**0.50**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.3	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.3	0.39	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.66**	**J**	**3.3**	**0.37**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.3**	**J**	**3.3**	**0.57**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.3	0.38	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.8**		**3.3**	**0.69**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.2**	**J**	**3.3**	**0.45**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.3	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.3	0.44	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.3	0.52	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**200**	**S**	**3.3**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	218	25-150
13C2_6:2FTS		143	25-150
13C2_8:2FTS		104	25-150
13C2_PFDoA		87	25-150
13C2_PFTeDA		86	25-150
13C3_PFBS		89	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		87	25-150
13C4_PFBA		69	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		87	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-016**
Description: **MW-18-88_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1405**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		93	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		101	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-017**

Description: **CH-14-RO_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1610** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1913	ASD	06/22/2022 1001	45775
2	SOP SPE	PFAS by ID SOP	100	06/27/2022 1203	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**110**		**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**160**		**3.6**	**0.45**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**330**		**3.6**	**0.53**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1600**		**360**	**50**	**ng/L**	**2**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**17**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**19**		**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**39**		**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.89**	**J**	**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**130**		**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**15**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**10000**		**360**	**180**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	206	25-150		106	25-150
13C2_6:2FTS		38	25-150		96	25-150
13C2_8:2FTS		118	25-150		118	25-150
13C2_PFDoA		98	25-150		121	25-150
13C2_PFTeDA		100	25-150		123	25-150
13C3_PFBS		97	25-150		104	25-150
13C3_PFHxS		61	25-150		106	25-150
13C3-HFPO-DA		84	25-150		106	25-150
13C4_PFBA		78	25-150		105	25-150
13C4_PFHpA		63	25-150		98	25-150
13C5_PFHxA		106	25-150		110	25-150
13C5_PFPeA		97	25-150		106	25-150
13C6_PFDA		104	25-150		108	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-017**

Description: **CH-14-RO_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1610** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		103	25-150		111	25-150
13C8_PFOA		27	25-150		98	25-150
13C8_PFOS		64	25-150		104	25-150
13C8_PFOSA		110	10-150		109	10-150
13C9_PFNA		65	25-150		100	25-150
d5-EtFOSAA		107	25-150		138	25-150
d3-MeFOSAA		112	25-150		121	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-018**

Description: **DUP-07_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1924	ASD	06/22/2022 1001	45775
2	SOP SPE	PFAS by ID SOP	100	06/27/2022 1214	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.7	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**110**		**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**150**		**3.4**	**0.42**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	**68259-12-1**	**PFAS by ID SOP**	**0.61**	**J**	**3.4**	**0.60**	**ng/L**	**1**
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**320**		**3.4**	**0.50**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1800**		**340**	**46**	**ng/L**	**2**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**17**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**18**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**39**		**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**120**		**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**13**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**9700**		**340**	**170**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	204	25-150		106	25-150
13C2_6:2FTS		36	25-150		93	25-150
13C2_8:2FTS		113	25-150		101	25-150
13C2_PFDoA		93	25-150		102	25-150
13C2_PFTeDA		91	25-150		107	25-150
13C3_PFBS		94	25-150		103	25-150
13C3_PFHxS		57	25-150		97	25-150
13C3-HFPO-DA		82	25-150		103	25-150
13C4_PFBA		78	25-150		100	25-150
13C4_PFHpA		62	25-150		97	25-150
13C5_PFHxA		101	25-150		100	25-150
13C5_PFPeA		93	25-150		104	25-150
13C6_PFDA		97	25-150		101	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-018**

Description: **DUP-07_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		97	25-150		104	25-150
13C8_PFOA		25	25-150		92	25-150
13C8_PFOS		58	25-150		104	25-150
13C8_PFOSA		97	10-150		106	10-150
13C9_PFNA		63	25-150		95	25-150
d5-EtFOSAA		101	25-150		112	25-150
d3-MeFOSAA		104	25-150		107	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-019**

Description: **MW-91-2R_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1340** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1935	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.3**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	156	25-150
13C2_6:2FTS		132	25-150
13C2_8:2FTS		110	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		102	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		111	25-150
13C5_PFPeA		103	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XF11006-019**
Description: **MW-91-2R_060922**		Matrix: **Aqueous**
Date Sampled: **06/09/2022 1340**	Project Name: **RACER Lansing**	
Date Received: **06/10/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		108	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		113	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-020**

Description: **MW-18-101_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1515** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 1946	ASD	06/22/2022 1001	45775

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.8**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.56**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	175	25-150
13C2_6:2FTS		132	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		102	25-150
13C3_PFBS		106	25-150
13C3_PFHxS		118	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		72	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-020**

Description: **MW-18-101_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1515** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		110	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		101	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		111	25-150
d3-MeFOSAA		115	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-021**

Description: **MW-18-93_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1705** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 2041	ASD	06/22/2022 1725	45832

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.35	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.58	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.70	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		111	25-150
13C2_6:2FTS		113	25-150
13C2_8:2FTS		105	25-150
13C2_PFDoA		96	25-150
13C2_PFTeDA		92	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		108	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		110	25-150
13C6_PFDA		97	25-150
13C7_PFUdA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XF11006-021**
Description: **MW-18-93_060922**
Matrix: **Aqueous**
Date Sampled: **06/09/2022 1705**
Project Name: **RACER Lansing**
Date Received: **06/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-022**

Description: **EB-07_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1730** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	06/24/2022 2103	ASD	06/22/2022 1725	45832

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		109	25-150
13C2_6:2FTS		137	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		101	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		103	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		102	25-150

LOQ = Limit of Quantitation
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XF11006-022**

Description: **EB-07_060922** Matrix: **Aqueous**

Date Sampled: **06/09/2022 1730** Project Name: **RACER Lansing**

Date Received: **06/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		108	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ45775-001
Batch: 45775
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1001

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/24/2022 1512
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/24/2022 1512
8:2 FTS	ND		1	8.0	1.6	ng/L	06/24/2022 1512
6:2 FTS	ND		1	8.0	2.0	ng/L	06/24/2022 1512
4:2 FTS	ND		1	8.0	0.87	ng/L	06/24/2022 1512
GenX	ND		1	8.0	2.1	ng/L	06/24/2022 1512
ADONA	ND		1	8.0	0.48	ng/L	06/24/2022 1512
EtFOSAA	ND		1	8.0	0.75	ng/L	06/24/2022 1512
MeFOSAA	ND		1	8.0	0.93	ng/L	06/24/2022 1512
PFBS	ND		1	4.0	0.41	ng/L	06/24/2022 1512
PFDS	ND		1	4.0	0.78	ng/L	06/24/2022 1512
PFHpS	ND		1	4.0	0.50	ng/L	06/24/2022 1512
PFNS	ND		1	4.0	0.71	ng/L	06/24/2022 1512
PFOSA	ND		1	4.0	0.61	ng/L	06/24/2022 1512
PFPeS	ND		1	4.0	0.59	ng/L	06/24/2022 1512
PFHxS	ND		1	4.0	0.55	ng/L	06/24/2022 1512
PFBA	ND		1	4.0	0.60	ng/L	06/24/2022 1512
PFDA	ND		1	4.0	0.52	ng/L	06/24/2022 1512
PFDoA	ND		1	4.0	0.47	ng/L	06/24/2022 1512
PFHpA	ND		1	4.0	0.45	ng/L	06/24/2022 1512
PFHxA	ND		1	4.0	0.69	ng/L	06/24/2022 1512
PFNA	ND		1	4.0	0.46	ng/L	06/24/2022 1512
PFOA	ND		1	4.0	0.83	ng/L	06/24/2022 1512
PFPeA	ND		1	4.0	0.54	ng/L	06/24/2022 1512
PFTeDA	ND		1	4.0	0.60	ng/L	06/24/2022 1512
PFTrDA	ND		1	4.0	0.53	ng/L	06/24/2022 1512
PFUdA	ND		1	4.0	0.63	ng/L	06/24/2022 1512
PFOS	ND		1	4.0	2.0	ng/L	06/24/2022 1512

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		144	25-150
13C2_6:2FTS	N	322	25-150
13C2_8:2FTS	N	151	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		105	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45775-001
Batch: 45775
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1001

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		111	25-150
13C7_PFUdA		106	25-150
13C8_PFOA		105	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		113	25-150
d3-MeFOSAA		116	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45775-002
Batch: 45775
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1001

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	13		1	88	50-150	06/24/2022 1524
11Cl-PF3OUdS	15	13		1	89	50-150	06/24/2022 1524
8:2 FTS	15	13		1	86	50-150	06/24/2022 1524
6:2 FTS	15	16		1	106	50-150	06/24/2022 1524
4:2 FTS	15	13		1	85	50-150	06/24/2022 1524
GenX	32	32		1	100	50-150	06/24/2022 1524
ADONA	15	13		1	88	50-150	06/24/2022 1524
EtFOSAA	16	15		1	91	50-150	06/24/2022 1524
MeFOSAA	16	15		1	97	50-150	06/24/2022 1524
PFBS	14	14		1	96	50-150	06/24/2022 1524
PFDS	15	14		1	90	50-150	06/24/2022 1524
PFHpS	15	16		1	103	50-150	06/24/2022 1524
PFNS	15	14		1	90	50-150	06/24/2022 1524
PFOSA	16	16		1	97	50-150	06/24/2022 1524
PFPeS	15	15		1	102	50-150	06/24/2022 1524
PFHxS	15	14		1	95	50-150	06/24/2022 1524
PFBA	16	16		1	98	50-150	06/24/2022 1524
PFDA	16	15		1	95	50-150	06/24/2022 1524
PFDoA	16	15		1	95	50-150	06/24/2022 1524
PFHpA	16	15		1	94	50-150	06/24/2022 1524
PFHxA	16	15		1	95	50-150	06/24/2022 1524
PFNA	16	14		1	90	50-150	06/24/2022 1524
PFOA	16	14		1	90	50-150	06/24/2022 1524
PFPeA	16	15		1	95	50-150	06/24/2022 1524
PFTeDA	16	15		1	92	50-150	06/24/2022 1524
PFTrDA	16	15		1	92	50-150	06/24/2022 1524
PFUdA	16	14		1	90	50-150	06/24/2022 1524
PFOS	15	13		1	90	50-150	06/24/2022 1524

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		108	25-150
13C2_6:2FTS	N	291	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		95	25-150
13C2_PFTeDA		92	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		99	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45775-002
Batch: 45775
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1001

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		97	25-150
13C7_PFUdA		99	25-150
13C8_PFOA		113	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XF11006-016MS
Batch: 45775
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1001

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	12		1	95	50-150	06/24/2022 1851
11Cl-PF3OUdS	ND	13	11		1	85	50-150	06/24/2022 1851
8:2 FTS	ND	13	11		1	87	50-150	06/24/2022 1851
6:2 FTS	ND	13	15		1	112	50-150	06/24/2022 1851
4:2 FTS	ND	13	12		1	96	50-150	06/24/2022 1851
GenX	ND	28	30		1	107	50-150	06/24/2022 1851
ADONA	ND	13	13		1	100	50-150	06/24/2022 1851
EtFOSAA	ND	14	14		1	99	50-150	06/24/2022 1851
MeFOSAA	ND	14	14		1	101	50-150	06/24/2022 1851
PFBS	2.4	12	14		1	97	50-150	06/24/2022 1851
PFDS	ND	13	12		1	89	50-150	06/24/2022 1851
PFHpS	1.7	13	15		1	99	50-150	06/24/2022 1851
PFNS	ND	13	12		1	92	50-150	06/24/2022 1851
PFOSA	ND	14	14		1	101	50-150	06/24/2022 1851
PFPeS	0.69	13	15		1	109	50-150	06/24/2022 1851
PFHxS	4.1	13	17		1	100	50-150	06/24/2022 1851
PFBA	13	14	27		1	97	50-150	06/24/2022 1851
PFDA	ND	14	14		1	99	50-150	06/24/2022 1851
PFDoA	ND	14	14		1	98	50-150	06/24/2022 1851
PFHpA	0.66	14	14		1	97	50-150	06/24/2022 1851
PFHxA	1.3	14	14		1	90	50-150	06/24/2022 1851
PFNA	ND	14	13		1	98	50-150	06/24/2022 1851
PFOA	7.8	14	20		1	90	50-150	06/24/2022 1851
PFPeA	1.2	14	14		1	95	50-150	06/24/2022 1851
PFTeDA	ND	14	13		1	98	50-150	06/24/2022 1851
PFTrDA	ND	14	12		1	89	50-150	06/24/2022 1851
PFUdA	ND	14	13		1	94	50-150	06/24/2022 1851
PFOS	200	13	200	N	1	-8.0	50-150	06/24/2022 1851

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	220	25-150
13C2_6:2FTS		142	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		73	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		93	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XF11006-016MS
Batch: 45775
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1001

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		100	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		99	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XF11006-016MD
Batch: 45775
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1001

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	13	12		1	91	4.2	50-150	30	06/24/2022 1902
11Cl-PF3OUdS	ND	13	11		1	84	0.78	50-150	30	06/24/2022 1902
8:2 FTS	ND	13	12		1	90	3.6	50-150	30	06/24/2022 1902
6:2 FTS	ND	13	13		1	103	7.9	50-150	30	06/24/2022 1902
4:2 FTS	ND	13	12		1	91	4.3	50-150	30	06/24/2022 1902
GenX	ND	28	30		1	107	0.79	50-150	30	06/24/2022 1902
ADONA	ND	13	12		1	96	4.0	50-150	30	06/24/2022 1902
EtFOSAA	ND	14	13		1	93	5.9	50-150	30	06/24/2022 1902
MeFOSAA	ND	14	13		1	94	6.4	50-150	30	06/24/2022 1902
PFBS	2.4	12	15		1	101	3.2	50-150	30	06/24/2022 1902
PFDS	ND	13	12		1	88	1.0	50-150	30	06/24/2022 1902
PFHpS	1.7	13	14		1	96	2.8	50-150	30	06/24/2022 1902
PFNS	ND	13	12		1	90	1.8	50-150	30	06/24/2022 1902
PFOSA	ND	14	14		1	104	3.5	50-150	30	06/24/2022 1902
PFPeS	0.69	13	15		1	109	0.77	50-150	30	06/24/2022 1902
PFHxS	4.1	13	17		1	100	0.34	50-150	30	06/24/2022 1902
PFBA	13	14	28		1	103	3.1	50-150	30	06/24/2022 1902
PFDA	ND	14	14		1	101	2.2	50-150	30	06/24/2022 1902
PFDoA	ND	14	14		1	102	3.8	50-150	30	06/24/2022 1902
PFHpA	0.66	14	13		1	93	3.5	50-150	30	06/24/2022 1902
PFHxA	1.3	14	15		1	98	7.3	50-150	30	06/24/2022 1902
PFNA	ND	14	14		1	100	2.8	50-150	30	06/24/2022 1902
PFOA	7.8	14	21		1	96	4.0	50-150	30	06/24/2022 1902
PFPeA	1.2	14	15		1	98	2.7	50-150	30	06/24/2022 1902
PFTeDA	ND	14	14		1	98	0.63	50-150	30	06/24/2022 1902
PFTrDA	ND	14	14		1	100	11	50-150	30	06/24/2022 1902
PFUdA	ND	14	14		1	99	5.3	50-150	30	06/24/2022 1902
PFOS	200	13	190	N	1	-53	3.0	50-150	30	06/24/2022 1902

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	225	25-150
13C2_6:2FTS		146	25-150
13C2_8:2FTS		117	25-150
13C2_PFDoA		91	25-150
13C2_PFTeDA		94	25-150
13C3_PFBS		92	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		91	25-150
13C4_PFBA		72	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XF11006-016MD
Batch: 45775
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1001

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		103	25-150
13C7_PFUdA		99	25-150
13C8_PFOA		101	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		101	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		112	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45832-001
Batch: 45832
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1725

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	06/24/2022 2019
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	06/24/2022 2019
8:2 FTS	ND		1	8.0	1.6	ng/L	06/24/2022 2019
6:2 FTS	ND		1	8.0	2.0	ng/L	06/24/2022 2019
4:2 FTS	ND		1	8.0	0.87	ng/L	06/24/2022 2019
GenX	ND		1	8.0	2.1	ng/L	06/24/2022 2019
ADONA	ND		1	8.0	0.48	ng/L	06/24/2022 2019
EtFOSAA	ND		1	8.0	0.75	ng/L	06/24/2022 2019
MeFOSAA	ND		1	8.0	0.93	ng/L	06/24/2022 2019
PFBS	ND		1	4.0	0.41	ng/L	06/24/2022 2019
PFDS	ND		1	4.0	0.78	ng/L	06/24/2022 2019
PFHpS	ND		1	4.0	0.50	ng/L	06/24/2022 2019
PFNS	ND		1	4.0	0.71	ng/L	06/24/2022 2019
PFOSA	ND		1	4.0	0.61	ng/L	06/24/2022 2019
PFPeS	ND		1	4.0	0.59	ng/L	06/24/2022 2019
PFHxS	ND		1	4.0	0.55	ng/L	06/24/2022 2019
PFBA	ND		1	4.0	0.60	ng/L	06/24/2022 2019
PFDA	ND		1	4.0	0.52	ng/L	06/24/2022 2019
PFDoA	ND		1	4.0	0.47	ng/L	06/24/2022 2019
PFHpA	ND		1	4.0	0.45	ng/L	06/24/2022 2019
PFHxA	ND		1	4.0	0.69	ng/L	06/24/2022 2019
PFNA	ND		1	4.0	0.46	ng/L	06/24/2022 2019
PFOA	ND		1	4.0	0.83	ng/L	06/24/2022 2019
PFPeA	ND		1	4.0	0.54	ng/L	06/24/2022 2019
PFTeDA	ND		1	4.0	0.60	ng/L	06/24/2022 2019
PFTrDA	ND		1	4.0	0.53	ng/L	06/24/2022 2019
PFUdA	ND		1	4.0	0.63	ng/L	06/24/2022 2019
PFOS	ND		1	4.0	2.0	ng/L	06/24/2022 2019

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS		128	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		78	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		100	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		100	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ45832-001
Batch: 45832
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1725

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		100	25-150
13C7_PFUdA		101	25-150
13C8_PFOA		104	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		101	10-150
13C9_PFNA		107	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45832-002
Batch: 45832
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1725

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	12		1	83	50-150	06/24/2022 2030
11Cl-PF3OUdS	15	12		1	83	50-150	06/24/2022 2030
8:2 FTS	15	13		1	84	50-150	06/24/2022 2030
6:2 FTS	15	15		1	100	50-150	06/24/2022 2030
4:2 FTS	15	13		1	87	50-150	06/24/2022 2030
GenX	32	31		1	97	50-150	06/24/2022 2030
ADONA	15	14		1	91	50-150	06/24/2022 2030
EtFOSAA	16	15		1	96	50-150	06/24/2022 2030
MeFOSAA	16	15		1	91	50-150	06/24/2022 2030
PFBS	14	13		1	93	50-150	06/24/2022 2030
PFDS	15	13		1	87	50-150	06/24/2022 2030
PFHpS	15	15		1	95	50-150	06/24/2022 2030
PFNS	15	13		1	88	50-150	06/24/2022 2030
PFOSA	16	15		1	95	50-150	06/24/2022 2030
PFPeS	15	14		1	93	50-150	06/24/2022 2030
PFHxS	15	13		1	92	50-150	06/24/2022 2030
PFBA	16	15		1	95	50-150	06/24/2022 2030
PFDA	16	15		1	93	50-150	06/24/2022 2030
PFDoA	16	14		1	89	50-150	06/24/2022 2030
PFHpA	16	14		1	90	50-150	06/24/2022 2030
PFHxA	16	15		1	91	50-150	06/24/2022 2030
PFNA	16	15		1	93	50-150	06/24/2022 2030
PFOA	16	15		1	93	50-150	06/24/2022 2030
PFPeA	16	14		1	90	50-150	06/24/2022 2030
PFTeDA	16	15		1	95	50-150	06/24/2022 2030
PFTrDA	16	13		1	84	50-150	06/24/2022 2030
PFUdA	16	15		1	91	50-150	06/24/2022 2030
PFOS	15	12		1	80	50-150	06/24/2022 2030

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		111	25-150
13C2_6:2FTS		136	25-150
13C2_8:2FTS		106	25-150
13C2_PFDoA		96	25-150
13C2_PFTeDA		83	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		99	25-150
13C4_PFHpA		99	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ45832-002
Batch: 45832
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1725

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		98	25-150
13C7_PFUdA		99	25-150
13C8_PFOA		107	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		102	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XF11006-021MS
Batch: 45832
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1725

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	11		1	88	50-150	06/24/2022 2052
11Cl-PF3OUdS	ND	13	11		1	82	50-150	06/24/2022 2052
8:2 FTS	ND	13	11		1	83	50-150	06/24/2022 2052
6:2 FTS	ND	13	13		1	101	50-150	06/24/2022 2052
4:2 FTS	ND	13	11		1	88	50-150	06/24/2022 2052
GenX	ND	27	27		1	98	50-150	06/24/2022 2052
ADONA	ND	13	11		1	89	50-150	06/24/2022 2052
EtFOSAA	ND	14	13		1	98	50-150	06/24/2022 2052
MeFOSAA	ND	14	14		1	99	50-150	06/24/2022 2052
PFBS	ND	12	11		1	92	50-150	06/24/2022 2052
PFDS	ND	13	11		1	85	50-150	06/24/2022 2052
PFHpS	ND	13	13		1	96	50-150	06/24/2022 2052
PFNS	ND	13	12		1	89	50-150	06/24/2022 2052
PFOSA	ND	14	14		1	101	50-150	06/24/2022 2052
PFPeS	ND	13	12		1	94	50-150	06/24/2022 2052
PFHxS	ND	12	12		1	93	50-150	06/24/2022 2052
PFBA	ND	14	13		1	94	50-150	06/24/2022 2052
PFDA	ND	14	12		1	89	50-150	06/24/2022 2052
PFDoA	ND	14	13		1	96	50-150	06/24/2022 2052
PFHpA	ND	14	12		1	88	50-150	06/24/2022 2052
PFHxA	ND	14	12		1	87	50-150	06/24/2022 2052
PFNA	ND	14	11		1	84	50-150	06/24/2022 2052
PFOA	ND	14	12		1	88	50-150	06/24/2022 2052
PFPeA	ND	14	12		1	90	50-150	06/24/2022 2052
PFTeDA	ND	14	13		1	95	50-150	06/24/2022 2052
PFTrDA	ND	14	13		1	93	50-150	06/24/2022 2052
PFUdA	ND	14	12		1	91	50-150	06/24/2022 2052
PFOS	ND	13	11		1	88	50-150	06/24/2022 2052

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		120	25-150
13C2_6:2FTS		117	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		96	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		111	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		111	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS - MS

Sample ID: XF11006-021MS
Batch: 45832
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 06/22/2022 1725

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		105	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		112	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		114	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

PLANT 3

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 135284

Client: ARCADIS	Report to Contact: TIFFANY LINDER, KAITLYN HUNT	Telephone No. / E-mail: 616-225-1928 TIFFANY.LINDELE ARCADIS.COM; 947-777-5215 KAITLYN.HUNT@ ARCADIS.COM	
Address: 28550 CABOT DR.	Sampler's Signature: x Scott Filipiak	Analysis (Attach list if more space is needed)	Page 1 of 3
City: NOVI	State: MI	Zip Code: 48377	Printed Name: SCOTT FILIPIAK		
Project Name: RACER LANSING			
Project No.: 30112892	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab/Composite	Matrix: Aqueous	Solid	Oil	Air	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	Na2S2O3	DW Filtered	PFAS via Method 537 Mod., w/isotope dilution PFC QSM 5.1								Remarks / Cooler I.D.
MW-19-114_060922	6/9/22	1000	G	X				2							X								
MW-18-105_060922	6/9/22	1055	G	X				2							X								
MW-18-104_060922	6/9/22	1150	G	X				2							X								
MW-18-103_060922	6/9/22	1245	G	X				2							X								
MW-18-102_060922	6/9/22	1345	G	X				2							X								
MW-18-106_060922	6/9/22	1500	G	X				2							X								
EB-06_060922	6/9/22	1525	G	X				2							X								

XF11006

KE32

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)	Sample Disposal: ☐ Return to Client ☒ Disposal by Lab	Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown	QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Scott Filipiak	6/9/22	18:00	1. Received by:	6/9/22	18:00
2. Relinquished by:	6/9/22	19:00	2. Received by:	Date	Time
3. Relinquished by:	Date	Time	3. Received by:	Date	Time
4. Relinquished by: FedEx	6-10-22	1615	4. Laboratory Received by:	6-10-22	1615

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle): Yes No Ice Pack
Receipt Temp: 3.6 °C
Temp Blank: ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME00SN2-01

PACE ANALYTICAL SERVICES, LLC

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www.pacelabs.com

Number 135284

Client: Arcadis	Report to Contact: Tiffany Linder, Kaitlyn Hunt	Telephone No. / E-mail: 810-225-1998 / 947-777-5215 / Tiffany.Linder@arcadis.com; Kaitlyn.Hunt@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Analysis (Attach list if more space is needed)	Page: 2 of 3
City: Novi	State: MI	Zip Code: 48377	Printed Name: Austin Westhuis		
Project Name: RACER Lansing			
Project No.: 30112892.0370A	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab/Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	HCl	HNO3	H2SO4	NaOH	NaOH/ZN	Other	PFAS Unfiltered (537 Mod), Filtered per QSM 5.1	Remarks / Cooler I.D.
MW-19-111_060922	6/9/22	1100	G	X			2							X	
MW-19-108_060922	6/9/22	1150	G	X			2							X	
MW-18-92_060922	6/9/22	1235	G	X			2							X	
MW-19-107_060922	6/9/22	1325	G	X			2							X	
UNK-15_060922	6/9/22	1035	G	X			2							X	
MW-19-112_060922	6/9/22	1005	G	X			2							X	
MW-18-98_060922	6/9/22	1135	G	X			2							X	
MW-18-95_060922	6/9/22	1300	G	X			2							X	
MW-18-88_060922	6/9/22	1406	G	X			6							X	ms/msd
CH-14-R0_060922	6/9/22	1610	G	X			2							X	
Dup-07_060922	6/9/22		G	X			2							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.): [X] Standard [ ] Rush (Specify)

Sample Disposal: [ ] Return to Client [X] Disposal by Lab

Possible Hazard Identification: [X] Non Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison [ ] Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Austin Westhuis/Arcadis	6/9/22	17:45	1. Received by:	6/9/22	17:45
2. Relinquished by:	6/9/22	19:00	2. Received by:	Date	Time
3. Relinquished by:	Date	Time	3. Received by:	Date	Time
4. Relinquished by: FedEx	6/10/22	1015	4. Laboratory Received by:	6/10/22	1015

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on ice (Circle): (Yes) No Ice Pack — Receipt Temp: 3.6 °C — Temp Blank: Y / N

* Report EGLE 28 Compounds

LE.1

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N2-01

XF11006

KESZ

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Pace Analytical PLANT-3

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www.pacelabs.com

Number 135284

Client: ARCADIS	Report to Contact: TIFFANY LINDER, KAITLYN HUNT	Telephone No. / E-mail: 810-225-1925, 947-777-8[illegible] Tiffany.Linder@arcadis-us.com, Kaitlyn.Hunt@arcadis-us.com	Quote No.
Address: 28550 CABOT DR., STE 500	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 3 of 3
City: NOVI	State: MI	Zip Code: 48377	
Project Name: RACER LANSING	Printed Name: BILLY J. COBERN		XF11006

Project No.	P.O. No.		Matrix			No of Containers by Preservative Type								
Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab/Composite	Aqueous	Solid	Non-Aqueous	Unpres	H2SO4	HNO3	HCl	NaOH	Soda Ash	Other Preserv.	PFAS Shipping SOP, Sampling SOP, Field Logbook, Pace Quote 537.1	Remarks / Cooler I.D.
30112892.0370.A															
MW-91-2R_060922	6/9/22	13:40	G	X			2							X	
MW-18-101_060922	6/9/22	15:15	G	X			2							X	
MW-18-93.060922	6/9/22	17:05	G	X			2							X	
EB-07_060922	6/9/22	17:30	G	X			2							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.)	Sample Disposal	Possible Hazard Identification	QC Requirements (Specify)
☐ Standard ☐ Rush (Specify)	☐ Return to Client ☐ Disposal by Lab	☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown	

	Date	Time		Date	Time
1. Relinquished by	6/9/22	19:00	1. Received by		
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by FEDEX	Date 6/10/22	Time 1015	4. Laboratory received by	Date 6-10-22	Time 1015

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle) Yes No Ice Pack
Receipt Temp. 3.6 °C
Temp Blank ☑ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

4.1

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

Pace Analytical

Bottle Order (ME003OB-01)
Issuing Authority: Pace ENV - WCOL

Revised:1/7/2021
Page 1 of 1

Analysis	Matrix	# of Samples	# of bottles / sample	Total #of Bottles	Preservative	Bottle Size	Bottle Type
PFAS - QSM Table B-15	A	100	2	200	None	250mL	HDPE
6 - 250 bottles filled with PFAS Free Water							
4L PFAS Free water							

Quote: 25329 **Delivery:** FedEx

Number of COC needed: 2 **Type of COC needed:** Regular

Form Completed By: KES **Date Ordered:** 5/20/2022

Date Needed: 5/26/2022 **Number of Coolers Needed:** AN

Project Number or Name: RACER Lansing

Contact Name: Austin Westhuis (home address) **Phone #:** 517.719.0214

Client Name: Arcadis

Address: 3819 Black Creek Drive
Hudsonville, MI 49426

Special Instructions:
Pre-printed labels, custody seals
USE FEDEX ACCT # 1180-9455-7 for rtn labels

Include Return Airbills

Pace Analytical

Samples Receipt Checklist (5RC) (ME001BC-15)
Issuing Authority: Pace ENV - WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: ARCADIS Cooler Inspected by/date: TEC / 06/10/2022 Lot #: XF11606

Means of receipt: ☐ Pace ☑ Client ☐ UPS ☐ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.6 / 3.6 °C 4.1 / 4.1 °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☑ Yes	☐ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☑ Yes	☐ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea-size" (¼"or 6mm: in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☑ Yes	☐ No		21. Was the quote number listed on the container label? If yes, Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA. Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: NA.

SR barcode labels applied by: TEC Date: 06/10/2022

Comments:

Analytical Laboratory Report

Report ID: S39805.01(01)+QC01
Generated on 09/07/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S39805.01-S39805.02
Project: Racer Lansing
Collected Date(s): 08/30/2022
Submitted Date/Time: 08/30/2022 15:15
Sampled by: Bill Cobern
P.O. #: 30112892

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Maya Murshak
Technical Director

Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S39805.01	AS-19-A06_083022	Groundwater	08/30/22 10:05
S39805.02	MW-13-22_083022	Groundwater	08/30/22 11:20

Analytical Laboratory Report

Lab Sample ID: S39805.01
Sample Tag: AS-19-A06_083022
Collected Date/Time: 08/30/2022 10:05
Matrix: Groundwater
COC Reference: 151947

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/07/22 09:37	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/06/22 16:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S39805.02
Sample Tag: MW-13-22_083022
Collected Date/Time: 08/30/2022 11:20
Matrix: Groundwater
COC Reference: 151947

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/07/22 09:37	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/06/22 16:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	137	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S39805.01(01)+QC01
Generated on 09/07/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S39805.01-S39805.02
Project: Racer Lansing
Submitted Date/Time: 08/30/2022 15:15
Sampled by: Bill Cobern
P.O. #: 30112892

QC Report Sections

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Prep Batch Summary (Page 11)
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Internal Standards per Lab Sample (Pages 13-14)
Internal Standards per QC Sample (Page 15)
Batch QC Results (Page 16)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S39805.01
Sample Tag: AS-19-A06_083022
Collected Date/Time: 08/30/2022 10:05
Matrix: Groundwater
COC Reference: 151947

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/06/22 16:13	220906A9	VS220906W2	Yes	BLK/LCS/LCSD

Lab Sample ID: S39805.02
Sample Tag: MW-13-22_083022
Collected Date/Time: 08/30/2022 11:20
Matrix: Groundwater
COC Reference: 151947

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/06/22 16:35	220906A9	VS220906W2	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS220906W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39805.01	1,4-Dioxane	SW8260B - SIM	09/06/22 16:13	220906A9
S39805.02	1,4-Dioxane	SW8260B - SIM	09/06/22 16:35	220906A9

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220906W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220906A9.BLKW06A

Run in Batch: 220906A9, Run Date: 09/06/2022 15:29, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:15, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220906A9.LCSDW06A, Parent Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:47, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39805.01

Sample Tag: AS-19-A06_083022

Collected Date/Time: 08/30/2022 10:05

Matrix: Groundwater

COC Reference: 151947

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220906A9, Run Date: 09/06/2022 16:13, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**123.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39805.02

Sample Tag: MW-13-22_083022

Collected Date/Time: 08/30/2022 11:20

Matrix: Groundwater

COC Reference: 151947

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220906A9, Run Date: 09/06/2022 16:35, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**130.6**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220906W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220906A9.BLKW06A

Run in Batch: 220906A9, Run Date: 09/06/2022 15:29, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**104.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:15, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**108.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220906A9.LCSDW06A, Parent Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:47, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**115.3**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220906W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220906A9.BLKW06A

Run in Batch: 220906A9, Run Date: 09/06/2022 15:29, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane		ND	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:15, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		85.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220906A9.LCSDW06A, Parent Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:47, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		79.5	70.0	130.0	7.3	30.0

Merit Laboratories Login Checklist

Lab Set ID: S39805
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: Racer Lansing
Submitted: 08/30/2022 15:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	6.0
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

PLANT-3

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____ 151947

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: KAITLYN HUNT
COMPANY: ARCADIS
ADDRESS: 28550 CABOT DR. SUITE 500
CITY: NOVI STATE: MI ZIP CODE: 48377
PHONE NO: 248-809-4013 CELL NO: 810-225-4925 P.O. NO: 30182892
E-MAIL ADDRESS: KAITLYN.HUNT@ARCADIS.COM QUOTE NO:

INVOICE TO

CONTACT NAME: X SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: RACER LANSING
SAMPLER(S) - PLEASE PRINT/SIGN NAME: BILL CARLSON

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

1,4-Dioxane 8260 SIM

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other _____

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane 8260 SIM
39805.01	8/30/22	10:05	AS-19-A06_083022	GW	3		3						3
.02	8/30/22	11:20	MW-13-22_083022	GW	3		3						3

RELINQUISHED BY: SIGNATURE/ORGANIZATION	ARCADIS	X Sampler	DATE 8-30-22	TIME 1515
RECEIVED BY: SIGNATURE/ORGANIZATION	M Chilcote		DATE 8/30/22	TIME 1515
RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL 6.0
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev 1 26.22

Analytical Laboratory Report

Report ID: S39806.01(01)+QC01
Generated on 09/12/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S39806.01-S39806.06
Project: 30112892
Collected Date(s): 08/29/2022 - 08/30/2022
Submitted Date/Time: 08/30/2022 15:15
Sampled by: Donald Richmond
P.O. #: 30112892

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S39806.01	MW-21-139_082922	Groundwater	08/29/22 14:25
S39806.02	MW-22-153_083022	Groundwater	08/30/22 10:20
S39806.03	MW-21-140_083022	Groundwater	08/30/22 12:25
S39806.04	MW-21-142_083022	Groundwater	08/30/22 14:00
S39806.05	Trip Blank	Water	08/30/22 00:01
S39806.06	DUP-01_083022	Groundwater	08/30/22 00:01

Analytical Laboratory Report

Lab Sample ID: S39806.01
Sample Tag: MW-21-139_082922
Collected Date/Time: 08/29/2022 14:25
Matrix: Groundwater
COC Reference: 151948

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/07/22 09:37	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/22 12:55, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Lab Sample ID: S39806.02
Sample Tag: MW-22-153_083022
Collected Date/Time: 08/30/2022 10:20
Matrix: Groundwater
COC Reference: 151948

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/02/22 10:15	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/22 13:17, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	48	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/22 16:53, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	6	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	4	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S39806.02 (continued)
Sample Tag: MW-22-153_083022

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/22 16:53, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S39806.03
Sample Tag: MW-21-140_083022
Collected Date/Time: 08/30/2022 12:25
Matrix: Groundwater
COC Reference: 151948

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/07/22 09:37	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/12/22 13:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S39806.04
Sample Tag: MW-21-142_083022
Collected Date/Time: 08/30/2022 14:00
Matrix: Groundwater
COC Reference: 151948

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/07/22 09:37	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/06/22 18:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	65	1		ug/L	1	123-91-1	

Lab Sample ID: S39806.05
Sample Tag: Trip Blank
Collected Date/Time: 08/30/2022 00:01
Matrix: Water
COC Reference: 151948

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/02/22 10:15	KAG	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/22 15:17, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S39806.05 (continued)
Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/22 15:17, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S39806.06
Sample Tag: DUP-01_083022
Collected Date/Time: 08/30/2022 00:01
Matrix: Groundwater
COC Reference: 151948

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/02/22 10:15	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/06/22 18:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	53	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/22 17:13, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	6	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	5	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S39806.06 (continued)
Sample Tag: DUP-01_083022

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/01/22 17:13, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Quality Control Report

Report ID: S39806.01(01)+QC01
Generated on 09/12/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S39806.01-S39806.06
Project: 30112892
Submitted Date/Time: 08/30/2022 15:15
Sampled by: Donald Richmond
P.O. #: 30112892

QC Report Sections

Cover Page (Page 15)
Analysis Summary (Pages 16-21)
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Internal Standards per QC Sample (Pages 35-37)
Batch QC Results (Pages 38-47)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S39806.01
Sample Tag: MW-21-139_082922
Collected Date/Time: 08/29/2022 14:25
Matrix: Groundwater
COC Reference: 151948

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/12/22 12:55	220912A9	VS220912W2	Yes	BLK/LCS/LCSD

Lab Sample ID: S39806.02
Sample Tag: MW-22-153_083022
Collected Date/Time: 08/30/2022 10:20
Matrix: Groundwater
COC Reference: 151948

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/12/22 13:17	220912A9	VS220912W2	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	09/01/22 16:53	220901A9	VF220901W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S39806.03
Sample Tag: MW-21-140_083022
Collected Date/Time: 08/30/2022 12:25
Matrix: Groundwater
COC Reference: 151948

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/12/22 13:38	220912A9	VS220912W2	Yes	BLK/LCS/LCSD

Lab Sample ID: S39806.04
Sample Tag: MW-21-142_083022
Collected Date/Time: 08/30/2022 14:00
Matrix: Groundwater
COC Reference: 151948

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/06/22 18:09	220906A9	VS220906W2	Yes	BLK/LCS/LCSD

Lab Sample ID: S39806.05

Sample Tag: Trip Blank

Collected Date/Time: 08/30/2022 00:01

Matrix: Water

COC Reference: 151948

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/01/22 15:17	220901A9	VF220901W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S39806.06

Sample Tag: DUP-01_083022

Collected Date/Time: 08/30/2022 00:01

Matrix: Groundwater

COC Reference: 151948

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/06/22 18:45	220906A9	VS220906W2	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	09/01/22 17:13	220901A9	VF220901W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF220901W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39806.02	Volatile Organics - DEQ List	SW5030C/8260C	09/01/22 16:53	220901A9
S39806.05	Volatile Organics - DEQ List	SW5030C/8260C	09/01/22 15:17	220901A9
S39806.06	Volatile Organics - DEQ List	SW5030C/8260C	09/01/22 17:13	220901A9

Organics - Volatiles, Prep Batch ID: VS220906W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39806.04	1,4-Dioxane	SW8260B - SIM	09/06/22 18:09	220906A9
S39806.06	1,4-Dioxane	SW8260B - SIM	09/06/22 18:45	220906A9

Organics - Volatiles, Prep Batch ID: VS220912W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39806.01	1,4-Dioxane	SW8260B - SIM	09/12/22 12:55	220912A9
S39806.02	1,4-Dioxane	SW8260B - SIM	09/12/22 13:17	220912A9
S39806.03	1,4-Dioxane	SW8260B - SIM	09/12/22 13:38	220912A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S39806.02

Sample Tag: MW-22-153_083022

Collected Date/Time: 08/30/2022 10:20

Matrix: Groundwater

COC Reference: 151948

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220901A9, Run Date: 09/01/2022 16:53, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**98.3**	80.0	124.0
1,2-Dichloroethane-D4		**104.7**	72.0	125.0
Toluene-D8		**91.4**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S39806.05

Sample Tag: Trip Blank

Collected Date/Time: 08/30/2022 00:01

Matrix: Water

COC Reference: 151948

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220901A9, Run Date: 09/01/2022 15:17, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**95.4**	80.0	124.0
1,2-Dichloroethane-D4		**95.7**	72.0	125.0
Toluene-D8		**89.6**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S39806.06

Sample Tag: DUP-01_083022

Collected Date/Time: 08/30/2022 00:01

Matrix: Groundwater

COC Reference: 151948

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220901A9, Run Date: 09/01/2022 17:13, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**97.5**	80.0	124.0
1,2-Dichloroethane-D4		**102.6**	72.0	125.0
Toluene-D8		**90.9**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220901W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220901A9.BLKW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 14:58, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**95.2**	80.0	124.0
1,2-Dichloroethane-D4		**92.9**	72.0	125.0
Toluene-D8		**90.5**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220901A9.LCSW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 13:01, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**101.7**	80.0	124.0
1,2-Dichloroethane-D4		**103.8**	72.0	125.0
Toluene-D8		**100.6**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220901A9.LCSDW01A, Parent Sample ID: 220901A9.LCSW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 13:20, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**99.7**	80.0	124.0
1,2-Dichloroethane-D4		**101.4**	72.0	125.0
Toluene-D8		**100.8**	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220901A9.3961904M, Parent Sample ID: S39619.03

Run in Batch: 220901A9, Run Date: 09/01/2022 13:40, Prep Date: 09/01/2022, Matrix: WW, Dilution: 5

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**99.5**	80.0	124.0
1,2-Dichloroethane-D4		**95.9**	72.0	125.0
Toluene-D8		**91.1**	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220901A9.3961905N, Parent Sample ID: 220901A9.3961904M

Run in Batch: 220901A9, Run Date: 09/01/2022 13:59, Prep Date: 09/01/2022, Matrix: WW, Dilution: 5

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**95.5**	80.0	124.0
1,2-Dichloroethane-D4		**88.2**	72.0	125.0
Toluene-D8		**91.1**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS220906W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220906A9.BLKW06A

Run in Batch: 220906A9, Run Date: 09/06/2022 15:29, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:15, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220906A9.LCSDW06A, Parent Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:47, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS220912W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220912A9.BLKW12A

Run in Batch: 220912A9, Run Date: 09/12/2022 12:33, Prep Date: 09/12/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220912A9.LCSW12A

Run in Batch: 220912A9, Run Date: 09/12/2022 11:31, Prep Date: 09/12/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220912A9.LCSDW12A, Parent Sample ID: 220912A9.LCSW12A

Run in Batch: 220912A9, Run Date: 09/12/2022 11:52, Prep Date: 09/12/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39806.01

Sample Tag: MW-21-139_082922

Collected Date/Time: 08/29/2022 14:25

Matrix: Groundwater

COC Reference: 151948

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220912A9, Run Date: 09/12/2022 12:55, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39806.02

Sample Tag: MW-22-153_083022

Collected Date/Time: 08/30/2022 10:20

Matrix: Groundwater

COC Reference: 151948

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220912A9, Run Date: 09/12/2022 13:17, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**107.1**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220901A9, Run Date: 09/01/2022 16:53, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**92.6**	50.0	200.0
1,4-Difluorobenzene		**95.7**	50.0	200.0
Chlorobenzene-D5		**97.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39806.03

Sample Tag: MW-21-140_083022

Collected Date/Time: 08/30/2022 12:25

Matrix: Groundwater

COC Reference: 151948

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220912A9, Run Date: 09/12/2022 13:38, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**105.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39806.04

Sample Tag: MW-21-142_083022

Collected Date/Time: 08/30/2022 14:00

Matrix: Groundwater

COC Reference: 151948

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220906A9, Run Date: 09/06/2022 18:09, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**110.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39806.05

Sample Tag: Trip Blank

Collected Date/Time: 08/30/2022 00:01

Matrix: Water

COC Reference: 151948

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220901A9, Run Date: 09/01/2022 15:17, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**101.1**	50.0	200.0
1,4-Difluorobenzene		**103.4**	50.0	200.0
Chlorobenzene-D5		**102.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**96.9**	50.0	200.0

Lab Sample ID: S39806.06

Sample Tag: DUP-01_083022

Collected Date/Time: 08/30/2022 00:01

Matrix: Groundwater

COC Reference: 151948

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220906A9, Run Date: 09/06/2022 18:45, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**117.2**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220901A9, Run Date: 09/01/2022 17:13, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**92.1**	50.0	200.0
1,4-Difluorobenzene		**95.4**	50.0	200.0
Chlorobenzene-D5		**97.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**94.5**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220901W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220901A9.BLKW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 14:58, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.0**	50.0	200.0
1,4-Difluorobenzene		**100.9**	50.0	200.0
Chlorobenzene-D5		**99.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**93.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220901A9.LCSW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 13:01, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.0**	50.0	200.0
1,4-Difluorobenzene		**101.3**	50.0	200.0
Chlorobenzene-D5		**103.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**102.2**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220901A9.LCSDW01A, Parent Sample ID: 220901A9.LCSW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 13:20, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.7**	50.0	200.0
1,4-Difluorobenzene		**103.0**	50.0	200.0
Chlorobenzene-D5		**104.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**101.3**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220901A9.3961904M, Parent Sample ID: S39619.03

Run in Batch: 220901A9, Run Date: 09/01/2022 13:40, Prep Date: 09/01/2022, Matrix: WW, Dilution: 5

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**107.0**	50.0	200.0
1,4-Difluorobenzene		**108.4**	50.0	200.0
Chlorobenzene-D5		**110.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**109.4**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220901A9.3961905N, Parent Sample ID: 220901A9.3961904M

Run in Batch: 220901A9, Run Date: 09/01/2022 13:59, Prep Date: 09/01/2022, Matrix: WW, Dilution: 5

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**107.2**	50.0	200.0
1,4-Difluorobenzene		**107.7**	50.0	200.0
Chlorobenzene-D5		**107.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**102.0**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220906W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220906A9.BLKW06A

Run in Batch: 220906A9, Run Date: 09/06/2022 15:29, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**104.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:15, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**108.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220906A9.LCSDW06A, Parent Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:47, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**115.3**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220912W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220912A9.BLKW12A

Run in Batch: 220912A9, Run Date: 09/12/2022 12:33, Prep Date: 09/12/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**99.5**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220912A9.LCSW12A

Run in Batch: 220912A9, Run Date: 09/12/2022 11:31, Prep Date: 09/12/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**112.0**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220912A9.LCSDW12A, Parent Sample ID: 220912A9.LCSW12A

Run in Batch: 220912A9, Run Date: 09/12/2022 11:52, Prep Date: 09/12/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**103.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220901W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220901A9.BLKW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 14:58, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220901W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 220901A9.BLKW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 14:58, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220901A9.LCSW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 13:01, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		105.1	67.4	121.2
Acetone		93.5	29.9	161.5
Methyl iodide		101.7	68.8	116.4
Carbon disulfide		100.3	63.8	137.4
tert-Methyl butyl ether (MTBE)		104.6	73.2	122.4
Acrylonitrile		107.0	69.9	128.9
2-Butanone (MEK)		98.7	44.0	134.4
Dichlorodifluoromethane		96.6	10.0	222.8
Chloromethane		105.0	23.8	166.5
Vinyl chloride		102.2	43.5	149.1
Bromomethane		102.9	56.8	151.3
Chloroethane		100.0	53.4	149.4
Trichlorofluoromethane		101.3	59.7	151.8
1,1-Dichloroethene		99.9	69.6	139.4
Methylene chloride		101.4	73.3	121.1
trans-1,2-Dichloroethene		100.8	73.6	129.3
1,1-Dichloroethane		101.9	71.5	126.2
cis-1,2-Dichloroethene		101.2	76.6	122.1
Tetrahydrofuran		94.7	59.0	117.9
Chloroform		100.5	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220901W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220901A9.LCSW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 13:01, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		101.6	78.2	120.8
1,1,1-Trichloroethane		99.3	79.4	130.9
4-Methyl-2-pentanone (MIBK)		104.7	71.6	125.2
2-Hexanone		103.0	55.4	136.9
Carbon tetrachloride		99.0	72.6	133.0
Benzene		99.2	79.9	124.9
1,2-Dichloroethane		98.4	76.0	126.3
Trichloroethene		99.1	79.7	124.2
1,2-Dichloropropane		99.9	78.6	126.4
Bromodichloromethane		102.9	80.4	128.2
Dibromomethane		102.4	76.9	122.1
cis-1,3-Dichloropropene		103.7	79.8	129.9
Toluene		98.5	79.8	124.5
trans-1,3-Dichloropropene		104.1	74.0	131.3
1,1,2-Trichloroethane		101.1	78.7	123.1
Tetrachloroethene		99.1	74.5	124.5
trans-1,4-Dichloro-2-butene		107.8	68.6	135.4
Dibromochloromethane		101.9	74.6	127.2
1,2-Dibromoethane		99.8	70.3	133.7
Chlorobenzene		97.3	79.2	122.7
1,1,1,2-Tetrachloroethane		99.9	80.3	128.2
Ethylbenzene		98.3	79.5	129.1
p,m-Xylene		98.1	79.4	132.2
o-Xylene		99.4	80.2	131.0
Styrene		100.2	69.5	126.7
Isopropylbenzene		98.9	74.4	121.5
Bromoform		103.7	69.4	128.0
1,1,2,2-Tetrachloroethane		100.9	79.8	126.3
1,2,3-Trichloropropane		100.5	78.3	138.8
n-Propylbenzene		99.8	82.0	130.7
Bromobenzene		101.0	78.7	124.6
1,3,5-Trimethylbenzene		98.8	81.3	128.9
tert-Butylbenzene		100.0	80.7	128.9
1,2,4-Trimethylbenzene		101.0	81.4	130.8
sec-Butylbenzene		98.9	77.4	129.8
p-Isopropyltoluene		98.9	79.8	137.5
1,3-Dichlorobenzene		97.8	77.0	131.3
1,4-Dichlorobenzene		97.5	20.7	137.7
1,2-Dichlorobenzene		99.6	10.0	166.2
1,2,3-Trimethylbenzene		101.6	76.3	124.2
n-Butylbenzene		99.9	80.0	133.3
Hexachloroethane		107.5	23.8	138.1
1,2-Dibromo-3-chloropropane		108.2	21.2	189.4
1,2,4-Trichlorobenzene		101.6	27.4	143.4
1,2,3-Trichlorobenzene		103.7	75.4	131.4
Naphthalene		105.0	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220901W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220901A9.LCSW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 13:01, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		115.4	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220901A9.LCSDW01A, Parent Sample ID: 220901A9.LCSW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 13:20, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		97.7	67.4	121.2	7.2	30.0
Acetone		93.3	29.9	161.5	0.2	30.0
Methyl iodide		96.0	68.8	116.4	5.7	30.0
Carbon disulfide		93.8	63.8	137.4	6.7	30.0
tert-Methyl butyl ether (MTBE)		100.3	73.2	122.4	4.2	30.0
Acrylonitrile		100.4	69.9	128.9	6.4	30.0
2-Butanone (MEK)		90.5	44.0	134.4	8.7	30.0
Dichlorodifluoromethane		88.8	10.0	222.8	8.4	30.0
Chloromethane		97.0	23.8	166.5	7.9	30.0
Vinyl chloride		95.8	43.5	149.1	6.5	30.0
Bromomethane		97.0	56.8	151.3	5.9	30.0
Chloroethane		94.6	53.4	149.4	5.6	30.0
Trichlorofluoromethane		93.7	59.7	151.8	7.8	30.0
1,1-Dichloroethene		93.9	69.6	139.4	6.2	30.0
Methylene chloride		98.1	73.3	121.1	3.3	30.0
trans-1,2-Dichloroethene		95.4	73.6	129.3	5.5	30.0
1,1-Dichloroethane		95.1	71.5	126.2	6.9	30.0
cis-1,2-Dichloroethene		94.9	76.6	122.1	6.4	30.0
Tetrahydrofuran		91.1	59.0	117.9	3.9	30.0
Chloroform		95.3	78.4	124.0	5.3	30.0
Bromochloromethane		97.4	78.2	120.8	4.2	30.0
1,1,1-Trichloroethane		93.9	79.4	130.9	5.6	30.0
4-Methyl-2-pentanone (MIBK)		98.7	71.6	125.2	6.0	30.0
2-Hexanone		95.8	55.4	136.9	7.2	30.0
Carbon tetrachloride		93.2	72.6	133.0	6.1	30.0
Benzene		95.1	79.9	124.9	4.2	30.0
1,2-Dichloroethane		94.8	76.0	126.3	3.7	30.0
Trichloroethene		93.6	79.7	124.2	5.7	30.0
1,2-Dichloropropane		95.1	78.6	126.4	5.0	30.0
Bromodichloromethane		98.2	80.4	128.2	4.6	30.0
Dibromomethane		98.5	76.9	122.1	3.9	30.0
cis-1,3-Dichloropropene		98.4	79.8	129.9	5.2	30.0
Toluene		94.3	79.8	124.5	4.4	30.0
trans-1,3-Dichloropropene		101.8	74.0	131.3	2.2	30.0
1,1,2-Trichloroethane		97.3	78.7	123.1	3.9	30.0
Tetrachloroethene		92.9	74.5	124.5	6.4	30.0
trans-1,4-Dichloro-2-butene		105.4	68.6	135.4	2.3	30.0
Dibromochloromethane		98.0	74.6	127.2	3.8	30.0
1,2-Dibromoethane		97.6	70.3	133.7	2.3	30.0
Chlorobenzene		93.0	79.2	122.7	4.5	30.0

Organics - Volatiles, Prep Batch ID: VF220901W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220901A9.LCSDW01A, Parent Sample ID: 220901A9.LCSW01A

Run in Batch: 220901A9, Run Date: 09/01/2022 13:20, Prep Date: 09/01/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		95.3	80.3	128.2	4.7	30.0
Ethylbenzene		93.5	79.5	129.1	5.1	30.0
p,m-Xylene		93.7	79.4	132.2	4.6	30.0
o-Xylene		94.8	80.2	131.0	4.8	30.0
Styrene		95.1	69.5	126.7	5.2	30.0
Isopropylbenzene		93.4	74.4	121.5	5.8	30.0
Bromoform		99.0	69.4	128.0	4.6	30.0
1,1,2,2-Tetrachloroethane		96.1	79.8	126.3	4.9	30.0
1,2,3-Trichloropropane		97.4	78.3	138.8	3.1	30.0
n-Propylbenzene		94.0	82.0	130.7	6.1	30.0
Bromobenzene		96.3	78.7	124.6	4.8	30.0
1,3,5-Trimethylbenzene		94.3	81.3	128.9	4.7	30.0
tert-Butylbenzene		93.6	80.7	128.9	6.5	30.0
1,2,4-Trimethylbenzene		95.7	81.4	130.8	5.4	30.0
sec-Butylbenzene		94.1	77.4	129.8	5.0	30.0
p-Isopropyltoluene		95.2	79.8	137.5	3.8	30.0
1,3-Dichlorobenzene		95.4	77.0	131.3	2.5	30.0
1,4-Dichlorobenzene		94.8	20.7	137.7	2.9	30.0
1,2-Dichlorobenzene		96.7	10.0	166.2	3.0	30.0
1,2,3-Trimethylbenzene		98.0	76.3	124.2	3.6	30.0
n-Butylbenzene		95.2	80.0	133.3	4.8	30.0
Hexachloroethane		102.8	23.8	138.1	4.4	30.0
1,2-Dibromo-3-chloropropane		104.6	21.2	189.4	3.4	30.0
1,2,4-Trichlorobenzene		101.6	27.4	143.4	0.1	30.0
1,2,3-Trichlorobenzene		102.7	75.4	131.4	1.0	30.0
Naphthalene		104.6	32.9	135.8	0.4	30.0
2-Methylnaphthalene		118.7	25.5	165.5	2.9	30.0

Matrix Spike (MS)

Lab Sample ID: 220901A9.3961904M, Parent Sample ID: S39619.03

Run in Batch: 220901A9, Run Date: 09/01/2022 13:40, Prep Date: 09/01/2022, Matrix: WW, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		88.6	67.4	121.2
Acetone		85.9	29.9	161.5
Methyl iodide		90.7	68.8	116.4
Carbon disulfide		82.6	63.8	137.4
tert-Methyl butyl ether (MTBE)		85.6	73.2	122.4
Acrylonitrile		87.4	69.9	128.9
2-Butanone (MEK)		87.2	44.0	134.4
Dichlorodifluoromethane		77.5	10.0	222.8
Chloromethane		75.9	23.8	166.5
Vinyl chloride		77.3	43.5	149.1
Bromomethane		85.2	56.8	151.3
Chloroethane		78.7	53.4	149.4
Trichlorofluoromethane		83.3	59.7	151.8
1,1-Dichloroethene		87.2	69.6	139.4

Organics - Volatiles, Prep Batch ID: VF220901W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220901A9.3961904M, Parent Sample ID: S39619.03

Run in Batch: 220901A9, Run Date: 09/01/2022 13:40, Prep Date: 09/01/2022, Matrix: WW, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		85.9	73.3	121.1
trans-1,2-Dichloroethene		86.1	73.6	129.3
1,1-Dichloroethane		83.8	71.5	126.2
cis-1,2-Dichloroethene		86.8	76.6	122.1
Tetrahydrofuran		83.6	59.0	117.9
Chloroform		88.6	78.4	124.0
Bromochloromethane		91.6	78.2	120.8
1,1,1-Trichloroethane		89.1	79.4	130.9
4-Methyl-2-pentanone (MIBK)		87.5	71.6	125.2
2-Hexanone		88.0	55.4	136.9
Carbon tetrachloride		92.7	72.6	133.0
Benzene		87.6	79.9	124.9
1,2-Dichloroethane		94.3	76.0	126.3
Trichloroethene	*	76.0	79.7	124.2
1,2-Dichloropropane		86.5	78.6	126.4
Bromodichloromethane		92.6	80.4	128.2
Dibromomethane		95.4	76.9	122.1
cis-1,3-Dichloropropene		91.2	79.8	129.9
Toluene		89.7	79.8	124.5
trans-1,3-Dichloropropene		95.0	74.0	131.3
1,1,2-Trichloroethane		92.7	78.7	123.1
Tetrachloroethene		93.5	74.5	124.5
trans-1,4-Dichloro-2-butene		103.9	68.6	135.4
Dibromochloromethane		97.4	74.6	127.2
1,2-Dibromoethane		96.9	70.3	133.7
Chlorobenzene		93.0	79.2	122.7
1,1,1,2-Tetrachloroethane		96.8	80.3	128.2
Ethylbenzene		93.1	79.5	129.1
p,m-Xylene		93.8	79.4	132.2
o-Xylene		94.2	80.2	131.0
Styrene		95.2	69.5	126.7
Isopropylbenzene		93.9	74.4	121.5
Bromoform		99.8	69.4	128.0
1,1,2,2-Tetrachloroethane		95.3	79.8	126.3
1,2,3-Trichloropropane		100.8	78.3	138.8
n-Propylbenzene		94.9	82.0	130.7
Bromobenzene		98.4	78.7	124.6
1,3,5-Trimethylbenzene		93.9	81.3	128.9
tert-Butylbenzene		94.7	80.7	128.9
1,2,4-Trimethylbenzene		96.4	81.4	130.8
sec-Butylbenzene		87.5	77.4	129.8
p-Isopropyltoluene		88.7	79.8	137.5
1,3-Dichlorobenzene		91.3	77.0	131.3
1,4-Dichlorobenzene		90.9	20.7	137.7
1,2-Dichlorobenzene		91.8	10.0	166.2
1,2,3-Trimethylbenzene		84.9	76.3	124.2

Organics - Volatiles, Prep Batch ID: VF220901W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220901A9.3961904M, Parent Sample ID: S39619.03

Run in Batch: 220901A9, Run Date: 09/01/2022 13:40, Prep Date: 09/01/2022, Matrix: WW, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		87.1	80.0	133.3
Hexachloroethane		90.4	23.8	138.1
1,2-Dibromo-3-chloropropane		95.2	21.2	189.4
1,2,4-Trichlorobenzene		95.4	27.4	143.4
1,2,3-Trichlorobenzene		98.1	75.4	131.4
Naphthalene		97.4	32.9	135.8
2-Methylnaphthalene		90.1	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220901A9.3961905N, Parent Sample ID: 220901A9.3961904M

Run in Batch: 220901A9, Run Date: 09/01/2022 13:59, Prep Date: 09/01/2022, Matrix: WW, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		85.7	67.4	121.2	3.3	30.0
Acetone		81.7	29.9	161.5	4.9	30.0
Methyl iodide		86.8	68.8	116.4	4.4	30.0
Carbon disulfide		80.3	63.8	137.4	2.8	30.0
tert-Methyl butyl ether (MTBE)		83.0	73.2	122.4	3.1	30.0
Acrylonitrile		85.5	69.9	128.9	2.2	30.0
2-Butanone (MEK)		82.8	44.0	134.4	5.2	30.0
Dichlorodifluoromethane		76.6	10.0	222.8	1.2	30.0
Chloromethane		74.3	23.8	166.5	2.0	30.0
Vinyl chloride		74.0	43.5	149.1	4.4	30.0
Bromomethane		82.4	56.8	151.3	3.3	30.0
Chloroethane		75.5	53.4	149.4	4.2	30.0
Trichlorofluoromethane		80.5	59.7	151.8	3.4	30.0
1,1-Dichloroethene		83.3	69.6	139.4	4.5	30.0
Methylene chloride		83.0	73.3	121.1	3.5	30.0
trans-1,2-Dichloroethene		83.4	73.6	129.3	3.2	30.0
1,1-Dichloroethane		82.0	71.5	126.2	2.1	30.0
cis-1,2-Dichloroethene		83.3	76.6	122.1	3.7	30.0
Tetrahydrofuran		79.4	59.0	117.9	5.2	30.0
Chloroform		86.7	78.4	124.0	2.2	30.0
Bromochloromethane		88.7	78.2	120.8	3.2	30.0
1,1,1-Trichloroethane		85.7	79.4	130.9	4.0	30.0
4-Methyl-2-pentanone (MIBK)		81.3	71.6	125.2	7.4	30.0
2-Hexanone		82.3	55.4	136.9	6.7	30.0
Carbon tetrachloride		90.9	72.6	133.0	2.0	30.0
Benzene		85.1	79.9	124.9	2.9	30.0
1,2-Dichloroethane		92.3	76.0	126.3	2.1	30.0
Trichloroethene	*	73.0	79.7	124.2	2.2	30.0
1,2-Dichloropropane		85.1	78.6	126.4	1.7	30.0
Bromodichloromethane		91.0	80.4	128.2	1.8	30.0
Dibromomethane		94.1	76.9	122.1	1.4	30.0
cis-1,3-Dichloropropene		88.4	79.8	129.9	3.2	30.0
Toluene		87.4	79.8	124.5	2.5	30.0
trans-1,3-Dichloropropene		92.3	74.0	131.3	2.8	30.0

Organics - Volatiles, Prep Batch ID: VF220901W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220901A9.3961905N, Parent Sample ID: 220901A9.3961904M

Run in Batch: 220901A9, Run Date: 09/01/2022 13:59, Prep Date: 09/01/2022, Matrix: WW, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		91.4	78.7	123.1	1.5	30.0
Tetrachloroethene		89.0	74.5	124.5	4.9	30.0
trans-1,4-Dichloro-2-butene		99.1	68.6	135.4	4.7	30.0
Dibromochloromethane		96.3	74.6	127.2	1.2	30.0
1,2-Dibromoethane		96.6	70.3	133.7	0.3	30.0
Chlorobenzene		93.1	79.2	122.7	0.2	30.0
1,1,1,2-Tetrachloroethane		96.6	80.3	128.2	0.2	30.0
Ethylbenzene		92.2	79.5	129.1	1.0	30.0
p,m-Xylene		92.6	79.4	132.2	1.3	30.0
o-Xylene		92.9	80.2	131.0	1.5	30.0
Styrene		94.4	69.5	126.7	0.9	30.0
Isopropylbenzene		93.6	74.4	121.5	0.3	30.0
Bromoform		97.4	69.4	128.0	2.4	30.0
1,1,2,2-Tetrachloroethane		94.0	79.8	126.3	1.4	30.0
1,2,3-Trichloropropane		98.0	78.3	138.8	2.8	30.0
n-Propylbenzene		93.4	82.0	130.7	1.5	30.0
Bromobenzene		98.6	78.7	124.6	0.2	30.0
1,3,5-Trimethylbenzene		92.4	81.3	128.9	1.6	30.0
tert-Butylbenzene		94.3	80.7	128.9	0.4	30.0
1,2,4-Trimethylbenzene		95.8	81.4	130.8	0.7	30.0
sec-Butylbenzene		90.0	77.4	129.8	2.7	30.0
p-Isopropyltoluene		91.5	79.8	137.5	3.1	30.0
1,3-Dichlorobenzene		94.0	77.0	131.3	2.9	30.0
1,4-Dichlorobenzene		94.5	20.7	137.7	3.9	30.0
1,2-Dichlorobenzene		94.8	10.0	166.2	3.2	30.0
1,2,3-Trimethylbenzene		87.4	76.3	124.2	2.9	30.0
n-Butylbenzene		90.2	80.0	133.3	3.5	30.0
Hexachloroethane		92.9	23.8	138.1	2.7	30.0
1,2-Dibromo-3-chloropropane		96.4	21.2	189.4	1.3	30.0
1,2,4-Trichlorobenzene		98.9	27.4	143.4	3.6	30.0
1,2,3-Trichlorobenzene		101.9	75.4	131.4	3.8	30.0
Naphthalene		100.4	32.9	135.8	3.1	30.0
2-Methylnaphthalene		92.3	25.5	165.5	2.4	30.0

Organics - Volatiles, Prep Batch ID: VS220906W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220906A9.BLKW06A

Run in Batch: 220906A9, Run Date: 09/06/2022 15:29, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane		ND	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:15, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		85.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220906A9.LCSDW06A, Parent Sample ID: 220906A9.LCSW06X

Run in Batch: 220906A9, Run Date: 09/06/2022 14:47, Prep Date: 09/06/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		79.5	70.0	130.0	7.3	30.0

Organics - Volatiles, Prep Batch ID: VS220912W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220912A9.BLKW12A

Run in Batch: 220912A9, Run Date: 09/12/2022 12:33, Prep Date: 09/12/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane		ND	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220912A9.LCSW12A

Run in Batch: 220912A9, Run Date: 09/12/2022 11:31, Prep Date: 09/12/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		81.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220912A9.LCSDW12A, Parent Sample ID: 220912A9.LCSW12A

Run in Batch: 220912A9, Run Date: 09/12/2022 11:52, Prep Date: 09/12/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		88.8	70.0	130.0	9.2	30.0

Merit Laboratories Login Checklist

Lab Set ID: S39806
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892
Submitted: 08/30/2022 15:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	6.0
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1 151948

Plant 2

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Dr Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 947 777 5215 CELL NO.: P.O. NO.:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☑ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Donald Richmond/Donald Richmond

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☑ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4 Dioxane	VOCs
3980601	8/29/22	1425	MW-21-139_082922	GW	3		X						X	
.02	8/30/22	1020	MW-22-153_083022	GW	3		X						X	X
.03	8/30/22	1225	MW-21-140_083022	GW	3		X						X	
.04	8/30/22	1400	MW-21-142_083022	GW	3		X						X	
.05	—	—	Trip Blank	W	1		X						[redacted]	X
.06	8/30/22	—	DUP-01_083022	GW	3		X						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	☑ Sampler Donald Richmond/Arcadis	DATE 8/30/22	TIME 1515
RECEIVED BY: SIGNATURE/ORGANIZATION	M Chilcote	DATE 8/30/22	TIME 1515
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 6.0

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Analytical Laboratory Report

Report ID: S40190.01(01)+QC01
Generated on 09/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S40190.01-S40190.02
Project: 30112892.00102/Racer Lansing
Collected Date(s): 09/12/2022
Submitted Date/Time: 09/13/2022 08:45
Sampled by: Austin Westhuis
P.O. #: 30112892.00102

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40190.01	MW-22-154_091222	Groundwater	09/12/22 16:20
S40190.02	Trip Blank	Groundwater	09/12/22 00:01

Lab Sample ID: S40190.01
Sample Tag: MW-22-154_091222
Collected Date/Time: 09/12/2022 16:20
Matrix: Groundwater
COC Reference: 137976

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/14/22 11:00	BML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/13/22 15:07, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	2	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	8	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S40190.01 (continued)
Sample Tag: MW-22-154_091222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/13/22 15:07, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S40190.02
Sample Tag: Trip Blank
Collected Date/Time: 09/12/2022 00:01
Matrix: Groundwater
COC Reference: 137976

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/14/22 11:00	BML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/13/22 14:43, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S40190.02 (continued)
Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/13/22 14:43, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Quality Control Report

Report ID: S40190.01(01)+QC01
Generated on 09/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S40190.01-S40190.02
Project: 30112892.00102/Racer Lansing
Submitted Date/Time: 09/13/2022 08:45
Sampled by: Austin Westhuis
P.O. #: 30112892.00102

QC Report Sections

Cover Page (Page 10)
Analysis Summary (Pages 11-12)
Prep Batch Summary (Page 13)
Surrogates per Lab Sample (Pages 14-15)
Surrogates per QC Sample (Page 16)
Internal Standards per Lab Sample (Pages 17-18)
Internal Standards per QC Sample (Page 19)
Batch QC Results (Pages 20-24)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S40190.01
Sample Tag: MW-22-154_091222
Collected Date/Time: 09/12/2022 16:20
Matrix: Groundwater
COC Reference: 137976

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/13/22 15:07	220913A3	VF220913W2	Yes	BLK/LCS/LCSD

Lab Sample ID: S40190.02

Sample Tag: Trip Blank

Collected Date/Time: 09/12/2022 00:01

Matrix: Groundwater

COC Reference: 137976

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/13/22 14:43	220913A3	VF220913W2	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF220913W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40190.01	Volatile Organics - DEQ List	SW5030C/8260C	09/13/22 15:07	220913A3
S40190.02	Volatile Organics - DEQ List	SW5030C/8260C	09/13/22 14:43	220913A3

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40190.01

Sample Tag: MW-22-154_091222

Collected Date/Time: 09/12/2022 16:20

Matrix: Groundwater

COC Reference: 137976

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220913A3, Run Date: 09/13/2022 15:07, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**108.2**	80.0	124.0
1,2-Dichloroethane-D4		**103.0**	72.0	125.0
Toluene-D8		**103.6**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40190.02

Sample Tag: Trip Blank

Collected Date/Time: 09/12/2022 00:01

Matrix: Groundwater

COC Reference: 137976

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220913A3, Run Date: 09/13/2022 14:43, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**107.0**	80.0	124.0
1,2-Dichloroethane-D4		**105.0**	72.0	125.0
Toluene-D8		**104.0**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF220913W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220913A3.BLKS13A

Run in Batch: 220913A3, Run Date: 09/13/2022 14:19, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**106.0**	80.0	124.0
1,2-Dichloroethane-D4		**104.2**	72.0	125.0
Toluene-D8		**103.6**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220913A3.LCSW13AA

Run in Batch: 220913A3, Run Date: 09/13/2022 12:44, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**110.8**	80.0	124.0
1,2-Dichloroethane-D4		**97.6**	72.0	125.0
Toluene-D8		**103.2**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220913A3.LCSDW13A, Parent Sample ID: 220913A3.LCSW13AA

Run in Batch: 220913A3, Run Date: 09/13/2022 13:08, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**111.6**	80.0	124.0
1,2-Dichloroethane-D4		**106.0**	72.0	125.0
Toluene-D8		**102.8**	89.0	112.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40190.01

Sample Tag: MW-22-154_091222

Collected Date/Time: 09/12/2022 16:20

Matrix: Groundwater

COC Reference: 137976

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220913A3, Run Date: 09/13/2022 15:07, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**97.0**	50.0	200.0
1,4-Difluorobenzene		**97.0**	50.0	200.0
Chlorobenzene-D5		**94.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**90.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40190.02

Sample Tag: Trip Blank

Collected Date/Time: 09/12/2022 00:01

Matrix: Groundwater

COC Reference: 137976

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220913A3, Run Date: 09/13/2022 14:43, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.0**	50.0	200.0
1,4-Difluorobenzene		**95.2**	50.0	200.0
Chlorobenzene-D5		**95.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**90.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220913W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220913A3.BLKS13A

Run in Batch: 220913A3, Run Date: 09/13/2022 14:19, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**98.5**	50.0	200.0
1,4-Difluorobenzene		**98.1**	50.0	200.0
Chlorobenzene-D5		**97.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**91.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220913A3.LCSW13AA

Run in Batch: 220913A3, Run Date: 09/13/2022 12:44, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.4**	50.0	200.0
1,4-Difluorobenzene		**100.7**	50.0	200.0
Chlorobenzene-D5		**99.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**95.6**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220913A3.LCSDW13A, Parent Sample ID: 220913A3.LCSW13AA

Run in Batch: 220913A3, Run Date: 09/13/2022 13:08, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**107.1**	50.0	200.0
1,4-Difluorobenzene		**105.7**	50.0	200.0
Chlorobenzene-D5		**106.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**104.8**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF220913W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220913A3.BLKS13A

Run in Batch: 220913A3, Run Date: 09/13/2022 14:19, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220913W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 220913A3.BLKS13A

Run in Batch: 220913A3, Run Date: 09/13/2022 14:19, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220913A3.LCSW13AA

Run in Batch: 220913A3, Run Date: 09/13/2022 12:44, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		113.7	67.4	121.2
Acetone		128.6	29.9	161.5
Methyl iodide		111.5	68.8	116.4
Carbon disulfide		107.9	63.8	137.4
tert-Methyl butyl ether (MTBE)		104.1	73.2	122.4
Acrylonitrile		124.7	69.9	128.9
2-Butanone (MEK)		128.6	44.0	134.4
Dichlorodifluoromethane		84.9	10.0	222.8
Chloromethane		104.7	23.8	166.5
Vinyl chloride		98.9	43.5	149.1
Bromomethane		117.8	56.8	151.3
Chloroethane		110.3	53.4	149.4
Trichlorofluoromethane		109.0	59.7	151.8
1,1-Dichloroethene		103.1	69.6	139.4
Methylene chloride		109.8	73.3	121.1
trans-1,2-Dichloroethene		106.2	73.6	129.3
1,1-Dichloroethane		105.4	71.5	126.2
cis-1,2-Dichloroethene		110.9	76.6	122.1
Tetrahydrofuran	*	132.4	59.0	117.9
Chloroform		109.0	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF220913W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220913A3.LCSW13AA

Run in Batch: 220913A3, Run Date: 09/13/2022 12:44, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		115.4	78.2	120.8
1,1,1-Trichloroethane		105.9	79.4	130.9
4-Methyl-2-pentanone (MIBK)		109.0	71.6	125.2
2-Hexanone		117.1	55.4	136.9
Carbon tetrachloride		106.8	72.6	133.0
Benzene		106.3	79.9	124.9
1,2-Dichloroethane		104.4	76.0	126.3
Trichloroethene		106.7	79.7	124.2
1,2-Dichloropropane		109.7	78.6	126.4
Bromodichloromethane		111.1	80.4	128.2
Dibromomethane		116.2	76.9	122.1
cis-1,3-Dichloropropene		112.5	79.8	129.9
Toluene		103.8	79.8	124.5
trans-1,3-Dichloropropene		114.2	74.0	131.3
1,1,2-Trichloroethane		111.5	78.7	123.1
Tetrachloroethene		110.9	74.5	124.5
trans-1,4-Dichloro-2-butene		111.6	68.6	135.4
Dibromochloromethane		122.4	74.6	127.2
1,2-Dibromoethane		119.4	70.3	133.7
Chlorobenzene		116.5	79.2	122.7
1,1,1,2-Tetrachloroethane		118.9	80.3	128.2
Ethylbenzene		112.8	79.5	129.1
p,m-Xylene		114.5	79.4	132.2
o-Xylene		114.1	80.2	131.0
Styrene		118.7	69.5	126.7
Isopropylbenzene		112.9	74.4	121.5
Bromoform		127.3	69.4	128.0
1,1,2,2-Tetrachloroethane		119.1	79.8	126.3
1,2,3-Trichloropropane		120.3	78.3	138.8
n-Propylbenzene		109.9	82.0	130.7
Bromobenzene		121.0	78.7	124.6
1,3,5-Trimethylbenzene		113.0	81.3	128.9
tert-Butylbenzene		103.9	80.7	128.9
1,2,4-Trimethylbenzene		112.2	81.4	130.8
sec-Butylbenzene		99.0	77.4	129.8
p-Isopropyltoluene		106.4	79.8	137.5
1,3-Dichlorobenzene		116.1	77.0	131.3
1,4-Dichlorobenzene		116.5	20.7	137.7
1,2-Dichlorobenzene		114.2	10.0	166.2
1,2,3-Trimethylbenzene		107.8	76.3	124.2
n-Butylbenzene		98.6	80.0	133.3
Hexachloroethane		105.6	23.8	138.1
1,2-Dibromo-3-chloropropane		128.7	21.2	189.4
1,2,4-Trichlorobenzene		109.3	27.4	143.4
1,2,3-Trichlorobenzene		107.1	75.4	131.4
Naphthalene		112.5	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF220913W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220913A3.LCSW13AA

Run in Batch: 220913A3, Run Date: 09/13/2022 12:44, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		97.3	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220913A3.LCSDW13A, Parent Sample ID: 220913A3.LCSW13AA

Run in Batch: 220913A3, Run Date: 09/13/2022 13:08, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		110.1	67.4	121.2	3.3	30.0
Acetone		128.5	29.9	161.5	0.1	30.0
Methyl iodide		102.2	68.8	116.4	8.6	30.0
Carbon disulfide		96.5	63.8	137.4	11.2	30.0
tert-Methyl butyl ether (MTBE)		100.1	73.2	122.4	4.0	30.0
Acrylonitrile		125.2	69.9	128.9	0.4	30.0
2-Butanone (MEK)		130.9	44.0	134.4	1.7	30.0
Dichlorodifluoromethane		75.4	10.0	222.8	11.9	30.0
Chloromethane		94.8	23.8	166.5	9.9	30.0
Vinyl chloride		89.4	43.5	149.1	10.1	30.0
Bromomethane		107.8	56.8	151.3	8.9	30.0
Chloroethane		99.8	53.4	149.4	10.0	30.0
Trichlorofluoromethane		98.8	59.7	151.8	9.8	30.0
1,1-Dichloroethene		94.0	69.6	139.4	9.2	30.0
Methylene chloride		101.7	73.3	121.1	7.6	30.0
trans-1,2-Dichloroethene		95.5	73.6	129.3	10.6	30.0
1,1-Dichloroethane		97.2	71.5	126.2	8.0	30.0
cis-1,2-Dichloroethene		101.8	76.6	122.1	8.6	30.0
Tetrahydrofuran	*	133.4	59.0	117.9	0.8	30.0
Chloroform		99.6	78.4	124.0	9.0	30.0
Bromochloromethane		108.5	78.2	120.8	6.1	30.0
1,1,1-Trichloroethane		95.3	79.4	130.9	10.6	30.0
4-Methyl-2-pentanone (MIBK)		109.7	71.6	125.2	0.6	30.0
2-Hexanone		121.5	55.4	136.9	3.7	30.0
Carbon tetrachloride		96.3	72.6	133.0	10.3	30.0
Benzene		97.5	79.9	124.9	8.6	30.0
1,2-Dichloroethane		98.1	76.0	126.3	6.3	30.0
Trichloroethene		96.5	79.7	124.2	10.0	30.0
1,2-Dichloropropane		99.1	78.6	126.4	10.2	30.0
Bromodichloromethane		103.0	80.4	128.2	7.6	30.0
Dibromomethane		110.7	76.9	122.1	4.9	30.0
cis-1,3-Dichloropropene		105.4	79.8	129.9	6.5	30.0
Toluene		94.4	79.8	124.5	9.5	30.0
trans-1,3-Dichloropropene		107.8	74.0	131.3	5.7	30.0
1,1,2-Trichloroethane		108.7	78.7	123.1	2.5	30.0
Tetrachloroethene		102.3	74.5	124.5	8.1	30.0
trans-1,4-Dichloro-2-butene		112.4	68.6	135.4	0.8	30.0
Dibromochloromethane		113.2	74.6	127.2	7.7	30.0
1,2-Dibromoethane		113.2	70.3	133.7	5.3	30.0
Chlorobenzene		104.0	79.2	122.7	11.3	30.0

Organics - Volatiles, Prep Batch ID: VF220913W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220913A3.LCSDW13A, Parent Sample ID: 220913A3.LCSW13AA

Run in Batch: 220913A3, Run Date: 09/13/2022 13:08, Prep Date: 09/13/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		108.1	80.3	128.2	9.5	30.0
Ethylbenzene		100.9	79.5	129.1	11.1	30.0
p,m-Xylene		101.8	79.4	132.2	11.7	30.0
o-Xylene		101.9	80.2	131.0	11.3	30.0
Styrene		107.0	69.5	126.7	10.4	30.0
Isopropylbenzene		100.6	74.4	121.5	11.5	30.0
Bromoform		121.1	69.4	128.0	4.9	30.0
1,1,2,2-Tetrachloroethane		115.3	79.8	126.3	3.2	30.0
1,2,3-Trichloropropane		113.5	78.3	138.8	5.8	30.0
n-Propylbenzene		97.7	82.0	130.7	11.8	30.0
Bromobenzene		111.4	78.7	124.6	8.2	30.0
1,3,5-Trimethylbenzene		101.5	81.3	128.9	10.7	30.0
tert-Butylbenzene		92.9	80.7	128.9	11.2	30.0
1,2,4-Trimethylbenzene		100.8	81.4	130.8	10.7	30.0
sec-Butylbenzene		86.4	77.4	129.8	13.6	30.0
p-Isopropyltoluene		91.5	79.8	137.5	15.1	30.0
1,3-Dichlorobenzene		101.6	77.0	131.3	13.4	30.0
1,4-Dichlorobenzene		102.9	20.7	137.7	12.4	30.0
1,2-Dichlorobenzene		102.5	10.0	166.2	10.8	30.0
1,2,3-Trimethylbenzene		95.1	76.3	124.2	12.5	30.0
n-Butylbenzene		85.4	80.0	133.3	14.3	30.0
Hexachloroethane		93.4	23.8	138.1	12.2	30.0
1,2-Dibromo-3-chloropropane		122.5	21.2	189.4	4.9	30.0
1,2,4-Trichlorobenzene		97.7	27.4	143.4	11.1	30.0
1,2,3-Trichlorobenzene		98.5	75.4	131.4	8.4	30.0
Naphthalene		106.2	32.9	135.8	5.8	30.0
2-Methylnaphthalene		94.8	25.5	165.5	2.6	30.0

Merit Laboratories Login Checklist

Lab Set ID:S40190
Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.00102/Racer Lansing
Submitted:09/13/2022 08:45 Login User: BJB

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.4
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Plant 6

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

137976

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi | Cell No. | STATE: MI | ZIP CODE: 48377
PHONE NO.: 810-225-1928 | FAX NO.: 517-861-0138 | P.O. NO.:
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com | QUOTE NO.:

INVOICE TO

CONTACT NAME | SAME
COMPANY
ADDRESS
CITY | STATE | ZIP CODE
PHONE NO. | E-MAIL ADDRESS

PROJECT NO./NAME: 30112892.00102 / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☒ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☒ Other MI

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs 8260
40190.01	9/12/22	1620	MW-22-154_091222	GW	3		1						X
.02	9/12/22	—	Trip Blank	GW	1		1						X

RELINQUISHED BY: SIGNATURE/ORGANIZATION: [signature] / Arcadis ☒ Sampler	DATE: 9/13/22	TIME: 0845	
RECEIVED BY: SIGNATURE/ORGANIZATION: Merit Drop Box	DATE: 9/13/22	TIME:	
RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit DropBox	DATE: 9/13/2022	TIME: 0846	
RECEIVED BY: SIGNATURE/ORGANIZATION: Barbie Ball	DATE: 9/13/2022	TIME: 0846	
RELINQUISHED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	
RECEIVED BY: SIGNATURE/ORGANIZATION:	DATE:	TIME:	

SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS
SEAL NO. | SEAL INTACT YES ☐ NO ☐ | INITIALS

NOTES: TEMP. ON ARRIVAL 4.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

*Please also email results to: Alex.Villhauer@arcadis.com and Caitlin.Cisco@arcadis.com

Analytical Laboratory Report

Report ID: S40191.01(01)+QC01
Generated on 09/27/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S40191.01-S40191.05
Project: 30112892.04100/Racer Lansing
Collected Date(s): 09/12/2022
Submitted Date/Time: 09/13/2022 08:45
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40191.01	MW-22-156_091222	Groundwater	09/12/22 11:05
S40191.02	MW-22-155_091222	Groundwater	09/12/22 12:05
S40191.03	MW-22-157_091222	Groundwater	09/12/22 14:10
S40191.04	MW-22-153_091222	Groundwater	09/12/22 15:00
S40191.05	MW-14-58R_091222	Groundwater	09/12/22 15:35

Analytical Laboratory Report

Lab Sample ID: S40191.01
Sample Tag: MW-22-156_091222
Collected Date/Time: 09/12/2022 11:05
Matrix: Groundwater
COC Reference: 157329

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/22/22 14:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/21/22 15:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	76	1		ug/L	1	123-91-1	

Lab Sample ID: S40191.02
Sample Tag: MW-22-155_091222
Collected Date/Time: 09/12/2022 12:05
Matrix: Groundwater
COC Reference: 157329

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/22/22 14:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/23/22 20:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	410	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S40191.03
Sample Tag: MW-22-157_091222
Collected Date/Time: 09/12/2022 14:10
Matrix: Groundwater
COC Reference: 157329

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/22/22 14:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/26/22 20:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Lab Sample ID: S40191.04
Sample Tag: MW-22-153_091222
Collected Date/Time: 09/12/2022 15:00
Matrix: Groundwater
COC Reference: 157329

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/22/22 14:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/21/22 16:43, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	55	1		ug/L	1	123-91-1	

Lab Sample ID: S40191.05
Sample Tag: MW-14-58R_091222
Collected Date/Time: 09/12/2022 15:35
Matrix: Groundwater
COC Reference: 157329

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/22/22 14:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/23/22 19:24, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	187	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S40191.01(01)+QC01
Generated on 09/27/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S40191.01-S40191.05
Project: 30112892.04100/Racer Lansing
Submitted Date/Time: 09/13/2022 08:45
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

QC Report Sections

Cover Page (Page 11)
Analysis Summary (Pages 12-16)
Prep Batch Summary (Page 17)
Surrogates per QC Sample (Pages 18-20)
Internal Standards per Lab Sample (Pages 21-25)
Internal Standards per QC Sample (Pages 26-28)
Batch QC Results (Pages 29-31)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S40191.01
Sample Tag: MW-22-156_091222
Collected Date/Time: 09/12/2022 11:05
Matrix: Groundwater
COC Reference: 157329

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/21/22 15:38	220921A9	VS220921W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S40191.02
Sample Tag: MW-22-155_091222
Collected Date/Time: 09/12/2022 12:05
Matrix: Groundwater
COC Reference: 157329

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/23/22 20:07	220923A9	VS220923W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S40191.03
Sample Tag: MW-22-157_091222
Collected Date/Time: 09/12/2022 14:10
Matrix: Groundwater
COC Reference: 157329

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/26/22 20:00	220926A9	VS220926W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S40191.04
Sample Tag: MW-22-153_091222
Collected Date/Time: 09/12/2022 15:00
Matrix: Groundwater
COC Reference: 157329

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/21/22 16:43	220921A9	VS220921W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S40191.05
Sample Tag: MW-14-58R_091222
Collected Date/Time: 09/12/2022 15:35
Matrix: Groundwater
COC Reference: 157329

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/23/22 19:24	220923A9	VS220923W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS220921W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40191.01	1,4-Dioxane	SW8260B - SIM	09/21/22 15:38	220921A9
S40191.04	1,4-Dioxane	SW8260B - SIM	09/21/22 16:43	220921A9

Organics - Volatiles, Prep Batch ID: VS220923W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40191.02	1,4-Dioxane	SW8260B - SIM	09/23/22 20:07	220923A9
S40191.05	1,4-Dioxane	SW8260B - SIM	09/23/22 19:24	220923A9

Organics - Volatiles, Prep Batch ID: VS220926W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40191.03	1,4-Dioxane	SW8260B - SIM	09/26/22 20:00	220926A9

Organics - Volatiles, Prep Batch ID: VS220921W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220921A9.BLKW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 15:05, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:04, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220921A9.LCSDW21A, Parent Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:25, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS220923W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220923A9.BLKW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 18:19, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample (LCS)

Lab Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:36, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220923A9.LCSDW23A, Parent Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:57, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Organics - Volatiles, Prep Batch ID: VS220926W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220926A9.BLKW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 19:39, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:37, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220926A9.LCSDW26A, Parent Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:58, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40191.01

Sample Tag: MW-22-156_091222

Collected Date/Time: 09/12/2022 11:05

Matrix: Groundwater

COC Reference: 157329

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220921A9, Run Date: 09/21/2022 15:38, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**96.9**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40191.02

Sample Tag: MW-22-155_091222

Collected Date/Time: 09/12/2022 12:05

Matrix: Groundwater

COC Reference: 157329

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220923A9, Run Date: 09/23/2022 20:07, Matrix: WW, Dilution: 10

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**113.4**	50.0	200.0

Lab Sample ID: S40191.03

Sample Tag: MW-22-157_091222

Collected Date/Time: 09/12/2022 14:10

Matrix: Groundwater

COC Reference: 157329

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220926A9, Run Date: 09/26/2022 20:00, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**99.9**	50.0	200.0

Lab Sample ID: S40191.04

Sample Tag: MW-22-153_091222

Collected Date/Time: 09/12/2022 15:00

Matrix: Groundwater

COC Reference: 157329

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220921A9, Run Date: 09/21/2022 16:43, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40191.05

Sample Tag: MW-14-58R_091222

Collected Date/Time: 09/12/2022 15:35

Matrix: Groundwater

COC Reference: 157329

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220923A9, Run Date: 09/23/2022 19:24, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**118.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220921W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220921A9.BLKW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 15:05, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**98.2**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:04, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**94.2**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220921A9.LCSDW21A, Parent Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:25, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**91.6**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220923W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220923A9.BLKW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 18:19, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.9**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:36, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**107.1**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220923A9.LCSDW23A, Parent Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:57, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**115.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220926W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220926A9.BLKW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 19:39, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.1**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:37, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**114.6**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220926A9.LCSDW26A, Parent Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:58, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**101.3**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS220921W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220921A9.BLKW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 15:05, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.44	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:04, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		90.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220921A9.LCSDW21A, Parent Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:25, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		92.5	70.0	130.0	2.5	30.0

Organics - Volatiles, Prep Batch ID: VS220923W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220923A9.BLKW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 18:19, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.61	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:36, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		93.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220923A9.LCSDW23A, Parent Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:57, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		92.8	70.0	130.0	1.0	30.0

Organics - Volatiles, Prep Batch ID: VS220926W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220926A9.BLKW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 19:39, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.42	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:37, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		88.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220926A9.LCSDW26A, Parent Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:58, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		89.1	70.0	130.0	0.9	30.0

Merit Laboratories Login Checklist

Lab Set ID:S40191
Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.04100/Racer Lansing
Submitted:09/13/2022 08:45 Login User: BJB

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.4
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Plant 2

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

157329

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 810-225-1928 CELL NO.: 517-861-0138 P.O. NO.:
E-MAIL ADDRESS: QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.04100/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis/[signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane 8260 SIM
40191.01	9/12/22	1105	MW-22-156_091222	GW	3		3						X
.02	9/12/22	1205	MW-22-155_091222	GW	3		3						X
.03	9/12/22	1410	MW-22-157_091222	GW	3		3						X
.04	9/12/22	1500	MW-22-153_091222	GW	3		3						X
.05	9/12/22	1535	MW-14-58R_091222	GW	3		3						X

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature]/Arcadis ☒Sampler DATE 9/13/22 TIME 0845
RECEIVED BY: SIGNATURE/ORGANIZATION Merit Drop Box DATE 9/13/22 TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION Merit Drop Box DATE 9/13/2022 TIME 0846
RECEIVED BY: SIGNATURE/ORGANIZATION Barbie Ball DATE 9/13/2022 TIME 0846

SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS
SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS

NOTES: TEMP. ON ARRIVAL 4.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Analytical Laboratory Report

Report ID: S41458.01(01)+QC01
Generated on 10/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S41458.01-S41458.08
Project: 30112892.04100 / Racer Lansing
Collected Date(s): 10/14/2022
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S41458.01	MW-22-157_101422	Groundwater	10/14/22 10:25
S41458.02	MW-22-157_101422 MS	Groundwater	10/14/22 10:25
S41458.03	MW-22-157_101422 MSD	Groundwater	10/14/22 10:25
S41458.04	MW-22-155_101422	Groundwater	10/14/22 11:50
S41458.05	MW-22-153_101422	Groundwater	10/14/22 12:50
S41458.06	MW-22-156_101422	Groundwater	10/14/22 13:35
S41458.07	MW-14-58R_101422	Groundwater	10/14/22 14:20
S41458.08	Dup-01_101422	Groundwater	10/14/22 00:01

Analytical Laboratory Report

Lab Sample ID: S41458.01
Sample Tag: MW-22-157_101422
Collected Date/Time: 10/14/2022 10:25
Matrix: Groundwater
COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 16:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	

Lab Sample ID: S41458.02
Sample Tag: MW-22-157_101422 MS
Collected Date/Time: 10/14/2022 10:25
Matrix: Groundwater
COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 13:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	51	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S41458.03
Sample Tag: MW-22-157_101422 MSD
Collected Date/Time: 10/14/2022 10:25
Matrix: Groundwater
COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 14:14, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	53	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S41458.04
Sample Tag: MW-22-155_101422
Collected Date/Time: 10/14/2022 11:50
Matrix: Groundwater
COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 18:34, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	400	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Analytical Laboratory Report

Lab Sample ID: S41458.05
Sample Tag: MW-22-153_101422
Collected Date/Time: 10/14/2022 12:50
Matrix: Groundwater
COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 18:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	52	1		ug/L	1	123-91-1	

Lab Sample ID: S41458.06
Sample Tag: MW-22-156_101422
Collected Date/Time: 10/14/2022 13:35
Matrix: Groundwater
COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 19:17, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	81	1		ug/L	1	123-91-1	

Lab Sample ID: S41458.07
Sample Tag: MW-14-58R_101422
Collected Date/Time: 10/14/2022 14:20
Matrix: Groundwater
COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 19:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	173	1		ug/L	1	123-91-1	

Lab Sample ID: S41458.08
Sample Tag: Dup-01_101422
Collected Date/Time: 10/14/2022 00:01
Matrix: Groundwater
COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 20:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	173	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S41458.01(01)+QC01
Generated on 10/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S41458.01-S41458.08
Project: 30112892.04100 / Racer Lansing
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

QC Report Sections

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Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S41458.01
Sample Tag: MW-22-157_101422
Collected Date/Time: 10/14/2022 10:25
Matrix: Groundwater
COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 16:03	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S41458.02
Sample Tag: MW-22-157_101422 MS
Collected Date/Time: 10/14/2022 10:25
Matrix: Groundwater
COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 13:53	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S41458.03
Sample Tag: MW-22-157_101422 MSD
Collected Date/Time: 10/14/2022 10:25
Matrix: Groundwater
COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 14:14	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S41458.04
Sample Tag: MW-22-155_101422
Collected Date/Time: 10/14/2022 11:50
Matrix: Groundwater
COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 18:34	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S41458.05
Sample Tag: MW-22-153_101422
Collected Date/Time: 10/14/2022 12:50
Matrix: Groundwater
COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 18:56	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S41458.06
Sample Tag: MW-22-156_101422
Collected Date/Time: 10/14/2022 13:35
Matrix: Groundwater
COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 19:17	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S41458.07
Sample Tag: MW-14-58R_101422
Collected Date/Time: 10/14/2022 14:20
Matrix: Groundwater
COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 19:38	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S41458.08
Sample Tag: Dup-01_101422
Collected Date/Time: 10/14/2022 00:01
Matrix: Groundwater
COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 20:00	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41458.01	1,4-Dioxane	SW8260B - SIM	10/20/22 16:03	221020A9
S41458.02	1,4-Dioxane	SW8260B - SIM	10/20/22 13:53	221020A9
S41458.03	1,4-Dioxane	SW8260B - SIM	10/20/22 14:14	221020A9
S41458.04	1,4-Dioxane	SW8260B - SIM	10/20/22 18:34	221020A9
S41458.05	1,4-Dioxane	SW8260B - SIM	10/20/22 18:56	221020A9
S41458.06	1,4-Dioxane	SW8260B - SIM	10/20/22 19:17	221020A9
S41458.07	1,4-Dioxane	SW8260B - SIM	10/20/22 19:38	221020A9
S41458.08	1,4-Dioxane	SW8260B - SIM	10/20/22 20:00	221020A9

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.01

Sample Tag: MW-22-157_101422

Collected Date/Time: 10/14/2022 10:25

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 16:03, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**98.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.04

Sample Tag: MW-22-155_101422

Collected Date/Time: 10/14/2022 11:50

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 18:34, Matrix: WW, Dilution: 10

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**81.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.05

Sample Tag: MW-22-153_101422

Collected Date/Time: 10/14/2022 12:50

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 18:56, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**105.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.06

Sample Tag: MW-22-156_101422

Collected Date/Time: 10/14/2022 13:35

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 19:17, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**103.3**	50.0	200.0

Lab Sample ID: S41458.07

Sample Tag: MW-14-58R_101422

Collected Date/Time: 10/14/2022 14:20

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 19:38, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.08

Sample Tag: Dup-01_101422

Collected Date/Time: 10/14/2022 00:01

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 20:00, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.5**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**96.2**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.9**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**88.5**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.45	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		89.7	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		85.1	70.0	130.0	5.3	30.0

Merit Laboratories Login Checklist

Lab Set ID: S41458
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.04100 / Racer Lansing
Submitted: 10/14/2022 16:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.3
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
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C.O.C. PAGE # 1 OF 1

154889

CHAIN OF CUSTODY RECORD

Plant 2

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 517-861-0138 CELL NO.: 810-225-1928 P.O. NO:
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com QUOTE NO:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.04100/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis/

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☒ OTHER 1-Week

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☒ Other MI

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane 8260 SIM	Special Instructions
41458.01	10/14/22	1025	MW-22-157_101422	GW	9		9						X	
.02/.03/.04	10/14/22	1150	MW-22-155_101422	GW	3		3						X	
.05	10/14/22	1250	MW-22-153_101422	GW	3		3						X	
.06	10/14/22	1335	MW-22-156_101422	GW	3		3						X	
.07	10/14/22	1420	MW-14-58R_101422	GW	3		3						X	
.08	10/14/22	—	Dup-01_101422	GW	3		3						X	
														See TAT Request

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Am LeVan / Arcadis (Sampler)	DATE 10/14/22	TIME 1615
RECEIVED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 10/14/22	TIME 1615
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 10/14/22	TIME 1615
RECEIVED BY: SIGNATURE/ORGANIZATION	M Oilcott	DATE 10/14/22	TIME 1615

SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:
SEAL NO: SEAL INTACT YES ☐ NO ☐ INITIALS:

NOTES: TEMP ON ARRIVAL 4.3°C

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev 1.26.22

Analytical Laboratory Report

Report ID: S41459.01(01)+QC01
Generated on 10/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S41459.01-S41459.02
Project: 30112892.04100 / Racer Lansing
Collected Date(s): 10/14/2022
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

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QC Report (Pages 8-19)

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S41459.01	MW-22-154_101422	Groundwater	10/14/22 15:15
S41459.02	Trip Blank	Water	10/14/22 00:01

Analytical Laboratory Report

Lab Sample ID: S41459.01
Sample Tag: MW-22-154_101422
Collected Date/Time: 10/14/2022 15:15
Matrix: Groundwater
COC Reference: 154887

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/21/22 13:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S41459.02
Sample Tag: Trip Blank
Collected Date/Time: 10/14/2022 00:01
Matrix: Water
COC Reference: 154887

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/18/22 10:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 15:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S41459.01(01)+QC01
Generated on 10/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S41459.01-S41459.02
Project: 30112892.04100 / Racer Lansing
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

QC Report Sections

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Internal Standards per QC Sample (Pages 16-17)
Batch QC Results (Pages 18-19)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S41459.01
Sample Tag: MW-22-154_101422
Collected Date/Time: 10/14/2022 15:15
Matrix: Groundwater
COC Reference: 154887

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/21/22 13:25	221021A9	VS221021W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S41459.02

Sample Tag: Trip Blank

Collected Date/Time: 10/14/2022 00:01

Matrix: Water

COC Reference: 154887

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 15:20	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41459.02	1,4-Dioxane	SW8260B - SIM	10/20/22 15:20	221020A9

Organics - Volatiles, Prep Batch ID: VS221021W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41459.01	1,4-Dioxane	SW8260B - SIM	10/21/22 13:25	221021A9

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS221021W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
No Surrogates				

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
No Surrogates				

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
No Surrogates				

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41459.01

Sample Tag: MW-22-154_101422

Collected Date/Time: 10/14/2022 15:15

Matrix: Groundwater

COC Reference: 154887

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221021A9, Run Date: 10/21/2022 13:25, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**103.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41459.02

Sample Tag: Trip Blank

Collected Date/Time: 10/14/2022 00:01

Matrix: Water

COC Reference: 154887

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 15:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**96.2**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.9**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**88.5**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221021W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**113.4**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**113.8**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.45	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		89.7	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		85.1	70.0	130.0	5.3	30.0

Organics - Volatiles, Prep Batch ID: VS221021W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.47	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		84.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		82.8	70.0	130.0	2.1	30.0

Merit Laboratories Login Checklist

Lab Set ID: S41459
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.04100 / Racer Lansing
Submitted: 10/14/2022 16:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.3
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1 — 154881

CHAIN OF CUSTODY RECORD

Plant 6

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 517-861-0138 CELL NO.: 810-225-1928 P.O. NO.:
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.04100/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☒ OTHER 1-Week
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs	Special Instructions
41459.01	10/14/22	1515	MW-22-154_101422	GW	3		3						X	* See TAT Request *
.02	10/14/22	—	Trip Blank	GW	2		2						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis ☒ Sampler DATE 10/14/22 TIME 1615
RECEIVED BY: SIGNATURE/ORGANIZATION Merit Drop Box DATE 10/14/22 TIME 1615
RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
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SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 8.3°C

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

* Please also email results to: Patrick.Curry@arcadis.com, Alex.Villhauer@arcadis.com, and Caitlin.Cisco@arcadis.com

Analytical Laboratory Report

Supplemental Report

Report ID: S41459.01(02)+QC02
Generated on 10/26/2022
Replaces report S41459.01(01) generated on 10/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S41459.01-S41459.02
Project: 30112892.04100 / Racer Lansing
Collected Date(s): 10/14/2022
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

VOCs added based on COC request

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S41459.01	MW-22-154_101422	Groundwater	10/14/22 15:15
S41459.02	Trip Blank	Water	10/14/22 00:01

Lab Sample ID: S41459.01
Sample Tag: MW-22-154_101422
Collected Date/Time: 10/14/2022 15:15
Matrix: Groundwater
COC Reference: 154887

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/21/22 13:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260 PAL, Method: SW5030C/8260C, Run Date: 10/26/22 05:44, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	30		ug/L	1	76-13-1	
Acetone	Not detected	20		ug/L	1	67-64-1	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	20		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	1	1		ug/L	1	75-01-4	
Bromomethane	Not detected	2		ug/L	1	74-83-9	
Chloroethane	Not detected	1		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	5	1		ug/L	1	156-59-2	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Methyl cyclohexane	Not detected	20		ug/L	1	108-87-2	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	

Lab Sample ID: S41459.01 (continued)

Sample Tag: MW-22-154_101422

TCL Volatile Organics 8260 PAL, Method: SW5030C/8260C, Run Date: 10/26/22 05:44, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	2		ug/L	1	120-82-1	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Naphthalene	Not detected	1		ug/L	1	91-20-3	

Lab Sample ID: S41459.02
Sample Tag: Trip Blank
Collected Date/Time: 10/14/2022 00:01
Matrix: Water
COC Reference: 154887

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/18/22 10:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 15:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S41459.01(02)+QC02
Generated on 10/26/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S41459.01-S41459.02
Project: 30112892.04100 / Racer Lansing
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

QC Report Sections

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Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S41459.01
Sample Tag: MW-22-154_101422
Collected Date/Time: 10/14/2022 15:15
Matrix: Groundwater
COC Reference: 154887

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/21/22 13:25	221021A9	VS221021W1	Yes	BLK/LCS/LCSD
TCL Volatile Organics 8260 PAL	SW5030C/8260C	10/26/22 05:44	221025B9	VF221025W2	Yes	BLK/LCS/LCSD

Lab Sample ID: S41459.02
Sample Tag: Trip Blank
Collected Date/Time: 10/14/2022 00:01
Matrix: Water
COC Reference: 154887

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 15:20	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF221025W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41459.01	TCL Volatile Organics 8260 PAL	SW5030C/8260C	10/26/22 05:44	221025B9

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41459.02	1,4-Dioxane	SW8260B - SIM	10/20/22 15:20	221020A9

Organics - Volatiles, Prep Batch ID: VS221021W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41459.01	1,4-Dioxane	SW8260B - SIM	10/21/22 13:25	221021A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S41459.01

Sample Tag: MW-22-154_101422

Collected Date/Time: 10/14/2022 15:15

Matrix: Groundwater

COC Reference: 154887

Organics - Volatiles, Analysis: TCL Volatile Organics 8260 PAL

Run in Batch: 221025B9, Run Date: 10/26/2022 05:44, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**106.8**	80.0	124.0
1,2-Dichloroethane-D4		**105.3**	72.0	125.0
Toluene-D8		**100.0**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF221025W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221025B9.BLKW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 23:15, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.0**	80.0	124.0
1,2-Dichloroethane-D4		**97.3**	72.0	125.0
Toluene-D8		**98.9**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 21:58, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**103.0**	80.0	124.0
1,2-Dichloroethane-D4		**98.4**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221025B9.LCSDW25B, Parent Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 22:18, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**103.3**	80.0	124.0
1,2-Dichloroethane-D4		**93.4**	72.0	125.0
Toluene-D8		**100.4**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS221021W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41459.01

Sample Tag: MW-22-154_101422

Collected Date/Time: 10/14/2022 15:15

Matrix: Groundwater

COC Reference: 154887

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221021A9, Run Date: 10/21/2022 13:25, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**103.4**	50.0	200.0

Organics - Volatiles, Analysis: TCL Volatile Organics 8260 PAL

Run in Batch: 221025B9, Run Date: 10/26/2022 05:44, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**99.9**	50.0	200.0
1,4-Difluorobenzene		**100.1**	50.0	200.0
Chlorobenzene-D5		**103.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**110.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41459.02

Sample Tag: Trip Blank

Collected Date/Time: 10/14/2022 00:01

Matrix: Water

COC Reference: 154887

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 15:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF221025W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221025B9.BLKW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 23:15, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**103.0**	50.0	200.0
1,4-Difluorobenzene		**102.7**	50.0	200.0
Chlorobenzene-D5		**103.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**106.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 21:58, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.8**	50.0	200.0
1,4-Difluorobenzene		**102.7**	50.0	200.0
Chlorobenzene-D5		**104.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**105.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221025B9.LCSDW25B, Parent Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 22:18, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.1**	50.0	200.0
1,4-Difluorobenzene		**99.7**	50.0	200.0
Chlorobenzene-D5		**98.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.5**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**96.2**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.9**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**88.5**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221021W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**113.4**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**113.8**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**107.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF221025W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221025B9.BLKW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 23:15, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,1,2-Trichloro-1,2,2-trifluoroethane		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Carbon disulfide		ND	1.00	ug/l
Methyl Acetate		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Chloroform		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
Cyclohexane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Methyl cyclohexane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l
Bromoform		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF221025W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 221025B9.BLKW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 23:15, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 21:58, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,1,2-Trichloro-1,2,2-trifluoroethane		95.1	75.1	135.9
Acetone		95.9	29.9	161.5
Carbon disulfide		97.4	63.8	137.4
Methyl Acetate		99.2	64.7	125.4
tert-Methyl butyl ether (MTBE)		101.0	73.2	122.4
2-Butanone (MEK)		99.0	44.0	134.4
Dichlorodifluoromethane		121.3	10.0	222.8
Chloromethane		119.7	23.8	166.5
Vinyl chloride		115.5	43.5	149.1
Bromomethane		109.2	56.8	151.3
Chloroethane		103.4	53.4	149.4
Trichlorofluoromethane		107.5	59.7	151.8
1,1-Dichloroethene		97.8	69.6	139.4
Methylene chloride		103.0	73.3	121.1
trans-1,2-Dichloroethene		99.7	73.6	129.3
1,1-Dichloroethane		103.1	71.5	126.2
cis-1,2-Dichloroethene		102.5	76.6	122.1
Chloroform		102.2	78.4	124.0
1,1,1-Trichloroethane		96.6	79.4	130.9
Cyclohexane		92.5	10.0	169.1
4-Methyl-2-pentanone (MIBK)		105.1	71.6	125.2
2-Hexanone		104.5	55.4	136.9
Carbon tetrachloride		96.0	72.6	133.0
Benzene		101.8	79.9	124.9
1,2-Dichloroethane		102.5	76.0	126.3
Trichloroethene		99.6	79.7	124.2
1,2-Dichloropropane		102.8	78.6	126.4
Bromodichloromethane		102.8	80.4	128.2
Methyl cyclohexane		94.4	76.6	131.3
cis-1,3-Dichloropropene		103.2	79.8	129.9
Toluene		98.8	79.8	124.5
trans-1,3-Dichloropropene		100.1	74.0	131.3
1,1,2-Trichloroethane		102.2	78.7	123.1
Tetrachloroethene		101.6	74.5	124.5
Dibromochloromethane		99.4	74.6	127.2
1,2-Dibromoethane		99.9	70.3	133.7

Organics - Volatiles, Prep Batch ID: VF221025W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 21:58, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chlorobenzene		99.7	79.2	122.7
1,1,2,2-Tetrachloroethane		100.4	79.8	126.3
Ethylbenzene		99.0	79.5	129.1
p,m-Xylene		99.8	79.4	132.2
o-Xylene		97.0	80.2	131.0
Styrene		100.3	69.5	126.7
Isopropylbenzene		97.6	74.4	121.5
Bromoform		99.5	69.4	128.0
1,3-Dichlorobenzene		97.2	77.0	131.3
1,4-Dichlorobenzene		97.8	20.7	137.7
1,2-Dichlorobenzene		98.2	10.0	166.2
1,2-Dibromo-3-chloropropane		95.9	21.2	189.4
1,2,4-Trichlorobenzene		100.1	27.4	143.4
n-Propylbenzene		99.9	82.0	130.7
Naphthalene		99.1	32.9	135.8

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221025B9.LCSDW25B, Parent Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 22:18, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloro-1,2,2-trifluoroethane		93.9	75.1	135.9	1.3	30.0
Acetone		89.3	29.9	161.5	7.0	30.0
Carbon disulfide		95.4	63.8	137.4	2.1	30.0
Methyl Acetate		95.5	64.7	125.4	3.7	30.0
tert-Methyl butyl ether (MTBE)		99.0	73.2	122.4	2.0	30.0
2-Butanone (MEK)		98.7	44.0	134.4	0.3	30.0
Dichlorodifluoromethane		120.4	10.0	222.8	0.7	30.0
Chloromethane		118.5	23.8	166.5	1.0	30.0
Vinyl chloride		115.2	43.5	149.1	0.3	30.0
Bromomethane		106.2	56.8	151.3	2.7	30.0
Chloroethane		100.0	53.4	149.4	3.3	30.0
Trichlorofluoromethane		104.2	59.7	151.8	3.1	30.0
1,1-Dichloroethene		95.8	69.6	139.4	2.1	30.0
Methylene chloride		101.3	73.3	121.1	1.7	30.0
trans-1,2-Dichloroethene		98.1	73.6	129.3	1.6	30.0
1,1-Dichloroethane		98.5	71.5	126.2	4.5	30.0
cis-1,2-Dichloroethene		100.8	76.6	122.1	1.8	30.0
Chloroform		100.9	78.4	124.0	1.3	30.0
1,1,1-Trichloroethane		96.5	79.4	130.9	0.1	30.0
Cyclohexane		89.3	10.0	169.1	3.6	30.0
4-Methyl-2-pentanone (MIBK)		100.7	71.6	125.2	4.3	30.0
2-Hexanone		99.4	55.4	136.9	4.9	30.0
Carbon tetrachloride		97.9	72.6	133.0	1.9	30.0
Benzene		100.8	79.9	124.9	1.0	30.0
1,2-Dichloroethane		103.0	76.0	126.3	0.4	30.0
Trichloroethene		99.3	79.7	124.2	0.3	30.0

Organics - Volatiles, Prep Batch ID: VF221025W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 221025B9.LCSDW25B, Parent Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 22:18, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,2-Dichloropropane		104.0	78.6	126.4	1.2	30.0
Bromodichloromethane		101.7	80.4	128.2	1.0	30.0
Methyl cyclohexane		93.6	76.6	131.3	0.9	30.0
cis-1,3-Dichloropropene		102.0	79.8	129.9	1.2	30.0
Toluene		99.5	79.8	124.5	0.7	30.0
trans-1,3-Dichloropropene		99.0	74.0	131.3	1.1	30.0
1,1,2-Trichloroethane		102.4	78.7	123.1	0.2	30.0
Tetrachloroethene		102.7	74.5	124.5	1.1	30.0
Dibromochloromethane		104.4	74.6	127.2	4.9	30.0
1,2-Dibromoethane		103.9	70.3	133.7	3.9	30.0
Chlorobenzene		102.6	79.2	122.7	2.9	30.0
1,1,2,2-Tetrachloroethane		104.1	79.8	126.3	3.6	30.0
Ethylbenzene		102.0	79.5	129.1	3.0	30.0
p,m-Xylene		101.9	79.4	132.2	2.1	30.0
o-Xylene		100.1	80.2	131.0	3.2	30.0
Styrene		102.6	69.5	126.7	2.2	30.0
Isopropylbenzene		101.2	74.4	121.5	3.6	30.0
Bromoform		102.7	69.4	128.0	3.1	30.0
1,3-Dichlorobenzene		98.3	77.0	131.3	1.2	30.0
1,4-Dichlorobenzene		100.3	20.7	137.7	2.4	30.0
1,2-Dichlorobenzene		100.6	10.0	166.2	2.4	30.0
1,2-Dibromo-3-chloropropane		97.7	21.2	189.4	1.9	30.0
1,2,4-Trichlorobenzene		104.0	27.4	143.4	3.8	30.0
n-Propylbenzene		100.6	82.0	130.7	0.7	30.0
Naphthalene		103.9	32.9	135.8	4.8	30.0

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.45	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		89.7	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		85.1	70.0	130.0	5.3	30.0

Organics - Volatiles, Prep Batch ID: VS221021W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.47	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		84.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		82.8	70.0	130.0	2.1	30.0

Merit Laboratories Login Checklist

Lab Set ID: S41459
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.04100 / Racer Lansing
Submitted: 10/14/2022 16:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.3
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1 — 154881

CHAIN OF CUSTODY RECORD

Plant 6

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 517-861-0138 CELL NO.: 810-225-1928 P.O. NO.:
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.04100/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☒ OTHER 1-Week
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs	Special Instructions
41459.01	10/14/22	1515	MW-22-154_101422	GW	3		3						X	* See TAT Request *
.02	10/14/22	—	Trip Blank	GW	2		2						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis ☒ Sampler DATE 10/14/22 TIME 1615
RECEIVED BY: SIGNATURE/ORGANIZATION Merit Drop Box DATE 10/14/22 TIME 1615
RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 8.3°C

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

* Please also email results to: Patrick.Curry@arcadis.com, Alex.Villhauer@arcadis.com, and Caitlin.Cisco@arcadis.com

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER Lansing

Project Number: 30112892.0370A

Lot Number:**XI01058**

Date Completed:09/24/2022

Kathy Smith

09/26/2022 8:41 AM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Case Narrative
Arcadis U.S., Inc.
Lot Number: XI01058

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Sample XI01058-010 required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of MeOH. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <5mL and reconstituted to 5mL using MeOH by transfer pipet.

The method blank, laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for prep batch 54607 exceeded acceptance criteria for the following analytes: 6:2 FTS EIS. The data has been reported.

Surrogate recovery for the following samples was outside the upper control limit: XI01058-001, XI01058-002, XI01058-003, XI01058-004, XI01058-005, XI01058-006, XI01058-007, XI01058-008, XI01058-009, XI01058-010, XI01058-011, XI01058-012. These samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XI01058

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	EB-02_082922	Aqueous	08/29/2022 1425	09/01/2022
002	UNK-15_082922	Aqueous	08/29/2022 1510	09/01/2022
003	MW-18-99_083022	Aqueous	08/30/2022 1235	09/01/2022
004	MW-18-98_083022	Aqueous	08/30/2022 1335	09/01/2022
005	MW-18-89_083022	Aqueous	08/30/2022 1440	09/01/2022
006	MW-18-90_083022	Aqueous	08/30/2022 1540	09/01/2022
007	DUP-02_083022	Aqueous	08/30/2022	09/01/2022
008	MW-18-105_083122	Aqueous	08/31/2022 0925	09/01/2022
009	MW-18-103_083122	Aqueous	08/31/2022 1025	09/01/2022
010	MW-18-91_083122	Aqueous	08/31/2022 1155	09/01/2022
011	MW-18-88_083122	Aqueous	08/31/2022 1300	09/01/2022
012	MW-18-95_083122	Aqueous	08/31/2022 1400	09/01/2022

(12 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XI01058

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
002	UNK-15_082922	Aqueous	PFBS	PFAS by ID	2.2	J	ng/L	9
002	UNK-15_082922	Aqueous	PFHpS	PFAS by ID	12		ng/L	9
002	UNK-15_082922	Aqueous	PFPeS	PFAS by ID	2.1	J	ng/L	9
002	UNK-15_082922	Aqueous	PFHxS	PFAS by ID	16		ng/L	9
002	UNK-15_082922	Aqueous	PFBA	PFAS by ID	13		ng/L	9
002	UNK-15_082922	Aqueous	PFDA	PFAS by ID	3.1	J	ng/L	9
002	UNK-15_082922	Aqueous	PFHpA	PFAS by ID	8.3		ng/L	9
002	UNK-15_082922	Aqueous	PFHxA	PFAS by ID	11		ng/L	9
002	UNK-15_082922	Aqueous	PFNA	PFAS by ID	5.0		ng/L	9
002	UNK-15_082922	Aqueous	PFOA	PFAS by ID	32		ng/L	9
002	UNK-15_082922	Aqueous	PFPeA	PFAS by ID	12		ng/L	9
002	UNK-15_082922	Aqueous	PFOS	PFAS by ID	1100		ng/L	9
003	MW-18-99_083022	Aqueous	PFBS	PFAS by ID	0.81	J	ng/L	11
003	MW-18-99_083022	Aqueous	PFDS	PFAS by ID	0.68	J	ng/L	11
003	MW-18-99_083022	Aqueous	PFHpS	PFAS by ID	0.98	J	ng/L	11
003	MW-18-99_083022	Aqueous	PFHxS	PFAS by ID	1.7	J	ng/L	11
003	MW-18-99_083022	Aqueous	PFBA	PFAS by ID	9.8		ng/L	11
003	MW-18-99_083022	Aqueous	PFDA	PFAS by ID	0.94	J	ng/L	11
003	MW-18-99_083022	Aqueous	PFHpA	PFAS by ID	2.8	J	ng/L	11
003	MW-18-99_083022	Aqueous	PFHxA	PFAS by ID	4.5		ng/L	11
003	MW-18-99_083022	Aqueous	PFNA	PFAS by ID	1.3	J	ng/L	11
003	MW-18-99_083022	Aqueous	PFOA	PFAS by ID	5.8		ng/L	11
003	MW-18-99_083022	Aqueous	PFPeA	PFAS by ID	3.1	J	ng/L	11
003	MW-18-99_083022	Aqueous	PFOS	PFAS by ID	84		ng/L	11
004	MW-18-98_083022	Aqueous	PFBS	PFAS by ID	1.0	J	ng/L	13
004	MW-18-98_083022	Aqueous	PFHpS	PFAS by ID	2.2	J	ng/L	13
004	MW-18-98_083022	Aqueous	PFBA	PFAS by ID	18		ng/L	13
004	MW-18-98_083022	Aqueous	PFDA	PFAS by ID	1.1	J	ng/L	13
004	MW-18-98_083022	Aqueous	PFHpA	PFAS by ID	3.0	J	ng/L	13
004	MW-18-98_083022	Aqueous	PFHxA	PFAS by ID	5.5		ng/L	13
004	MW-18-98_083022	Aqueous	PFNA	PFAS by ID	13		ng/L	13
004	MW-18-98_083022	Aqueous	PFOA	PFAS by ID	14		ng/L	13
004	MW-18-98_083022	Aqueous	PFPeA	PFAS by ID	2.0	J	ng/L	13
004	MW-18-98_083022	Aqueous	PFOS	PFAS by ID	430		ng/L	13
005	MW-18-89_083022	Aqueous	PFBS	PFAS by ID	0.97	J	ng/L	15
005	MW-18-89_083022	Aqueous	PFHpS	PFAS by ID	2.2	J	ng/L	15
005	MW-18-89_083022	Aqueous	PFPeS	PFAS by ID	1.1	J	ng/L	15
005	MW-18-89_083022	Aqueous	PFHxS	PFAS by ID	4.5		ng/L	15
005	MW-18-89_083022	Aqueous	PFBA	PFAS by ID	8.3		ng/L	15
005	MW-18-89_083022	Aqueous	PFDA	PFAS by ID	1.0	J	ng/L	15
005	MW-18-89_083022	Aqueous	PFHpA	PFAS by ID	4.2		ng/L	15
005	MW-18-89_083022	Aqueous	PFHxA	PFAS by ID	6.1		ng/L	15
005	MW-18-89_083022	Aqueous	PFNA	PFAS by ID	1.3	J	ng/L	15

Detection Summary (Continued)

Lot Number: XI01058

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
005	MW-18-89_083022	Aqueous	PFOA	PFAS by ID	13		ng/L	15
005	MW-18-89_083022	Aqueous	PFPeA	PFAS by ID	5.4		ng/L	15
005	MW-18-89_083022	Aqueous	PFOS	PFAS by ID	120		ng/L	15
006	MW-18-90_083022	Aqueous	PFBS	PFAS by ID	1.4	J	ng/L	17
006	MW-18-90_083022	Aqueous	PFDS	PFAS by ID	0.69	J	ng/L	17
006	MW-18-90_083022	Aqueous	PFHpS	PFAS by ID	20		ng/L	17
006	MW-18-90_083022	Aqueous	PFOSA	PFAS by ID	0.59	J	ng/L	17
006	MW-18-90_083022	Aqueous	PFPeS	PFAS by ID	3.2	J	ng/L	17
006	MW-18-90_083022	Aqueous	PFHxS	PFAS by ID	21		ng/L	17
006	MW-18-90_083022	Aqueous	PFBA	PFAS by ID	9.4		ng/L	17
006	MW-18-90_083022	Aqueous	PFDA	PFAS by ID	1.6	J	ng/L	17
006	MW-18-90_083022	Aqueous	PFHpA	PFAS by ID	3.6		ng/L	17
006	MW-18-90_083022	Aqueous	PFHxA	PFAS by ID	6.1		ng/L	17
006	MW-18-90_083022	Aqueous	PFNA	PFAS by ID	1.3	J	ng/L	17
006	MW-18-90_083022	Aqueous	PFOA	PFAS by ID	16		ng/L	17
006	MW-18-90_083022	Aqueous	PFPeA	PFAS by ID	3.1	J	ng/L	17
006	MW-18-90_083022	Aqueous	PFOS	PFAS by ID	980		ng/L	17
007	DUP-02_083022	Aqueous	PFBS	PFAS by ID	2.2	J	ng/L	19
007	DUP-02_083022	Aqueous	PFHpS	PFAS by ID	19		ng/L	19
007	DUP-02_083022	Aqueous	PFOSA	PFAS by ID	0.71	J	ng/L	19
007	DUP-02_083022	Aqueous	PFPeS	PFAS by ID	3.3		ng/L	19
007	DUP-02_083022	Aqueous	PFHxS	PFAS by ID	21		ng/L	19
007	DUP-02_083022	Aqueous	PFBA	PFAS by ID	9.9		ng/L	19
007	DUP-02_083022	Aqueous	PFDA	PFAS by ID	1.6	J	ng/L	19
007	DUP-02_083022	Aqueous	PFHpA	PFAS by ID	4.2		ng/L	19
007	DUP-02_083022	Aqueous	PFHxA	PFAS by ID	6.3		ng/L	19
007	DUP-02_083022	Aqueous	PFNA	PFAS by ID	1.4	J	ng/L	19
007	DUP-02_083022	Aqueous	PFOA	PFAS by ID	17		ng/L	19
007	DUP-02_083022	Aqueous	PFPeA	PFAS by ID	3.0	J	ng/L	19
007	DUP-02_083022	Aqueous	PFOS	PFAS by ID	930		ng/L	19
008	MW-18-105_083122	Aqueous	PFBS	PFAS by ID	4.6		ng/L	21
008	MW-18-105_083122	Aqueous	PFHxS	PFAS by ID	1.3	J	ng/L	21
008	MW-18-105_083122	Aqueous	PFBA	PFAS by ID	0.93	J	ng/L	21
008	MW-18-105_083122	Aqueous	PFOS	PFAS by ID	2.9	J	ng/L	21
009	MW-18-103_083122	Aqueous	PFBS	PFAS by ID	8.0		ng/L	23
009	MW-18-103_083122	Aqueous	PFPeS	PFAS by ID	6.8		ng/L	23
009	MW-18-103_083122	Aqueous	PFHxS	PFAS by ID	63		ng/L	23
009	MW-18-103_083122	Aqueous	PFBA	PFAS by ID	7.9		ng/L	23
009	MW-18-103_083122	Aqueous	PFHxA	PFAS by ID	1.1	J	ng/L	23
009	MW-18-103_083122	Aqueous	PFOA	PFAS by ID	1.2	J	ng/L	23
009	MW-18-103_083122	Aqueous	PFPeA	PFAS by ID	1.2	J	ng/L	23
009	MW-18-103_083122	Aqueous	PFOS	PFAS by ID	3.8		ng/L	23
010	MW-18-91_083122	Aqueous	PFBS	PFAS by ID	1.7	J	ng/L	25
010	MW-18-91_083122	Aqueous	PFDS	PFAS by ID	2.2	J	ng/L	25
010	MW-18-91_083122	Aqueous	PFHpS	PFAS by ID	0.60	J	ng/L	25
010	MW-18-91_083122	Aqueous	PFOSA	PFAS by ID	0.70	J	ng/L	25
010	MW-18-91_083122	Aqueous	PFHxS	PFAS by ID	1.7	J	ng/L	25
010	MW-18-91_083122	Aqueous	PFBA	PFAS by ID	8.2		ng/L	25

Detection Summary (Continued)

Lot Number: XI01058

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
010	MW-18-91_083122	Aqueous	PFDA	PFAS by ID	1.1	J	ng/L	25
010	MW-18-91_083122	Aqueous	PFHpA	PFAS by ID	2.5	J	ng/L	25
010	MW-18-91_083122	Aqueous	PFHxA	PFAS by ID	3.1	J	ng/L	25
010	MW-18-91_083122	Aqueous	PFNA	PFAS by ID	1.3	J	ng/L	25
010	MW-18-91_083122	Aqueous	PFOA	PFAS by ID	7.9		ng/L	25
010	MW-18-91_083122	Aqueous	PFPeA	PFAS by ID	2.8	J	ng/L	25
010	MW-18-91_083122	Aqueous	PFOS	PFAS by ID	48		ng/L	25
011	MW-18-88_083122	Aqueous	PFBS	PFAS by ID	1.9	J	ng/L	27
011	MW-18-88_083122	Aqueous	PFHpS	PFAS by ID	2.3	J	ng/L	27
011	MW-18-88_083122	Aqueous	PFPeS	PFAS by ID	0.69	J	ng/L	27
011	MW-18-88_083122	Aqueous	PFHxS	PFAS by ID	4.6		ng/L	27
011	MW-18-88_083122	Aqueous	PFBA	PFAS by ID	10		ng/L	27
011	MW-18-88_083122	Aqueous	PFHpA	PFAS by ID	0.70	J	ng/L	27
011	MW-18-88_083122	Aqueous	PFHxA	PFAS by ID	0.89	J	ng/L	27
011	MW-18-88_083122	Aqueous	PFNA	PFAS by ID	0.67	J	ng/L	27
011	MW-18-88_083122	Aqueous	PFOA	PFAS by ID	9.2		ng/L	27
011	MW-18-88_083122	Aqueous	PFPeA	PFAS by ID	0.68	J	ng/L	27
011	MW-18-88_083122	Aqueous	PFOS	PFAS by ID	310		ng/L	27
012	MW-18-95_083122	Aqueous	PFBS	PFAS by ID	1.8	J	ng/L	29
012	MW-18-95_083122	Aqueous	PFHpS	PFAS by ID	0.75	J	ng/L	29
012	MW-18-95_083122	Aqueous	PFHxS	PFAS by ID	1.2	J	ng/L	29
012	MW-18-95_083122	Aqueous	PFBA	PFAS by ID	9.6		ng/L	29
012	MW-18-95_083122	Aqueous	PFNA	PFAS by ID	0.89	J	ng/L	29
012	MW-18-95_083122	Aqueous	PFOA	PFAS by ID	5.2		ng/L	29
012	MW-18-95_083122	Aqueous	PFPeA	PFAS by ID	0.58	J	ng/L	29
012	MW-18-95_083122	Aqueous	PFOS	PFAS by ID	41		ng/L	29

(117 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-001**

Description: **EB-02_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1425** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1551	MMM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		111	25-150
13C2_6:2FTS	N	397	25-150
13C2_8:2FTS		114	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		93	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		97	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		100	25-150
13C6_PFDA		96	25-150
13C7_PFUdA		97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XI01058-001**
Description: **EB-02_082922**		Matrix: **Aqueous**
Date Sampled: **08/29/2022 1425**	Project Name: **RACER Lansing**	
Date Received: **09/01/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		102	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-002**

Description: **UNK-15_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1510** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1602	MMM	09/20/2022 1256	54607
2	SOP SPE	PFAS by ID SOP	5	09/22/2022 1345	ALM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.2**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**12**		**3.6**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**2.1**	**J**	**3.6**	**0.53**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**16**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**13**		**3.6**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**3.1**	**J**	**3.6**	**0.47**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**8.3**		**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**11**		**3.6**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**5.0**		**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**32**		**3.6**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**12**		**3.6**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1100**		**18**	**8.9**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	225	25-150	N	174	25-150
13C2_6:2FTS	N	251	25-150		138	25-150
13C2_8:2FTS	N	168	25-150		116	25-150
13C2_PFDoA		96	25-150		103	25-150
13C2_PFTeDA		88	25-150		98	25-150
13C3_PFBS		83	25-150		113	25-150
13C3_PFHxS		89	25-150		108	25-150
13C3-HFPO-DA		83	25-150		110	25-150
13C4_PFBA		57	25-150		103	25-150
13C4_PFHpA		95	25-150		105	25-150
13C5_PFHxA		88	25-150		111	25-150
13C5_PFPeA		73	25-150		106	25-150
13C6_PFDA		105	25-150		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-002**

Description: **UNK-15_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1510** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		100	25-150		102	25-150
13C8_PFOA		95	25-150		106	25-150
13C8_PFOS		92	25-150		106	25-150
13C8_PFOSA		105	10-150		104	10-150
13C9_PFNA		98	25-150		107	25-150
d5-EtFOSAA		112	25-150		107	25-150
d3-MeFOSAA		113	25-150		109	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-003**

Description: **MW-18-99_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1235** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1635	MMM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.81**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	**335-77-3**	**PFAS by ID SOP**	**0.68**	**J**	**3.5**	**0.68**	**ng/L**	**1**
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.98**	**J**	**3.5**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.8**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.94**	**J**	**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.8**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**4.5**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.3**	**J**	**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.8**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.1**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**84**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	222	25-150
13C2_6:2FTS	N	293	25-150
13C2_8:2FTS		124	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		73	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		92	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XI01058-003**
Description: **MW-18-99_083022**		Matrix: **Aqueous**
Date Sampled: **08/30/2022 1235**	Project Name: **RACER Lansing**	
Date Received: **09/01/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		113	25-150
d3-MeFOSAA		115	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-004**

Description: **MW-18-98_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1335** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1646	MMM	09/20/2022 1256	54607
2	SOP SPE	PFAS by ID SOP	5	09/22/2022 1356	ALM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.7	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.0**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**2.2**	**J**	**3.4**	**0.42**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**18**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.44**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.0**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**5.5**		**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**13**		**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**14**		**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**430**		**17**	**8.4**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	247	25-150	N	178	25-150
13C2_6:2FTS	N	296	25-150		141	25-150
13C2_8:2FTS		129	25-150		107	25-150
13C2_PFDoA		79	25-150		93	25-150
13C2_PFTeDA		79	25-150		87	25-150
13C3_PFBS		79	25-150		109	25-150
13C3_PFHxS		89	25-150		114	25-150
13C3-HFPO-DA		85	25-150		115	25-150
13C4_PFBA		46	25-150		96	25-150
13C4_PFHpA		93	25-150		108	25-150
13C5_PFHxA		86	25-150		111	25-150
13C5_PFPeA		69	25-150		106	25-150
13C6_PFDA		103	25-150		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-004**

Description: **MW-18-98_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1335** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		84	25-150		96	25-150
13C8_PFOA		97	25-150		104	25-150
13C8_PFOS		94	25-150		106	25-150
13C8_PFOSA		98	10-150		103	10-150
13C9_PFNA		101	25-150		109	25-150
d5-EtFOSAA		98	25-150		99	25-150
d3-MeFOSAA		100	25-150		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-005**

Description: **MW-18-89_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1440** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1656	MMM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.40	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.55	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.7	0.73	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.40	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.97**	**J**	**3.3**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.3	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**2.2**	**J**	**3.3**	**0.42**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.3	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.3	0.51	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.3**	**0.50**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**4.5**		**3.3**	**0.46**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.3**		**3.3**	**0.50**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.0**	**J**	**3.3**	**0.44**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.3	0.39	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**4.2**		**3.3**	**0.37**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**6.1**		**3.3**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.3**	**J**	**3.3**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**13**		**3.3**	**0.69**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.4**		**3.3**	**0.45**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.3	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.3	0.44	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.3	0.52	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**120**		**3.3**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	236	25-150
13C2_6:2FTS	N	301	25-150
13C2_8:2FTS	N	151	25-150
13C2_PFDoA		81	25-150
13C2_PFTeDA		73	25-150
13C3_PFBS		78	25-150
13C3_PFHxS		84	25-150
13C3-HFPO-DA		80	25-150
13C4_PFBA		51	25-150
13C4_PFHpA		85	25-150
13C5_PFHxA		81	25-150
13C5_PFPeA		69	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		87	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XI01058-005**
Description: **MW-18-89_083022**
Matrix: **Aqueous**
Date Sampled: **08/30/2022 1440**
Project Name: **RACER Lansing**
Date Received: **09/01/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		91	25-150
13C8_PFOS		92	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		99	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-006**

Description: **MW-18-90_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1540** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1707	MMM	09/20/2022 1256	54607
2	SOP SPE	PFAS by ID SOP	5	09/22/2022 1407	ALM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.4**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	**335-77-3**	**PFAS by ID SOP**	**0.69**	**J**	**3.4**	**0.67**	**ng/L**	**1**
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**20**		**3.4**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.59**	**J**	**3.4**	**0.53**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**3.2**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**21**		**3.4**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.4**		**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.6**	**J**	**3.4**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.6**		**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**6.1**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.3**	**J**	**3.4**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**16**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.1**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**980**		**17**	**8.6**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	289	25-150	N	192	25-150
13C2_6:2FTS	N	288	25-150	N	152	25-150
13C2_8:2FTS	N	238	25-150		134	25-150
13C2_PFDoA		96	25-150		99	25-150
13C2_PFTeDA		85	25-150		92	25-150
13C3_PFBS		88	25-150		109	25-150
13C3_PFHxS		88	25-150		108	25-150
13C3-HFPO-DA		84	25-150		108	25-150
13C4_PFBA		27	25-150		39	25-150
13C4_PFHpA		95	25-150		108	25-150
13C5_PFHxA		87	25-150		110	25-150
13C5_PFPeA		80	25-150		104	25-150
13C6_PFDA		112	25-150		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-006**

Description: **MW-18-90_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1540** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		109	25-150		103	25-150
13C8_PFOA		98	25-150		103	25-150
13C8_PFOS		88	25-150		103	25-150
13C8_PFOSA		103	10-150		106	10-150
13C9_PFNA		100	25-150		112	25-150
d5-EtFOSAA		122	25-150		108	25-150
d3-MeFOSAA		116	25-150		111	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-007**

Description: **DUP-02_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1718	MMM	09/20/2022 1256	54607
2	SOP SPE	PFAS by ID SOP	5	09/22/2022 1418	ALM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.6	0.40	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.6	0.55	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.6	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.6	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.6	0.72	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.6	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.6	0.40	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.6	0.62	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.6	0.77	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.2**	**J**	**3.3**	**0.34**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.3	0.64	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**19**		**3.3**	**0.41**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.3	0.59	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.71**	**J**	**3.3**	**0.51**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**3.3**		**3.3**	**0.49**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**21**		**3.3**	**0.46**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.9**		**3.3**	**0.50**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.6**	**J**	**3.3**	**0.43**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.3	0.39	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**4.2**		**3.3**	**0.37**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**6.3**		**3.3**	**0.57**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.4**	**J**	**3.3**	**0.38**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**17**		**3.3**	**0.69**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.0**	**J**	**3.3**	**0.45**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.3	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.3	0.44	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.3	0.52	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**930**		**17**	**8.3**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	272	25-150	N	180	25-150
13C2_6:2FTS	N	302	25-150		150	25-150
13C2_8:2FTS	N	230	25-150		131	25-150
13C2_PFDoA		92	25-150		90	25-150
13C2_PFTeDA		81	25-150		83	25-150
13C3_PFBS		87	25-150		101	25-150
13C3_PFHxS		91	25-150		100	25-150
13C3-HFPO-DA		82	25-150		108	25-150
13C4_PFBA		26	25-150		34	25-150
13C4_PFHpA		93	25-150		109	25-150
13C5_PFHxA		91	25-150		106	25-150
13C5_PFPeA		76	25-150		104	25-150
13C6_PFDA		111	25-150		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-007**

Description: **DUP-02_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		105	25-150		97	25-150
13C8_PFOA		98	25-150		102	25-150
13C8_PFOS		92	25-150		113	25-150
13C8_PFOSA		106	10-150		103	10-150
13C9_PFNA		102	25-150		107	25-150
d5-EtFOSAA		117	25-150		105	25-150
d3-MeFOSAA		114	25-150		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-008**

Description: **MW-18-105_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 0925** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1729	MMM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**4.6**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.3**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**0.93**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.9**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	156	25-150
13C2_6:2FTS	N	334	25-150
13C2_8:2FTS		110	25-150
13C2_PFDoA		94	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		84	25-150
13C4_PFHpA		99	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		101	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XI01058-008**
Description: **MW-18-105_083122**
Matrix: **Aqueous**
Date Sampled: **08/31/2022 0925**
Project Name: **RACER Lansing**
Date Received: **09/01/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-009**

Description: **MW-18-103_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1025** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1740	MMM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**8.0**		**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**6.8**		**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**63**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.9**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.2**	**J**	**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.2**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**3.8**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		133	25-150
13C2_6:2FTS	N	250	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		106	25-150
13C4_PFBA		74	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		100	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		92	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-009**

Description: **MW-18-103_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1025** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		99	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-010**

Description: **MW-18-91_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1155** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1813	MMM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.7**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	**335-77-3**	**PFAS by ID SOP**	**2.2**	**J**	**3.6**	**0.69**	**ng/L**	**1**
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.60**	**J**	**3.6**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.70**	**J**	**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.7**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.2**		**3.6**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.1**	**J**	**3.6**	**0.47**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.5**	**J**	**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.1**	**J**	**3.6**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.3**	**J**	**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.9**		**3.6**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.8**	**J**	**3.6**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**48**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	283	25-150
13C2_6:2FTS	N	355	25-150
13C2_8:2FTS	N	268	25-150
13C2_PFDoA		111	25-150
13C2_PFTeDA		100	25-150
13C3_PFBS		84	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		85	25-150
13C4_PFBA		49	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		88	25-150
13C5_PFPeA		72	25-150
13C6_PFDA		122	25-150
13C7_PFUdA		116	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XI01058-010**
Description: **MW-18-91_083122**		Matrix: **Aqueous**
Date Sampled: **08/31/2022 1155**	Project Name: **RACER Lansing**	
Date Received: **09/01/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		114	25-150
d5-EtFOSAA		139	25-150
d3-MeFOSAA		134	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-011**

Description: **MW-18-88_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1300** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1824	MMM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.9**	**J**	**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**2.3**	**J**	**3.6**	**0.45**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.69**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**4.6**		**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**10**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.70**	**J**	**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.89**	**J**	**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.67**	**J**	**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**9.2**		**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.68**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**310**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	220	25-150
13C2_6:2FTS	N	214	25-150
13C2_8:2FTS		117	25-150
13C2_PFDoA		90	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		92	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		69	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		91	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XI01058-011**
Description: **MW-18-88_083122**		Matrix: **Aqueous**
Date Sampled: **08/31/2022 1300**	Project Name: **RACER Lansing**	
Date Received: **09/01/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		95	25-150
13C8_PFOS		94	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		98	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		108	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-012**

Description: **MW-18-95_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1400** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	09/21/2022 1835	MMM	09/20/2022 1256	54607

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.8**	**J**	**3.5**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.75**	**J**	**3.5**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.6**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.89**	**J**	**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.2**		**3.5**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.58**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**41**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	226	25-150
13C2_6:2FTS	N	273	25-150
13C2_8:2FTS		115	25-150
13C2_PFDoA		91	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		91	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		72	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		88	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01058-012**

Description: **MW-18-95_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1400** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ54607-001
Batch: 54607
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/20/2022 1256

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	09/21/2022 1518
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	09/21/2022 1518
8:2 FTS	ND		1	8.0	1.6	ng/L	09/21/2022 1518
6:2 FTS	ND		1	8.0	2.0	ng/L	09/21/2022 1518
4:2 FTS	ND		1	8.0	0.87	ng/L	09/21/2022 1518
GenX	ND		1	8.0	2.1	ng/L	09/21/2022 1518
ADONA	ND		1	8.0	0.48	ng/L	09/21/2022 1518
EtFOSAA	ND		1	8.0	0.75	ng/L	09/21/2022 1518
MeFOSAA	ND		1	8.0	0.93	ng/L	09/21/2022 1518
PFBS	ND		1	4.0	0.41	ng/L	09/21/2022 1518
PFDS	ND		1	4.0	0.78	ng/L	09/21/2022 1518
PFHpS	ND		1	4.0	0.50	ng/L	09/21/2022 1518
PFNS	ND		1	4.0	0.71	ng/L	09/21/2022 1518
PFOSA	ND		1	4.0	0.61	ng/L	09/21/2022 1518
PFPeS	ND		1	4.0	0.59	ng/L	09/21/2022 1518
PFHxS	ND		1	4.0	0.55	ng/L	09/21/2022 1518
PFBA	ND		1	4.0	0.60	ng/L	09/21/2022 1518
PFDA	ND		1	4.0	0.52	ng/L	09/21/2022 1518
PFDoA	ND		1	4.0	0.47	ng/L	09/21/2022 1518
PFHpA	ND		1	4.0	0.45	ng/L	09/21/2022 1518
PFHxA	ND		1	4.0	0.69	ng/L	09/21/2022 1518
PFNA	ND		1	4.0	0.46	ng/L	09/21/2022 1518
PFOA	ND		1	4.0	0.83	ng/L	09/21/2022 1518
PFPeA	ND		1	4.0	0.54	ng/L	09/21/2022 1518
PFTeDA	ND		1	4.0	0.60	ng/L	09/21/2022 1518
PFTrDA	ND		1	4.0	0.53	ng/L	09/21/2022 1518
PFUdA	ND		1	4.0	0.63	ng/L	09/21/2022 1518
PFOS	ND		1	4.0	2.0	ng/L	09/21/2022 1518

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		105	25-150
13C2_6:2FTS	N	230	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		90	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		94	25-150
13C3_PFHxS		92	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		94	25-150
13C4_PFHpA		94	25-150
13C5_PFHxA		91	25-150
13C5_PFPeA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ54607-001
Batch: 54607
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/20/2022 1256

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		89	25-150
13C8_PFOA		99	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		97	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ54607-002
Batch: 54607
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/20/2022 1256

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	100	50-150	09/21/2022 1529
11Cl-PF3OUdS	15	14		1	91	50-150	09/21/2022 1529
8:2 FTS	15	15		1	95	50-150	09/21/2022 1529
6:2 FTS	15	15		1	100	50-150	09/21/2022 1529
4:2 FTS	15	15		1	101	50-150	09/21/2022 1529
GenX	32	38		1	118	50-150	09/21/2022 1529
ADONA	15	14		1	94	50-150	09/21/2022 1529
EtFOSAA	16	15		1	97	50-150	09/21/2022 1529
MeFOSAA	16	17		1	106	50-150	09/21/2022 1529
PFBS	14	14		1	98	50-150	09/21/2022 1529
PFDS	15	14		1	93	50-150	09/21/2022 1529
PFHpS	15	14		1	93	50-150	09/21/2022 1529
PFNS	15	14		1	93	50-150	09/21/2022 1529
PFOSA	16	16		1	102	50-150	09/21/2022 1529
PFPeS	15	15		1	98	50-150	09/21/2022 1529
PFHxS	15	14		1	98	50-150	09/21/2022 1529
PFBA	16	16		1	98	50-150	09/21/2022 1529
PFDA	16	16		1	102	50-150	09/21/2022 1529
PFDoA	16	16		1	99	50-150	09/21/2022 1529
PFHpA	16	16		1	97	50-150	09/21/2022 1529
PFHxA	16	16		1	97	50-150	09/21/2022 1529
PFNA	16	15		1	97	50-150	09/21/2022 1529
PFOA	16	16		1	102	50-150	09/21/2022 1529
PFPeA	16	16		1	98	50-150	09/21/2022 1529
PFTeDA	16	16		1	101	50-150	09/21/2022 1529
PFTrDA	16	13		1	83	50-150	09/21/2022 1529
PFUdA	16	17		1	104	50-150	09/21/2022 1529
PFOS	15	15		1	98	50-150	09/21/2022 1529

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		105	25-150
13C2_6:2FTS	N	257	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		85	25-150
13C2_PFTeDA		63	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		90	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ54607-002
Batch: 54607
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/20/2022 1256

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		92	25-150
13C7_PFUdA		91	25-150
13C8_PFOA		94	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		94	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XI01058-009MS
Batch: 54607
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/20/2022 1256

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	13		1	100	50-150	09/21/2022 1751
11Cl-PF3OUdS	ND	13	12		1	95	50-150	09/21/2022 1751
8:2 FTS	ND	13	14		1	106	50-150	09/21/2022 1751
6:2 FTS	ND	13	12		1	98	50-150	09/21/2022 1751
4:2 FTS	ND	13	13		1	105	50-150	09/21/2022 1751
GenX	ND	27	31		1	114	50-150	09/21/2022 1751
ADONA	ND	13	13		1	99	50-150	09/21/2022 1751
EtFOSAA	ND	13	14		1	106	50-150	09/21/2022 1751
MeFOSAA	ND	13	13		1	96	50-150	09/21/2022 1751
PFBS	8.0	12	21		1	112	50-150	09/21/2022 1751
PFDS	ND	13	13		1	97	50-150	09/21/2022 1751
PFHpS	ND	13	12		1	97	50-150	09/21/2022 1751
PFNS	ND	13	12		1	94	50-150	09/21/2022 1751
PFOSA	ND	13	13		1	100	50-150	09/21/2022 1751
PFPeS	6.8	13	20		1	108	50-150	09/21/2022 1751
PFHxS	63	12	81		1	144	50-150	09/21/2022 1751
PFBA	7.9	13	22		1	102	50-150	09/21/2022 1751
PFDA	ND	13	13		1	98	50-150	09/21/2022 1751
PFDoA	ND	13	13		1	100	50-150	09/21/2022 1751
PFHpA	ND	13	14		1	106	50-150	09/21/2022 1751
PFHxA	1.1	13	14		1	97	50-150	09/21/2022 1751
PFNA	ND	13	13		1	97	50-150	09/21/2022 1751
PFOA	1.2	13	15		1	100	50-150	09/21/2022 1751
PFPeA	1.2	13	15		1	99	50-150	09/21/2022 1751
PFTeDA	ND	13	14		1	101	50-150	09/21/2022 1751
PFTrDA	ND	13	13		1	95	50-150	09/21/2022 1751
PFUdA	ND	13	13		1	100	50-150	09/21/2022 1751
PFOS	3.8	12	16		1	97	50-150	09/21/2022 1751

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		124	25-150
13C2_6:2FTS	N	229	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		89	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		72	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		98	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XI01058-009MS
Batch: 54607
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/20/2022 1256

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		98	25-150
13C7_PFUdA		92	25-150
13C8_PFOA		96	25-150
13C8_PFOS		95	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		98	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XI01058-009MD
Batch: 54607
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/20/2022 1256

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	13	13		1	98	3.4	50-150	30	09/21/2022 1802
11Cl-PF3OUdS	ND	13	13		1	94	4.0	50-150	30	09/21/2022 1802
8:2 FTS	ND	14	13		1	97	2.9	50-150	30	09/21/2022 1802
6:2 FTS	ND	13	13		1	99	7.5	50-150	30	09/21/2022 1802
4:2 FTS	ND	13	13		1	94	4.9	50-150	30	09/21/2022 1802
GenX	ND	28	31		1	110	1.9	50-150	30	09/21/2022 1802
ADONA	ND	13	13		1	94	0.11	50-150	30	09/21/2022 1802
EtFOSAA	ND	14	14		1	96	4.4	50-150	30	09/21/2022 1802
MeFOSAA	ND	14	13		1	94	3.7	50-150	30	09/21/2022 1802
PFBS	8.0	13	22		1	109	1.8	50-150	30	09/21/2022 1802
PFDS	ND	14	12		1	89	3.6	50-150	30	09/21/2022 1802
PFHpS	ND	14	12		1	92	0.30	50-150	30	09/21/2022 1802
PFNS	ND	14	13		1	94	6.0	50-150	30	09/21/2022 1802
PFOSA	ND	14	14		1	99	4.6	50-150	30	09/21/2022 1802
PFPeS	6.8	13	23		1	119	9.9	50-150	30	09/21/2022 1802
PFHxS	63	13	81		1	134	0.48	50-150	30	09/21/2022 1802
PFBA	7.9	14	22		1	101	3.0	50-150	30	09/21/2022 1802
PFDA	ND	14	15		1	103	11	50-150	30	09/21/2022 1802
PFDoA	ND	14	14		1	98	3.2	50-150	30	09/21/2022 1802
PFHpA	ND	14	15		1	103	1.9	50-150	30	09/21/2022 1802
PFHxA	1.1	14	15		1	101	8.4	50-150	30	09/21/2022 1802
PFNA	ND	14	14		1	98	6.2	50-150	30	09/21/2022 1802
PFOA	1.2	14	15		1	100	5.3	50-150	30	09/21/2022 1802
PFPeA	1.2	14	15		1	100	6.2	50-150	30	09/21/2022 1802
PFTeDA	ND	14	14		1	101	5.1	50-150	30	09/21/2022 1802
PFTrDA	ND	14	13		1	94	4.3	50-150	30	09/21/2022 1802
PFUdA	ND	14	15		1	103	9.0	50-150	30	09/21/2022 1802
PFOS	3.8	13	17		1	101	7.4	50-150	30	09/21/2022 1802

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		119	25-150
13C2_6:2FTS	N	292	25-150
13C2_8:2FTS		105	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		87	25-150
13C3_PFBS		91	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		70	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		94	25-150
13C5_PFPeA		94	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS - MSD

Sample ID: XI01058-009MD
Batch: 54607
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/20/2022 1256

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		92	25-150
13C7_PFUdA		90	25-150
13C8_PFOA		92	25-150
13C8_PFOS		92	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		97	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

PLANT -3

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 138325

Client: ARCADIS	Report to Contact: KAITLYN HUNT, TIFFANY LINDER	Telephone No. / E-mail: 248-864-6013 / 815-225-1928	Quote No.
Address: 28550 Cabot Dr. Suite 500	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 1 of 2
City: NOVI	State: MI	Zip Code: 48377	Printed Name: Billy J. Coberly		
Project Name: RACER LANSING			
Project No.: 30172892.0370A	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab / Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	HNO3	H2SO4	HCl	NaOH	ZnAc/NaOH	Other	PFAS Method 537.1 DoD v4/1535M Modified (Acq/Solid)	Remarks / Cooler I.D.
EB-02-082922	8-29-22	1425	G	X			3							2	
UNK-15_082922	8-29-22	15:10	G	X			2							2	RUSH PFAS Compounds for ALL
~~CH14RO_082922~~	~~8-29-22~~	~~16:10~~	~~G~~	~~X~~			~~2~~							~~2~~	
MW-18-99_083022	8-30-22	12:35	G	X			2							2	NO SAMPLE
MW-18-98_083022	8-30-22	13:35	G	X			2							2	
MW-18-89_083022	8-30-22	14:40	G	X			2							2	
MW-18-90_083022	8-30-22	15:40	G	X			2							2	
DUP-02_083022	8-30-22	—	G	X			2							2	
MW-18-105_083122	8-31-22	9:25	G	X			2							2	
MW-18-103_083122	8-31-22	10:25	G	X			6							6	MS/MSD

XI01058

KEB2

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by: Austin Westhuis / Arcadis	Date: 8/31/22	Time	1. Received by: FedEx	Date: 8/31/22	Time
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: fedex	Date: 9.1.22	Time: 1626	4. Laboratory received by	Date: 9.1.22	Time: 1626

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle): (Yes) No Ice Pack
Receipt Temp: 2.9 °C 3.4C
Temp Blank: ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

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PLANT - 3

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106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 138327

Client: ARCADIS	Report to Contact: KAITLYN HUNT, TIFFANY LINDER	Telephone No. / E-mail: 248-865-4403, 810-225-1936, KAITLYN.HUNT@ARCADIS.COM	Quote No.
Address: 28550 CABOT DR. SUITE 500	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 2 of 2
City: NOVI	State: MI	Zip Code: 48377	Printed Name: BILLY J. COBERN
Project Name: RACER LANSING			
Project No.: 30112872.0370A	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab/Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Wipe/Air/Other	No. of Containers by Preservative Type: Unpres.	HNO3	H2SO4	HCl	NaOH	Na2S2O3	Field Filtered	Analysis: PFAS Method 537 Mod Isotope Dilution 24 PFAS 5.1
MW-18-91_083122	8/31/22	11:55	G	X			2							2
MW-18-88_083122	8/31/22	13:00	G	X			2							2
MW-18-95_083122	8/31/22	14:00	G	X			2							2

XI01058

KBS2

Remarks / Cooler I.D.

REPORT EDD 28 COMPOUNDS FOR ALL

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☑ Standard ☐ Rush: (Specify)

Sample Disposal: ☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time
1. Relinquished by: Austin Westhuis / Arcadis	8/31/22	
2. Relinquished by		
3. Relinquished by		
4. Relinquished by: fedex	9.1.22	1626

	Date	Time
1. Received by: FedEx	8/31/22	
2. Received by		
3. Received by		
4. Laboratory received by: Logan Mennis	9.1.22	1626

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle): Yes / No Ice Pack
Receipt Temp: 3.4 °C
Temp Blank: ☑ Y ☐ N

3.4°C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME009N2-01

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: ARCADIS Cooler Inspected by/date: KDRW / 09/01/2022 Lot #: XJ01058

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:			
☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?
pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA			
Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA			
2.9 / 2.9 °C NA / NA °C NA / NA °C NA / NA °C			
Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C			
Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None			
☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		11. Was adequate sample volume available?
☑ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☑ Yes	☐ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Qualtrax ID: 56360 Pace® Analytical Services, LLC Page 1 of 1

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER Lansing

Project Number: 30112892.0370A

Lot Number:**XI01064**

Date Completed:11/03/2022

Kathy Smith

11/04/2022 10:28 AM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Case Narrative
Arcadis U.S., Inc.
Lot Number: XI01064

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Samples XI01064-004, XI01064-013 required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of MeOH. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <5mL and reconstituted to 5mL using MeOH by transfer pipet.

The method blank, laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for prep batch 54767 exceeded acceptance criteria for the following analytes: 6:2 FTS EIS. The data has been reported.

Surrogate recovery for the following samples was outside the upper control limit: XI01064-001, XI01064-002, XI01064-003, XI01064-004, XI01064-005, XI01064-006, XI01064-007, XI01064-008, XI01064-009, XI01064-010, XI01064-011, XI01064-012, XI01064-013, XI01064-014, XI01064-015, XI01064-016, XI01064-018, XI01064-019, XI01064-020. This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Samples XI01064-002, XI01064-018 required a dilution which was performed outside of holding time. All data has been reported.

Surrogate recovery for the following sample was outside control limits: XI01064-017. Re-extraction and/or re-analysis was performed outside of holding time. All data has been reported.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XI01064

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-14-67_082922	Aqueous	08/29/2022 1420	09/01/2022
002	P6-SB-07_082922	Aqueous	08/29/2022 1520	09/01/2022
003	EB-01_082922	Aqueous	08/29/2022 1620	09/01/2022
004	MW-22-143_083022	Aqueous	08/30/2022 1000	09/01/2022
005	MW-22-144_083022	Aqueous	08/30/2022 1100	09/01/2022
006	MW-22-145_083022	Aqueous	08/30/2022 1140	09/01/2022
007	MW-22-146_083022	Aqueous	08/30/2022 1305	09/01/2022
008	MW-22-147_083022	Aqueous	08/30/2022 1405	09/01/2022
009	MW-22-148_083022	Aqueous	08/30/2022 1450	09/01/2022
010	Dup-04_083022	Aqueous	08/30/2022	09/01/2022
011	MW-22-149_083122	Aqueous	08/31/2022 0855	09/01/2022
012	MW-22-150_083122	Aqueous	08/31/2022 1005	09/01/2022
013	MW-22-151_083122	Aqueous	08/31/2022 1055	09/01/2022
014	MW-22-152_083122	Aqueous	08/31/2022 1145	09/01/2022
015	MW-12-12_083122	Aqueous	08/31/2022 1110	09/01/2022
016	MW-12-13_083122	Aqueous	08/31/2022 1305	09/01/2022
017	MW-13-36R_083122	Aqueous	08/31/2022 1440	09/01/2022
018	MW-14-70_083122	Aqueous	08/31/2022 1210	09/01/2022
019	Dup-03_083122	Aqueous	08/31/2022	09/01/2022
020	EB-03_083122	Aqueous	08/31/2022 1230	09/01/2022

(20 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XI01064

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-14-67_082922	Aqueous	PFBS	PFAS by ID	8.8		ng/L	8
001	MW-14-67_082922	Aqueous	PFBA	PFAS by ID	41		ng/L	8
001	MW-14-67_082922	Aqueous	PFDA	PFAS by ID	1.2	J	ng/L	8
001	MW-14-67_082922	Aqueous	PFHpA	PFAS by ID	28		ng/L	8
001	MW-14-67_082922	Aqueous	PFHxA	PFAS by ID	85		ng/L	8
001	MW-14-67_082922	Aqueous	PFNA	PFAS by ID	0.48	J	ng/L	8
001	MW-14-67_082922	Aqueous	PFOA	PFAS by ID	12		ng/L	8
001	MW-14-67_082922	Aqueous	PFPeA	PFAS by ID	51		ng/L	8
002	P6-SB-07_082922	Aqueous	PFBS	PFAS by ID	4.7		ng/L	10
002	P6-SB-07_082922	Aqueous	PFHpS	PFAS by ID	0.46	J	ng/L	10
002	P6-SB-07_082922	Aqueous	PFPeS	PFAS by ID	0.90	J	ng/L	10
002	P6-SB-07_082922	Aqueous	PFHxS	PFAS by ID	3.8		ng/L	10
002	P6-SB-07_082922	Aqueous	PFBA	PFAS by ID	250		ng/L	10
002	P6-SB-07_082922	Aqueous	PFDA	PFAS by ID	33		ng/L	10
002	P6-SB-07_082922	Aqueous	PFNA	PFAS by ID	120		ng/L	10
002	P6-SB-07_082922	Aqueous	PFOS	PFAS by ID	48		ng/L	10
002	P6-SB-07_082922	Aqueous	PFHpA	PFAS by ID	770	H	ng/L	12
002	P6-SB-07_082922	Aqueous	PFHxA	PFAS by ID	960	H	ng/L	12
002	P6-SB-07_082922	Aqueous	PFOA	PFAS by ID	1200	H	ng/L	12
002	P6-SB-07_082922	Aqueous	PFPeA	PFAS by ID	920	H	ng/L	12
004	MW-22-143_083022	Aqueous	PFBS	PFAS by ID	1.4	J	ng/L	16
004	MW-22-143_083022	Aqueous	PFBA	PFAS by ID	11		ng/L	16
004	MW-22-143_083022	Aqueous	PFHpA	PFAS by ID	6.1		ng/L	16
004	MW-22-143_083022	Aqueous	PFHxA	PFAS by ID	17		ng/L	16
004	MW-22-143_083022	Aqueous	PFOA	PFAS by ID	5.8		ng/L	16
004	MW-22-143_083022	Aqueous	PFPeA	PFAS by ID	12		ng/L	16
005	MW-22-144_083022	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	18
005	MW-22-144_083022	Aqueous	PFHxS	PFAS by ID	3.2	J	ng/L	18
005	MW-22-144_083022	Aqueous	PFBA	PFAS by ID	5.5		ng/L	18
005	MW-22-144_083022	Aqueous	PFHpA	PFAS by ID	5.6		ng/L	18
005	MW-22-144_083022	Aqueous	PFHxA	PFAS by ID	9.3		ng/L	18
005	MW-22-144_083022	Aqueous	PFOA	PFAS by ID	9.0		ng/L	18
005	MW-22-144_083022	Aqueous	PFPeA	PFAS by ID	9.3		ng/L	18
006	MW-22-145_083022	Aqueous	PFBS	PFAS by ID	2.5	J	ng/L	20
006	MW-22-145_083022	Aqueous	PFPeS	PFAS by ID	0.76	J	ng/L	20
006	MW-22-145_083022	Aqueous	PFHxS	PFAS by ID	2.4	J	ng/L	20
006	MW-22-145_083022	Aqueous	PFBA	PFAS by ID	8.9		ng/L	20
006	MW-22-145_083022	Aqueous	PFHpA	PFAS by ID	15		ng/L	20
006	MW-22-145_083022	Aqueous	PFHxA	PFAS by ID	23		ng/L	20
006	MW-22-145_083022	Aqueous	PFOA	PFAS by ID	23		ng/L	20
006	MW-22-145_083022	Aqueous	PFPeA	PFAS by ID	17		ng/L	20
007	MW-22-146_083022	Aqueous	PFBS	PFAS by ID	4.5		ng/L	22
007	MW-22-146_083022	Aqueous	PFBA	PFAS by ID	24		ng/L	22

Detection Summary (Continued)

Lot Number: XI01064

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
007	MW-22-146_083022	Aqueous	PFHpA	PFAS by ID	17		ng/L	22
007	MW-22-146_083022	Aqueous	PFHxA	PFAS by ID	57		ng/L	22
007	MW-22-146_083022	Aqueous	PFOA	PFAS by ID	2.9	J	ng/L	22
007	MW-22-146_083022	Aqueous	PFPeA	PFAS by ID	33		ng/L	22
008	MW-22-147_083022	Aqueous	PFBS	PFAS by ID	3.1	J	ng/L	24
008	MW-22-147_083022	Aqueous	PFHxS	PFAS by ID	1.4	J	ng/L	24
008	MW-22-147_083022	Aqueous	PFBA	PFAS by ID	6.4		ng/L	24
008	MW-22-147_083022	Aqueous	PFHpA	PFAS by ID	1.1	J	ng/L	24
008	MW-22-147_083022	Aqueous	PFHxA	PFAS by ID	2.0	J	ng/L	24
008	MW-22-147_083022	Aqueous	PFOA	PFAS by ID	4.6		ng/L	24
008	MW-22-147_083022	Aqueous	PFPeA	PFAS by ID	2.0	J	ng/L	24
008	MW-22-147_083022	Aqueous	PFOS	PFAS by ID	2.1	J	ng/L	24
009	MW-22-148_083022	Aqueous	PFBS	PFAS by ID	2.4	J	ng/L	26
009	MW-22-148_083022	Aqueous	PFOSA	PFAS by ID	1.3	J	ng/L	26
009	MW-22-148_083022	Aqueous	PFBA	PFAS by ID	0.57	J	ng/L	26
010	Dup-04_083022	Aqueous	PFBS	PFAS by ID	3.7		ng/L	28
010	Dup-04_083022	Aqueous	PFOSA	PFAS by ID	0.52	J	ng/L	28
010	Dup-04_083022	Aqueous	PFHxS	PFAS by ID	0.78	J	ng/L	28
010	Dup-04_083022	Aqueous	PFBA	PFAS by ID	10		ng/L	28
010	Dup-04_083022	Aqueous	PFHxA	PFAS by ID	1.1	J	ng/L	28
010	Dup-04_083022	Aqueous	PFOA	PFAS by ID	2.4	J	ng/L	28
010	Dup-04_083022	Aqueous	PFPeA	PFAS by ID	0.97	J	ng/L	28
011	MW-22-149_083122	Aqueous	PFBS	PFAS by ID	1.7	J	ng/L	30
011	MW-22-149_083122	Aqueous	PFOSA	PFAS by ID	1.2	J	ng/L	30
011	MW-22-149_083122	Aqueous	PFHxS	PFAS by ID	0.95	J	ng/L	30
011	MW-22-149_083122	Aqueous	PFBA	PFAS by ID	0.99	J	ng/L	30
011	MW-22-149_083122	Aqueous	PFNA	PFAS by ID	0.52	J	ng/L	30
011	MW-22-149_083122	Aqueous	PFOA	PFAS by ID	1.8	J	ng/L	30
011	MW-22-149_083122	Aqueous	PFOS	PFAS by ID	2.7	J	ng/L	30
012	MW-22-150_083122	Aqueous	PFOSA	PFAS by ID	1.2	J	ng/L	32
012	MW-22-150_083122	Aqueous	PFBA	PFAS by ID	2.7	J	ng/L	32
012	MW-22-150_083122	Aqueous	PFHxA	PFAS by ID	1.7	J	ng/L	32
012	MW-22-150_083122	Aqueous	PFPeA	PFAS by ID	1.6	J	ng/L	32
013	MW-22-151_083122	Aqueous	PFBS	PFAS by ID	7.4		ng/L	34
013	MW-22-151_083122	Aqueous	PFHxS	PFAS by ID	1.2	J	ng/L	34
013	MW-22-151_083122	Aqueous	PFBA	PFAS by ID	12		ng/L	34
013	MW-22-151_083122	Aqueous	PFHpA	PFAS by ID	3.3	J	ng/L	34
013	MW-22-151_083122	Aqueous	PFHxA	PFAS by ID	10		ng/L	34
013	MW-22-151_083122	Aqueous	PFNA	PFAS by ID	0.55	J	ng/L	34
013	MW-22-151_083122	Aqueous	PFOA	PFAS by ID	8.1		ng/L	34
013	MW-22-151_083122	Aqueous	PFPeA	PFAS by ID	19		ng/L	34
013	MW-22-151_083122	Aqueous	PFOS	PFAS by ID	4.2		ng/L	34
014	MW-22-152_083122	Aqueous	PFBS	PFAS by ID	7.4		ng/L	36
014	MW-22-152_083122	Aqueous	PFHxS	PFAS by ID	4.1		ng/L	36
014	MW-22-152_083122	Aqueous	PFBA	PFAS by ID	5.6		ng/L	36
014	MW-22-152_083122	Aqueous	PFHpA	PFAS by ID	1.5	J	ng/L	36
014	MW-22-152_083122	Aqueous	PFHxA	PFAS by ID	3.0	J	ng/L	36
014	MW-22-152_083122	Aqueous	PFOA	PFAS by ID	4.6		ng/L	36

Detection Summary (Continued)

Lot Number: XI01064

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
014	MW-22-152_083122	Aqueous	PFPeA	PFAS by ID	4.6		ng/L	36
015	MW-12-12_083122	Aqueous	PFBS	PFAS by ID	2.8	J	ng/L	38
015	MW-12-12_083122	Aqueous	PFPeS	PFAS by ID	0.61	J	ng/L	38
015	MW-12-12_083122	Aqueous	PFHxS	PFAS by ID	1.5	J	ng/L	38
015	MW-12-12_083122	Aqueous	PFBA	PFAS by ID	39		ng/L	38
015	MW-12-12_083122	Aqueous	PFDA	PFAS by ID	14		ng/L	38
015	MW-12-12_083122	Aqueous	PFHpA	PFAS by ID	39		ng/L	38
015	MW-12-12_083122	Aqueous	PFHxA	PFAS by ID	110		ng/L	38
015	MW-12-12_083122	Aqueous	PFNA	PFAS by ID	7.0		ng/L	38
015	MW-12-12_083122	Aqueous	PFOA	PFAS by ID	88		ng/L	38
015	MW-12-12_083122	Aqueous	PFPeA	PFAS by ID	67		ng/L	38
015	MW-12-12_083122	Aqueous	PFOS	PFAS by ID	41		ng/L	38
016	MW-12-13_083122	Aqueous	PFBS	PFAS by ID	3.2	J	ng/L	40
016	MW-12-13_083122	Aqueous	PFOSA	PFAS by ID	0.90	J	ng/L	40
016	MW-12-13_083122	Aqueous	PFBA	PFAS by ID	8.9		ng/L	40
016	MW-12-13_083122	Aqueous	PFHxA	PFAS by ID	0.98	J	ng/L	40
016	MW-12-13_083122	Aqueous	PFOA	PFAS by ID	2.2	J	ng/L	40
016	MW-12-13_083122	Aqueous	PFPeA	PFAS by ID	0.70	J	ng/L	40
017	MW-13-36R_083122	Aqueous	EtFOSAA	PFAS by ID	6.0	JQ	ng/L	42
017	MW-13-36R_083122	Aqueous	MeFOSAA	PFAS by ID	3.5	JQ	ng/L	42
017	MW-13-36R_083122	Aqueous	PFBS	PFAS by ID	2.3	J	ng/L	42
017	MW-13-36R_083122	Aqueous	PFDS	PFAS by ID	0.81	J	ng/L	42
017	MW-13-36R_083122	Aqueous	PFHpS	PFAS by ID	0.49	J	ng/L	42
017	MW-13-36R_083122	Aqueous	PFOSA	PFAS by ID	3.3	J	ng/L	42
017	MW-13-36R_083122	Aqueous	PFHxS	PFAS by ID	1.2	J	ng/L	42
017	MW-13-36R_083122	Aqueous	PFDA	PFAS by ID	25		ng/L	42
017	MW-13-36R_083122	Aqueous	PFDoA	PFAS by ID	0.50	J	ng/L	42
017	MW-13-36R_083122	Aqueous	PFHpA	PFAS by ID	30		ng/L	42
017	MW-13-36R_083122	Aqueous	PFHxA	PFAS by ID	30		ng/L	42
017	MW-13-36R_083122	Aqueous	PFNA	PFAS by ID	12		ng/L	42
017	MW-13-36R_083122	Aqueous	PFOA	PFAS by ID	65		ng/L	42
017	MW-13-36R_083122	Aqueous	PFPeA	PFAS by ID	22		ng/L	42
017	MW-13-36R_083122	Aqueous	PFUdA	PFAS by ID	0.64	J	ng/L	42
017	MW-13-36R_083122	Aqueous	PFOS	PFAS by ID	39		ng/L	42
017	MW-13-36R_083122	Aqueous	PFBA	PFAS by ID	21	H	ng/L	44
018	MW-14-70_083122	Aqueous	PFBS	PFAS by ID	6.6		ng/L	46
018	MW-14-70_083122	Aqueous	PFBA	PFAS by ID	120		ng/L	46
018	MW-14-70_083122	Aqueous	PFHpA	PFAS by ID	130		ng/L	46
018	MW-14-70_083122	Aqueous	PFHxA	PFAS by ID	330		ng/L	46
018	MW-14-70_083122	Aqueous	PFOA	PFAS by ID	11		ng/L	46
018	MW-14-70_083122	Aqueous	PFPeA	PFAS by ID	440	H	ng/L	48
019	Dup-03_083122	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	50
019	Dup-03_083122	Aqueous	PFHxS	PFAS by ID	1.9	J	ng/L	50
019	Dup-03_083122	Aqueous	PFBA	PFAS by ID	41		ng/L	50
019	Dup-03_083122	Aqueous	PFDA	PFAS by ID	13		ng/L	50
019	Dup-03_083122	Aqueous	PFHpA	PFAS by ID	43		ng/L	50
019	Dup-03_083122	Aqueous	PFHxA	PFAS by ID	130		ng/L	50
019	Dup-03_083122	Aqueous	PFNA	PFAS by ID	6.7		ng/L	50

Detection Summary (Continued)

Lot Number: XI01064

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
019	Dup-03_083122	Aqueous	PFOA	PFAS by ID	94		ng/L	50
019	Dup-03_083122	Aqueous	PFPeA	PFAS by ID	74		ng/L	50
019	Dup-03_083122	Aqueous	PFOS	PFAS by ID	36		ng/L	50

(142 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-001**

Description: **MW-14-67_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1420** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1422	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**8.8**		**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**41**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.2**	**J**	**3.4**	**0.44**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**28**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**85**		**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.48**	**J**	**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**12**		**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**51**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	210	25-150
13C2_6:2FTS	N	262	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		92	25-150
13C2_PFTeDA		98	25-150
13C3_PFBS		74	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		74	25-150
13C4_PFBA		27	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		72	25-150
13C5_PFPeA		49	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		111	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-001**

Description: **MW-14-67_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1420** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		100	25-150
d5-EtFOSAA		111	25-150
d3-MeFOSAA		112	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-002**

Description: **P6-SB-07_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1520** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1432	LAB	09/21/2022 0824	54767
2	SOP SPE	PFAS by ID SOP	5	10/24/2022 1452	ALM	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**4.7**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.46**	**J**	**3.5**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.90**	**J**	**3.5**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.8**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**250**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**33**		**3.5**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**680**	**E**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**780**	**E**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**120**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**930**	**E**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**700**	**E**	**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**48**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	256	25-150	HN	167	25-150
13C2_6:2FTS	N	241	25-150	H	105	25-150
13C2_8:2FTS		141	25-150	H	107	25-150
13C2_PFDoA		84	25-150	H	81	25-150
13C2_PFTeDA		96	25-150	H	81	25-150
13C3_PFBS		88	25-150	H	89	25-150
13C3_PFHxS		99	25-150	H	89	25-150
13C3-HFPO-DA		74	25-150	H	95	25-150
13C4_PFBA		48	25-150	H	84	25-150
13C4_PFHpA		88	25-150	H	95	25-150
13C5_PFHxA		77	25-150	H	89	25-150
13C5_PFPeA		65	25-150	H	85	25-150
13C6_PFDA		102	25-150	H	90	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-002**

Description: **P6-SB-07_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1520** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		109	25-150	H	91	25-150
13C8_PFOA		94	25-150	H	80	25-150
13C8_PFOS		99	25-150	H	93	25-150
13C8_PFOSA		106	10-150	H	91	10-150
13C9_PFNA		99	25-150	H	89	25-150
d5-EtFOSAA		119	25-150	H	96	25-150
d3-MeFOSAA		120	25-150	H	92	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-002**

Description: **P6-SB-07_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1520** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1432	LAB	09/21/2022 0824	54767
2	SOP SPE	PFAS by ID SOP	5	10/24/2022 1452	ALM	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	H	35	2.1	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	H	35	2.9	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	H	35	6.9	ng/L	2
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	H	35	8.7	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	HQ	35	3.8	ng/L	2
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	H	35	9.0	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	H	35	2.1	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	H	35	3.2	ng/L	2
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	H	35	4.0	ng/L	2
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**4.2**	**HJ**	**17**	**1.8**	**ng/L**	**2**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	H	17	3.4	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	H	17	2.2	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	H	17	3.1	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	H	17	2.7	ng/L	2
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	H	17	2.6	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.6**	**HJ**	**17**	**2.4**	**ng/L**	**2**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**250**	**H**	**17**	**2.6**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**27**	**H**	**17**	**2.3**	**ng/L**	**2**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	H	17	2.0	ng/L	2
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**770**	**H**	**17**	**1.9**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**960**	**H**	**17**	**3.0**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**110**	**H**	**17**	**2.0**	**ng/L**	**2**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1200**	**H**	**17**	**3.6**	**ng/L**	**2**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**920**	**H**	**17**	**2.4**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	H	17	2.6	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	H	17	2.3	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	H	17	2.7	ng/L	2
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**48**	**H**	**17**	**8.7**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	256	25-150	HN	167	25-150
13C2_6:2FTS	N	241	25-150	H	105	25-150
13C2_8:2FTS		141	25-150	H	107	25-150
13C2_PFDoA		84	25-150	H	81	25-150
13C2_PFTeDA		96	25-150	H	81	25-150
13C3_PFBS		88	25-150	H	89	25-150
13C3_PFHxS		99	25-150	H	89	25-150
13C3-HFPO-DA		74	25-150	H	95	25-150
13C4_PFBA		48	25-150	H	84	25-150
13C4_PFHpA		88	25-150	H	95	25-150
13C5_PFHxA		77	25-150	H	89	25-150
13C5_PFPeA		65	25-150	H	85	25-150
13C6_PFDA		102	25-150	H	90	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-002**

Description: **P6-SB-07_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1520** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		109	25-150	H	91	25-150
13C8_PFOA		94	25-150	H	80	25-150
13C8_PFOS		99	25-150	H	93	25-150
13C8_PFOSA		106	10-150	H	91	10-150
13C9_PFNA		99	25-150	H	89	25-150
d5-EtFOSAA		119	25-150	H	96	25-150
d3-MeFOSAA		120	25-150	H	92	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-003**

Description: **EB-01_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1620** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1443	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		102	25-150
13C2_6:2FTS	N	257	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		94	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		90	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		103	25-150
13C4_PFHpA		102	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		93	25-150
13C6_PFDA		97	25-150
13C7_PFUdA		111	25-150

LOQ = Limit of Quantitation
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E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XI01064-003**
Description: **EB-01_082922**		Matrix: **Aqueous**
Date Sampled: **08/29/2022 1620**	Project Name: **RACER Lansing**	
Date Received: **09/01/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		107	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		93	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-004**

Description: **MW-22-143_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1000** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1454	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.1**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**17**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.8**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**12**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	192	25-150
13C2_6:2FTS	N	305	25-150
13C2_8:2FTS		118	25-150
13C2_PFDoA		90	25-150
13C2_PFTeDA		105	25-150
13C3_PFBS		94	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		65	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		96	25-150
13C6_PFDA		96	25-150
13C7_PFUdA		109	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-004**

Description: **MW-22-143_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1000** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		85	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-005**

Description: **MW-22-144_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1100** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1504	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.2**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.5**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**5.6**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**9.3**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**9.0**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**9.3**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	152	25-150
13C2_6:2FTS	N	188	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		90	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		92	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		79	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		100	25-150
13C6_PFDA		95	25-150
13C7_PFUdA		104	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-005**

Description: **MW-22-144_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1100** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		101	25-150
13C8_PFOS		89	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		89	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-006**

Description: **MW-22-145_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1140** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1515	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.5**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.76**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.4**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.9**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**15**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**23**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**23**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**17**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		124	25-150
13C2_6:2FTS	N	182	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		96	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		98	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		88	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		105	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		112	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XI01064-006**
Description: **MW-22-145_083022**
Matrix: **Aqueous**
Date Sampled: **08/30/2022 1140**
Project Name: **RACER Lansing**
Date Received: **09/01/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		95	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		93	25-150
d5-EtFOSAA		126	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-007**

Description: **MW-22-146_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1305** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1525	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**4.5**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**24**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**17**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**57**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.9**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**33**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	268	25-150
13C2_6:2FTS	N	237	25-150
13C2_8:2FTS		122	25-150
13C2_PFDoA		90	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		119	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		65	25-150
13C4_PFHpA		118	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		92	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		111	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-007**

Description: **MW-22-146_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1305** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		117	25-150
13C8_PFOS		112	25-150
13C8_PFOSA		114	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		115	25-150
d3-MeFOSAA		136	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-008**

Description: **MW-22-147_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1405** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1536	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.1**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.4**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**6.4**		**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**4.6**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.1**	**J**	**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	214	25-150
13C2_6:2FTS	N	201	25-150
13C2_8:2FTS		105	25-150
13C2_PFDoA		91	25-150
13C2_PFTeDA		98	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		63	25-150
13C4_PFHpA		115	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		97	25-150
13C7_PFUdA		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XI01064-008**
Description: **MW-22-147_083022**		Matrix: **Aqueous**
Date Sampled: **08/30/2022 1405**	Project Name: **RACER Lansing**	
Date Received: **09/01/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		110	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		95	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		115	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-009**

Description: **MW-22-148_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022 1450** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1547	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.4**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**1.3**	**J**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**0.57**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.58	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		126	25-150
13C2_6:2FTS	N	193	25-150
13C2_8:2FTS		104	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		86	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		84	25-150
13C5_PFPeA		101	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		88	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XI01064-009**
Description: **MW-22-148_083022**
Matrix: **Aqueous**
Date Sampled: **08/30/2022 1450**
Project Name: **RACER Lansing**
Date Received: **09/01/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		113	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		88	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-010**

Description: **Dup-04_083022** Matrix: **Aqueous**

Date Sampled: **08/30/2022** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1618	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.7**		**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.52**	**J**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.78**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**10**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.4**	**J**	**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.97**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	191	25-150
13C2_6:2FTS	N	269	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		85	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		86	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		60	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		89	25-150
13C7_PFUdA		93	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XI01064-010**
Description: **Dup-04_083022**		Matrix: **Aqueous**
Date Sampled: **08/30/2022**	Project Name: **RACER Lansing**	
Date Received: **09/01/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		95	25-150
d5-EtFOSAA		98	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-011**

Description: **MW-22-149_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 0855** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1650	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.54**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.95**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**0.99**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.52**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.8**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.7**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		113	25-150
13C2_6:2FTS	N	227	25-150
13C2_8:2FTS		114	25-150
13C2_PFDoA		85	25-150
13C2_PFTeDA		98	25-150
13C3_PFBS		94	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		92	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		106	25-150
13C7_PFUdA		95	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XI01064-011**
Description: **MW-22-149_083122**
Matrix: **Aqueous**
Date Sampled: **08/31/2022 0855**
Project Name: **RACER Lansing**
Date Received: **09/01/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		111	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		95	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		116	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-012**

Description: **MW-22-150_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1005** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1701	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**1.2**	**J**	**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.7**	**J**	**3.6**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.7**	**J**	**3.6**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.6**	**J**	**3.6**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	285	25-150
13C2_6:2FTS	N	236	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		84	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		83	25-150
13C4_PFBA		41	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		71	25-150
13C6_PFDA		92	25-150
13C7_PFUdA		99	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XI01064-012**
Description: **MW-22-150_083122**
Matrix: **Aqueous**
Date Sampled: **08/31/2022 1005**
Project Name: **RACER Lansing**
Date Received: **09/01/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		106	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		96	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		117	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-013**

Description: **MW-22-151_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1055** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1711	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**7.4**		**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**12**		**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.3**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**10**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.55**	**J**	**3.4**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**8.1**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**19**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.2**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	270	25-150
13C2_6:2FTS	N	308	25-150
13C2_8:2FTS		148	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		80	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		73	25-150
13C4_PFBA		36	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		79	25-150
13C5_PFPeA		64	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		101	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-013**

Description: **MW-22-151_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1055** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		104	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		116	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		112	25-150
d3-MeFOSAA		128	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-014**

Description: **MW-22-152_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1145** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1722	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**7.4**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**4.1**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.6**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.5**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.0**	**J**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**4.6**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**4.6**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	185	25-150
13C2_6:2FTS	N	264	25-150
13C2_8:2FTS		119	25-150
13C2_PFDoA		96	25-150
13C2_PFTeDA		104	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		81	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		105	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-014**

Description: **MW-22-152_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1145** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		120	25-150
13C8_PFOS		116	25-150
13C8_PFOSA		113	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		130	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
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DL = Detection Limit
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-015**

Description: **MW-12-12_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1110** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1733	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.8**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.61**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.5**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**39**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**14**		**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**39**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**110**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**7.0**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**88**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**67**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**41**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	285	25-150
13C2_6:2FTS	N	318	25-150
13C2_8:2FTS	N	232	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		103	25-150
13C3_PFBS		86	25-150
13C3_PFHxS		117	25-150
13C3-HFPO-DA		67	25-150
13C4_PFBA		43	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		82	25-150
13C5_PFPeA		67	25-150
13C6_PFDA		128	25-150
13C7_PFUdA		117	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-015**

Description: **MW-12-12_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1110** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		108	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		117	10-150
13C9_PFNA		116	25-150
d5-EtFOSAA		127	25-150
d3-MeFOSAA		145	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-016**

Description: **MW-12-13_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1305** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1743	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.7	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.7	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.2**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.60	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.90**	**J**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.9**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.98**	**J**	**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.2**	**J**	**3.4**	**0.70**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.70**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	193	25-150
13C2_6:2FTS	N	268	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		98	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		100	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		66	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		97	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-016**

Description: **MW-12-13_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1305** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		115	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		112	10-150
13C9_PFNA		96	25-150
d5-EtFOSAA		110	25-150
d3-MeFOSAA		121	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-017**

Description: **MW-13-36R_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1440** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1754	LAB	09/21/2022 0824	54767
2	SOP SPE	PFAS by ID SOP	1	11/01/2022 2024	MMM	10/24/2022 1434	57956

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	**2991-50-6**	**PFAS by ID SOP**	**6.0**	**JQ**	**6.9**	**0.65**	**ng/L**	**1**
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	**2355-31-9**	**PFAS by ID SOP**	**3.5**	**JQ**	**6.9**	**0.81**	**ng/L**	**1**
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.3**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	**335-77-3**	**PFAS by ID SOP**	**0.81**	**J**	**3.5**	**0.68**	**ng/L**	**1**
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.49**	**J**	**3.5**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**3.3**	**J**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND	Q	3.5	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**25**		**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	**307-55-1**	**PFAS by ID SOP**	**0.50**	**J**	**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**30**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**30**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**12**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**65**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**22**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	**2058-94-8**	**PFAS by ID SOP**	**0.64**	**J**	**3.5**	**0.54**	**ng/L**	**1**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**39**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	335	25-150	HN	353	25-150
13C2_6:2FTS	N	394	25-150	HN	433	25-150
13C2_8:2FTS	N	402	25-150	HN	331	25-150
13C2_PFDoA		106	25-150	HN	151	25-150
13C2_PFTeDA		96	25-150	H	116	25-150
13C3_PFBS		95	25-150	H	108	25-150
13C3_PFHxS		106	25-150	H	122	25-150
13C3-HFPO-DA		72	25-150	H	92	25-150
13C4_PFBA	N	21	25-150	H	40	25-150
13C4_PFHpA		100	25-150	H	103	25-150
13C5_PFHxA		91	25-150	H	99	25-150
13C5_PFPeA		81	25-150	H	105	25-150
13C6_PFDA		113	25-150	HN	151	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-017**

Description: **MW-13-36R_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1440** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		119	25-150	H	134	25-150
13C8_PFOA		107	25-150	H	134	25-150
13C8_PFOS		116	25-150	H	118	25-150
13C8_PFOSA		112	10-150	H	145	10-150
13C9_PFNA		118	25-150	H	145	25-150
d5-EtFOSAA	N	153	25-150	HN	193	25-150
d3-MeFOSAA	N	164	25-150	HN	165	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-017**

Description: **MW-13-36R_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1440** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1754	LAB	09/21/2022 0824	54767
2	SOP SPE	PFAS by ID SOP	1	11/01/2022 2024	MMM	10/24/2022 1434	57956

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	H	7.1	0.43	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	H	7.1	0.59	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	HQ	7.1	1.4	ng/L	2
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	HQ	7.1	1.8	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	HQ	7.1	0.77	ng/L	2
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	H	7.1	1.8	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	H	7.1	0.43	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	**2991-50-6**	**PFAS by ID SOP**	**5.0**	**HJQ**	**7.1**	**0.66**	**ng/L**	**2**
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	**2355-31-9**	**PFAS by ID SOP**	**3.4**	**HJQ**	**7.1**	**0.82**	**ng/L**	**2**
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.2**	**HJ**	**3.5**	**0.37**	**ng/L**	**2**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	H	3.5	0.69	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	H	3.5	0.44	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	H	3.5	0.63	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**3.3**	**HJ**	**3.5**	**0.54**	**ng/L**	**2**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	H	3.5	0.52	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.2**	**HJ**	**3.5**	**0.49**	**ng/L**	**2**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**21**	**H**	**3.5**	**0.53**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**23**	**HQ**	**3.5**	**0.46**	**ng/L**	**2**
Perfluoro-n-dodecanoic acid (PFDoA)	**307-55-1**	**PFAS by ID SOP**	**0.47**	**HJQ**	**3.5**	**0.42**	**ng/L**	**2**
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**31**	**H**	**3.5**	**0.40**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**31**	**H**	**3.5**	**0.61**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**15**	**H**	**3.5**	**0.41**	**ng/L**	**2**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**62**	**H**	**3.5**	**0.73**	**ng/L**	**2**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**25**	**H**	**3.5**	**0.48**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	H	3.5	0.53	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	HQ	3.5	0.47	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	**2058-94-8**	**PFAS by ID SOP**	**0.70**	**HJ**	**3.5**	**0.55**	**ng/L**	**2**
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**40**	**H**	**3.5**	**1.8**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	335	25-150	HN	353	25-150
13C2_6:2FTS	N	394	25-150	HN	433	25-150
13C2_8:2FTS	N	402	25-150	HN	331	25-150
13C2_PFDoA		106	25-150	HN	151	25-150
13C2_PFTeDA		96	25-150	H	116	25-150
13C3_PFBS		95	25-150	H	108	25-150
13C3_PFHxS		106	25-150	H	122	25-150
13C3-HFPO-DA		72	25-150	H	92	25-150
13C4_PFBA	N	21	25-150	H	40	25-150
13C4_PFHpA		100	25-150	H	103	25-150
13C5_PFHxA		91	25-150	H	99	25-150
13C5_PFPeA		81	25-150	H	105	25-150
13C6_PFDA		113	25-150	HN	151	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-017**

Description: **MW-13-36R_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1440** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		119	25-150	H	134	25-150
13C8_PFOA		107	25-150	H	134	25-150
13C8_PFOS		116	25-150	H	118	25-150
13C8_PFOSA		112	10-150	H	145	10-150
13C9_PFNA		118	25-150	H	145	25-150
d5-EtFOSAA	N	153	25-150	HN	193	25-150
d3-MeFOSAA	N	164	25-150	HN	165	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
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W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-018**

Description: **MW-14-70_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1210** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1804	LAB	09/21/2022 0824	54767
2	SOP SPE	PFAS by ID SOP	5	10/25/2022 1315	ALM	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**6.6**		**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**120**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**130**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**330**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**11**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**360**	**E**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	228	25-150	H	114	25-150
13C2_6:2FTS	N	293	25-150	H	108	25-150
13C2_8:2FTS		117	25-150	H	102	25-150
13C2_PFDoA		97	25-150	H	86	25-150
13C2_PFTeDA		99	25-150	H	89	25-150
13C3_PFBS		94	25-150	H	106	25-150
13C3_PFHxS		103	25-150	H	91	25-150
13C3-HFPO-DA		89	25-150	H	111	25-150
13C4_PFBA		55	25-150	H	92	25-150
13C4_PFHpA		98	25-150	H	96	25-150
13C5_PFHxA		98	25-150	H	98	25-150
13C5_PFPeA		81	25-150	H	96	25-150
13C6_PFDA		98	25-150	H	92	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XI01064-018**
Description: **MW-14-70_083122**
Matrix: **Aqueous**
Date Sampled: **08/31/2022 1210**
Project Name: **RACER Lansing**
Date Received: **09/01/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		99	25-150	H	98	25-150
13C8_PFOA		116	25-150	H	93	25-150
13C8_PFOS		105	25-150	H	101	25-150
13C8_PFOSA		106	10-150	H	95	10-150
13C9_PFNA		103	25-150	H	95	25-150
d5-EtFOSAA		106	25-150	H	100	25-150
d3-MeFOSAA		119	25-150	H	105	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-018**

Description: **MW-14-70_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1210** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1804	LAB	09/21/2022 0824	54767
2	SOP SPE	PFAS by ID SOP	5	10/25/2022 1315	ALM	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	H	34	2.1	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	H	34	2.8	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	H	34	6.9	ng/L	2
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	H	34	8.6	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	H	34	3.7	ng/L	2
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	H	34	8.9	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	H	34	2.1	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	H	34	3.2	ng/L	2
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	H	34	4.0	ng/L	2
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**5.6**	**HJ**	**17**	**1.8**	**ng/L**	**2**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	H	17	3.3	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	H	17	2.1	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	H	17	3.0	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	H	17	2.6	ng/L	2
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	H	17	2.5	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND	H	17	2.4	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**120**	**H**	**17**	**2.6**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	H	17	2.2	ng/L	2
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	H	17	2.0	ng/L	2
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**140**	**H**	**17**	**1.9**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**350**	**H**	**17**	**2.9**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	H	17	2.0	ng/L	2
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**11**	**HJ**	**17**	**3.5**	**ng/L**	**2**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**440**	**H**	**17**	**2.3**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	H	17	2.6	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	H	17	2.3	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	H	17	2.7	ng/L	2
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND	H	17	8.6	ng/L	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	228	25-150	H	114	25-150
13C2_6:2FTS	N	293	25-150	H	108	25-150
13C2_8:2FTS		117	25-150	H	102	25-150
13C2_PFDoA		97	25-150	H	86	25-150
13C2_PFTeDA		99	25-150	H	89	25-150
13C3_PFBS		94	25-150	H	106	25-150
13C3_PFHxS		103	25-150	H	91	25-150
13C3-HFPO-DA		89	25-150	H	111	25-150
13C4_PFBA		55	25-150	H	92	25-150
13C4_PFHpA		98	25-150	H	96	25-150
13C5_PFHxA		98	25-150	H	98	25-150
13C5_PFPeA		81	25-150	H	96	25-150
13C6_PFDA		98	25-150	H	92	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-018**

Description: **MW-14-70_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1210** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		99	25-150	H	98	25-150
13C8_PFOA		116	25-150	H	93	25-150
13C8_PFOS		105	25-150	H	101	25-150
13C8_PFOSA		106	10-150	H	95	10-150
13C9_PFNA		103	25-150	H	95	25-150
d5-EtFOSAA		106	25-150	H	100	25-150
d3-MeFOSAA		119	25-150	H	105	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-019**

Description: **Dup-03_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1815	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.9**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**41**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**13**		**3.4**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**43**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**130**		**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**6.7**		**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**94**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**74**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**36**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	298	25-150
13C2_6:2FTS	N	328	25-150
13C2_8:2FTS	N	209	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		101	25-150
13C3_PFBS		90	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		72	25-150
13C4_PFBA		41	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		77	25-150
13C5_PFPeA		64	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		111	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XI01064-019**
Description: **Dup-03_083122**		Matrix: **Aqueous**
Date Sampled: **08/31/2022**	Project Name: **RACER Lansing**	
Date Received: **09/01/2022**	Project Number: **30112892.0370A**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		112	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		124	25-150
d3-MeFOSAA		143	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-020**

Description: **EB-03_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1230** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/09/2022 1825	LAB	09/21/2022 0824	54767

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.75	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		122	25-150
13C2_6:2FTS	N	499	25-150
13C2_8:2FTS		119	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		103	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		99	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		116	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01064-020**

Description: **EB-03_083122** Matrix: **Aqueous**

Date Sampled: **08/31/2022 1230** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		121	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		125	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		109	25-150
d3-MeFOSAA		125	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ54767-001
Batch: 54767
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/21/2022 0824

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	10/09/2022 1401
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	10/09/2022 1401
8:2 FTS	ND		1	8.0	1.6	ng/L	10/09/2022 1401
6:2 FTS	ND		1	8.0	2.0	ng/L	10/09/2022 1401
4:2 FTS	ND		1	8.0	0.87	ng/L	10/09/2022 1401
GenX	ND		1	8.0	2.1	ng/L	10/09/2022 1401
ADONA	ND		1	8.0	0.48	ng/L	10/09/2022 1401
EtFOSAA	ND		1	8.0	0.75	ng/L	10/09/2022 1401
MeFOSAA	ND		1	8.0	0.93	ng/L	10/09/2022 1401
PFBS	ND		1	4.0	0.41	ng/L	10/09/2022 1401
PFDS	ND		1	4.0	0.78	ng/L	10/09/2022 1401
PFHpS	ND		1	4.0	0.50	ng/L	10/09/2022 1401
PFNS	ND		1	4.0	0.71	ng/L	10/09/2022 1401
PFOSA	ND		1	4.0	0.61	ng/L	10/09/2022 1401
PFPeS	ND		1	4.0	0.59	ng/L	10/09/2022 1401
PFHxS	ND		1	4.0	0.55	ng/L	10/09/2022 1401
PFBA	ND		1	4.0	0.60	ng/L	10/09/2022 1401
PFDA	ND		1	4.0	0.52	ng/L	10/09/2022 1401
PFDoA	ND		1	4.0	0.47	ng/L	10/09/2022 1401
PFHpA	ND		1	4.0	0.45	ng/L	10/09/2022 1401
PFHxA	ND		1	4.0	0.69	ng/L	10/09/2022 1401
PFNA	ND		1	4.0	0.46	ng/L	10/09/2022 1401
PFOA	ND		1	4.0	0.83	ng/L	10/09/2022 1401
PFPeA	ND		1	4.0	0.54	ng/L	10/09/2022 1401
PFTeDA	ND		1	4.0	0.60	ng/L	10/09/2022 1401
PFTrDA	ND		1	4.0	0.53	ng/L	10/09/2022 1401
PFUdA	ND		1	4.0	0.63	ng/L	10/09/2022 1401
PFOS	ND		1	4.0	2.0	ng/L	10/09/2022 1401

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		104	25-150
13C2_6:2FTS	N	182	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		87	25-150
13C2_PFTeDA		85	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		97	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ54767-001
Batch: 54767
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/21/2022 0824

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		99	25-150
13C7_PFUdA		97	25-150
13C8_PFOA		104	25-150
13C8_PFOS		92	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		93	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ54767-002
Batch: 54767
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/21/2022 0824

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	12		1	81	50-150	10/09/2022 1411
11Cl-PF3OUdS	15	13		1	87	50-150	10/09/2022 1411
8:2 FTS	15	15		1	98	50-150	10/09/2022 1411
6:2 FTS	15	17		1	113	50-150	10/09/2022 1411
4:2 FTS	15	13		1	90	50-150	10/09/2022 1411
GenX	32	31		1	97	50-150	10/09/2022 1411
ADONA	15	12		1	79	50-150	10/09/2022 1411
EtFOSAA	16	16		1	103	50-150	10/09/2022 1411
MeFOSAA	16	14		1	85	50-150	10/09/2022 1411
PFBS	14	15		1	107	50-150	10/09/2022 1411
PFDS	15	15		1	98	50-150	10/09/2022 1411
PFHpS	15	13		1	84	50-150	10/09/2022 1411
PFNS	15	14		1	92	50-150	10/09/2022 1411
PFOSA	16	16		1	103	50-150	10/09/2022 1411
PFPeS	15	17		1	112	50-150	10/09/2022 1411
PFHxS	15	12		1	80	50-150	10/09/2022 1411
PFBA	16	16		1	98	50-150	10/09/2022 1411
PFDA	16	18		1	111	50-150	10/09/2022 1411
PFDoA	16	16		1	100	50-150	10/09/2022 1411
PFHpA	16	14		1	90	50-150	10/09/2022 1411
PFHxA	16	16		1	98	50-150	10/09/2022 1411
PFNA	16	15		1	96	50-150	10/09/2022 1411
PFOA	16	16		1	100	50-150	10/09/2022 1411
PFPeA	16	16		1	100	50-150	10/09/2022 1411
PFTeDA	16	16		1	97	50-150	10/09/2022 1411
PFTrDA	16	16		1	97	50-150	10/09/2022 1411
PFUdA	16	16		1	98	50-150	10/09/2022 1411
PFOS	15	13		1	89	50-150	10/09/2022 1411

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		105	25-150
13C2_6:2FTS	N	194	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		91	25-150
13C3_PFHxS		113	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		100	25-150
13C4_PFHpA		101	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		94	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ54767-002
Batch: 54767
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/21/2022 0824

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		94	25-150
13C7_PFUdA		96	25-150
13C8_PFOA		101	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		91	10-150
13C9_PFNA		93	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		119	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XI01064-009MS
Batch: 54767
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/21/2022 0824

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	14		1	112	50-150	10/09/2022 1557
11Cl-PF3OUdS	ND	13	13		1	99	50-150	10/09/2022 1557
8:2 FTS	ND	13	13		1	99	50-150	10/09/2022 1557
6:2 FTS	ND	13	13		1	100	50-150	10/09/2022 1557
4:2 FTS	ND	13	12		1	94	50-150	10/09/2022 1557
GenX	ND	27	36		1	133	50-150	10/09/2022 1557
ADONA	ND	13	12		1	95	50-150	10/09/2022 1557
EtFOSAA	ND	14	17		1	122	50-150	10/09/2022 1557
MeFOSAA	ND	14	17		1	123	50-150	10/09/2022 1557
PFBS	2.4	12	12		1	77	50-150	10/09/2022 1557
PFDS	ND	13	14		1	106	50-150	10/09/2022 1557
PFHpS	ND	13	12		1	94	50-150	10/09/2022 1557
PFNS	ND	13	14		1	105	50-150	10/09/2022 1557
PFOSA	1.3	14	14		1	91	50-150	10/09/2022 1557
PFPeS	ND	13	11		1	89	50-150	10/09/2022 1557
PFHxS	ND	12	12		1	99	50-150	10/09/2022 1557
PFBA	0.57	14	14		1	106	50-150	10/09/2022 1557
PFDA	ND	14	14		1	106	50-150	10/09/2022 1557
PFDoA	ND	14	14		1	105	50-150	10/09/2022 1557
PFHpA	ND	14	12		1	92	50-150	10/09/2022 1557
PFHxA	ND	14	14		1	102	50-150	10/09/2022 1557
PFNA	ND	14	15		1	111	50-150	10/09/2022 1557
PFOA	ND	14	14		1	102	50-150	10/09/2022 1557
PFPeA	ND	14	14		1	100	50-150	10/09/2022 1557
PFTeDA	ND	14	15		1	109	50-150	10/09/2022 1557
PFTrDA	ND	14	13		1	95	50-150	10/09/2022 1557
PFUdA	ND	14	13		1	98	50-150	10/09/2022 1557
PFOS	ND	13	14		1	108	50-150	10/09/2022 1557

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		116	25-150
13C2_6:2FTS	N	233	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		82	25-150
13C2_PFTeDA		84	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		92	25-150
13C3-HFPO-DA		86	25-150
13C4_PFBA		85	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		90	25-150
13C5_PFPeA		91	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XI01064-009MS
Batch: 54767
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/21/2022 0824

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		88	25-150
13C7_PFUdA		96	25-150
13C8_PFOA		102	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		88	25-150
d5-EtFOSAA		92	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XI01064-009MD
Batch: 54767
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/21/2022 0824

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	13	13		1	97	13	50-150	30	10/09/2022 1608
11Cl-PF3OUdS	ND	13	13		1	96	1.5	50-150	30	10/09/2022 1608
8:2 FTS	ND	13	13		1	95	2.2	50-150	30	10/09/2022 1608
6:2 FTS	ND	13	14		1	106	7.4	50-150	30	10/09/2022 1608
4:2 FTS	ND	13	13		1	99	7.7	50-150	30	10/09/2022 1608
GenX	ND	28	30		1	106	20	50-150	30	10/09/2022 1608
ADONA	ND	13	12		1	93	0.23	50-150	30	10/09/2022 1608
EtFOSAA	ND	14	15		1	111	7.6	50-150	30	10/09/2022 1608
MeFOSAA	ND	14	16		1	113	6.7	50-150	30	10/09/2022 1608
PFBS	2.4	12	15		1	105	26	50-150	30	10/09/2022 1608
PFDS	ND	13	14		1	104	0.65	50-150	30	10/09/2022 1608
PFHpS	ND	13	14		1	103	11	50-150	30	10/09/2022 1608
PFNS	ND	13	15		1	109	5.9	50-150	30	10/09/2022 1608
PFOSA	1.3	14	15		1	99	9.5	50-150	30	10/09/2022 1608
PFPeS	ND	13	11		1	88	1.1	50-150	30	10/09/2022 1608
PFHxS	ND	13	12		1	92	5.2	50-150	30	10/09/2022 1608
PFBA	0.57	14	14		1	104	0.53	50-150	30	10/09/2022 1608
PFDA	ND	14	14		1	104	0.35	50-150	30	10/09/2022 1608
PFDoA	ND	14	14		1	99	4.0	50-150	30	10/09/2022 1608
PFHpA	ND	14	14		1	101	11	50-150	30	10/09/2022 1608
PFHxA	ND	14	13		1	96	4.0	50-150	30	10/09/2022 1608
PFNA	ND	14	12		1	89	20	50-150	30	10/09/2022 1608
PFOA	ND	14	13		1	95	5.2	50-150	30	10/09/2022 1608
PFPeA	ND	14	13		1	95	3.4	50-150	30	10/09/2022 1608
PFTeDA	ND	14	14		1	98	8.1	50-150	30	10/09/2022 1608
PFTrDA	ND	14	14		1	101	8.7	50-150	30	10/09/2022 1608
PFUdA	ND	14	13		1	93	2.9	50-150	30	10/09/2022 1608
PFOS	ND	13	14		1	105	0.51	50-150	30	10/09/2022 1608

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		123	25-150
13C2_6:2FTS	N	263	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		84	25-150
13C2_PFTeDA		94	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		96	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		100	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XI01064-009MD
Batch: 54767
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/21/2022 0824

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		93	25-150
13C7_PFUdA		99	25-150
13C8_PFOA		110	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		93	25-150
d5-EtFOSAA		95	25-150
d3-MeFOSAA		105	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ57956-001
Batch: 57956
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/24/2022 1434

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/01/2022 2003
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/01/2022 2003
8:2 FTS	ND		1	8.0	1.6	ng/L	11/01/2022 2003
6:2 FTS	ND		1	8.0	2.0	ng/L	11/01/2022 2003
4:2 FTS	ND		1	8.0	0.87	ng/L	11/01/2022 2003
GenX	ND		1	8.0	2.1	ng/L	11/01/2022 2003
ADONA	ND		1	8.0	0.48	ng/L	11/01/2022 2003
EtFOSAA	ND		1	8.0	0.75	ng/L	11/01/2022 2003
MeFOSAA	ND		1	8.0	0.93	ng/L	11/01/2022 2003
PFBS	ND		1	4.0	0.41	ng/L	11/01/2022 2003
PFDS	ND		1	4.0	0.78	ng/L	11/01/2022 2003
PFHpS	ND		1	4.0	0.50	ng/L	11/01/2022 2003
PFNS	ND		1	4.0	0.71	ng/L	11/01/2022 2003
PFOSA	ND		1	4.0	0.61	ng/L	11/01/2022 2003
PFPeS	ND		1	4.0	0.59	ng/L	11/01/2022 2003
PFHxS	ND		1	4.0	0.55	ng/L	11/01/2022 2003
PFBA	ND		1	4.0	0.60	ng/L	11/01/2022 2003
PFDA	ND		1	4.0	0.52	ng/L	11/01/2022 2003
PFDoA	ND		1	4.0	0.47	ng/L	11/01/2022 2003
PFHpA	ND		1	4.0	0.45	ng/L	11/01/2022 2003
PFHxA	ND		1	4.0	0.69	ng/L	11/01/2022 2003
PFNA	ND		1	4.0	0.46	ng/L	11/01/2022 2003
PFOA	ND		1	4.0	0.83	ng/L	11/01/2022 2003
PFPeA	ND		1	4.0	0.54	ng/L	11/01/2022 2003
PFTeDA	ND		1	4.0	0.60	ng/L	11/01/2022 2003
PFTrDA	ND		1	4.0	0.53	ng/L	11/01/2022 2003
PFUdA	ND		1	4.0	0.63	ng/L	11/01/2022 2003
PFOS	ND		1	4.0	2.0	ng/L	11/01/2022 2003

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		116	25-150
13C2_6:2FTS		124	25-150
13C2_8:2FTS		145	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		103	25-150
13C3_PFBS		121	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		106	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		115	25-150
13C5_PFPeA		128	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ57956-001
Batch: 57956
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/24/2022 1434

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		128	25-150
13C7_PFUdA		115	25-150
13C8_PFOA		120	25-150
13C8_PFOS		111	25-150
13C8_PFOSA		129	10-150
13C9_PFNA		145	25-150
d5-EtFOSAA		126	25-150
d3-MeFOSAA		122	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ57956-002
Batch: 57956
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/24/2022 1434

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	93	50-150	11/01/2022 2014
11Cl-PF3OUdS	15	14		1	94	50-150	11/01/2022 2014
8:2 FTS	15	15		1	96	50-150	11/01/2022 2014
6:2 FTS	15	16		1	105	50-150	11/01/2022 2014
4:2 FTS	15	16		1	110	50-150	11/01/2022 2014
GenX	32	26		1	82	50-150	11/01/2022 2014
ADONA	15	16		1	108	50-150	11/01/2022 2014
EtFOSAA	16	17		1	106	50-150	11/01/2022 2014
MeFOSAA	16	16		1	102	50-150	11/01/2022 2014
PFBS	14	12		1	86	50-150	11/01/2022 2014
PFDS	15	14		1	93	50-150	11/01/2022 2014
PFHpS	15	15		1	98	50-150	11/01/2022 2014
PFNS	15	13		1	87	50-150	11/01/2022 2014
PFOSA	16	16		1	100	50-150	11/01/2022 2014
PFPeS	15	15		1	99	50-150	11/01/2022 2014
PFHxS	15	16		1	109	50-150	11/01/2022 2014
PFBA	16	16		1	102	50-150	11/01/2022 2014
PFDA	16	17		1	105	50-150	11/01/2022 2014
PFDoA	16	15		1	95	50-150	11/01/2022 2014
PFHpA	16	15		1	96	50-150	11/01/2022 2014
PFHxA	16	16		1	103	50-150	11/01/2022 2014
PFNA	16	19		1	116	50-150	11/01/2022 2014
PFOA	16	16		1	102	50-150	11/01/2022 2014
PFPeA	16	15		1	95	50-150	11/01/2022 2014
PFTeDA	16	17		1	105	50-150	11/01/2022 2014
PFTrDA	16	16		1	103	50-150	11/01/2022 2014
PFUdA	16	17		1	105	50-150	11/01/2022 2014
PFOS	15	14		1	92	50-150	11/01/2022 2014

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		94	25-150
13C2_6:2FTS		128	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		113	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		124	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		117	25-150
13C4_PFBA		106	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		124	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ57956-002
Batch: 57956
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 10/24/2022 1434

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		120	25-150
13C7_PFUdA		112	25-150
13C8_PFOA		100	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		118	10-150
13C9_PFNA		128	25-150
d5-EtFOSAA		126	25-150
d3-MeFOSAA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical® Plant 6

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 138328

Client: Arcadis	Report to Contact: Kaitlyn Hunt, Tiffany Linder	Telephone No. / E-mail: 248-809-4013 / kaitlyn.hunt@arcadis.com; 810-225-1928 / Tiffany.Linder@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x [signature]	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Novi	State: MI	Zip Code: 48377	Printed Name: Austin Westhuis	
Project Name: RACER Lansing			XI01064
Project No.: 30112892.0370A	P.O. No.		KES1

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab/Composite	Matrix: Aqueous	Solid	Non-Aqueous	No of Containers by Preservative Type: Unpres	H2SO4	HNO3	HCl	NaOH	NaOH XS	Other	PFAS via Att. Pkg. 537.1 mod. w/ isotope dilution per DOD QSM 5.3 Table B-15	Remarks / Cooler I.D.
MW-14-67_082922	8/29/22	1420	G	X			2							X	
PG-SB-07_082922	8/29/22	1520	G	X			2							X	
EB-01_082922	8/29/22	1620	G	X			2							X	
MW-22-143_083022	8/30/22	1000	G	X			2							X	
MW-22-144_083022	8/30/22	1100	G	X			2							X	
MW-22-145_083022	8/30/22	1140	G	X			2							X	
MW-22-146_083022	8/30/22	1305	G	X			2							X	
MW-22-147_083022	8/30/22	1405	G	X			2							X	
MW-22-148_083022	8/30/22	1450	G	X			6							X	MS/MSD
Dup-04_083022	8/30/22	—	G	X			2							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.)
X Standard ☐ Rush (Specify)

Sample Disposal
☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by: Austin Westhuis / Arcadis	Date: 8/31/22	Time	1. Received by: FedEx	Date: 8/31/22	Time		
2. Relinquished by	Date	Time	2. Received by	Date	Time		
3. Relinquished by	Date	Time	3. Received by	Date	Time		
4. Relinquished by: fedex	Date: 9.1.22	Time: 1620	4. Laboratory received by: [signature]	Date: 9.1.22	Time: 1624		

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle): (Yes) No Ice Pack
Receipt Temp: 3.4 °C
Temp Blank: ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy * Report EGLE 28 Compounds *

Document Number: MF003N2-01

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

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PACE ANALYTICAL SERVICES, LLC
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Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 138329

Client: Arcadis	Report to Contact: Kaitlyn Hunt / Tiffany Linden	Telephone No. / E-mail: 248-809-4018 / Kaitlyn.Hunt@arcadis.com; 810-225-1928 / Tiffany.Linden@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x [signature]	Analysis (Attach list if more space is needed)	Page 2 of 2
City: Novi / State: MI / Zip Code: 48377	Printed Name: Austin Westhuis		XI01064
Project Name: RACER Lansing			KES2
Project No.: 30112892.0370A	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line)	Collection Date(s)	Collection Time (Military)	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Wipe/Oil	No. of Containers by Preservative Type: Unpres.	HCl	HNO3	H2SO4	NaOH	Na2S2O3	Field Filtered	1,2,3-TCP (8260) w/ SIM	Remarks / Cooler I.D.
MW-22-149_083122	8/31/22	0855	G	X			2							X	
MW-22-150_083122	8/31/22	1005	G	X			2							X	
MW-22-151_083122	8/31/22	1055	G	X			2							X	
MW-22-152_083122	8/31/22	1145	G	X			2							X	
MW-12-12_083122	8/31/22	1110	G	X			2							X	
MW-12-13_083122	8/31/22	1305	G	X			2							X	
MW-13-36R_083122	8/31/22	1440	G	X			2							X	
MW-14-70_083122	8/31/22	1210	G	X			2							X	
Dup-03_083122	8/31/22	—	G	X			2							X	
EB-03_083122	8/31/22	1230	G	X			2							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by: [signature] / Austin Westhuis / Arcadis	Date: 8/31/22	Time:	1. Received by: FedEx	Date:	Time:
2. Relinquished by	Date:	Time:	2. Received by	Date:	Time:
3. Relinquished by	Date:	Time:	3. Received by	Date:	Time:
4. Relinquished by: FedEx	Date: 9.1.22	Time: 1620	4. Laboratory received by: [signature]	Date: 9.1.22	Time: 1620

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on ice (Circle): (Yes) No Ice Pack — Receipt Temp: 3.4 °C — Temp Blank: ☐ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy * Report EGLE 28 Compounds *

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: ARCADIS Cooler Inspected by/date: KDRW / 09/01/2022 Lot #: XI01064

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt: %Solid Snap-Cup ID: NA

3.4 / 3.4 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		11. Was adequate sample volume available?
☑ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☑ Yes	☐ No	☐ NA	18. Was the quote number listed on the container label? If yes. Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L. (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA

Comments:

Qualtrax ID: 56360

Pace® Analytical Services, LLC

Page 1 of 1

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER Lansing

Project Number: 30112892

Lot Number:**XI01065**

Date Completed:10/24/2022

Kathy Smith

10/24/2022 4:16 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Case Narrative
Arcadis U.S., Inc.
Lot Number: XI01065

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

The following sample was prepared outside of preparation holding time due to laboratory error: XI01065-001.

Surrogate recovery for the following sample was outside control limits: XI01065-001. Re-extraction and/or re-analysis was performed with concurring results. The original analysis has been reported.

The MS/MSD associated with sample XI01065-001 had compounds recovered outside of the acceptance limits. The LCS was recovered within the required acceptance limits; therefore, this demonstrates a matrix effect and data quality is not impacted.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XI01065

Project Name: RACER Lansing

Project Number: 30112892

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-21-139_082922	Aqueous	08/29/2022 1425	09/01/2022

(1 sample)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XI01065

Project Name: RACER Lansing

Project Number: 30112892

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-21-139_082922	Aqueous	8:2 FTS	PFAS by ID	53	H	ng/L	5
001	MW-21-139_082922	Aqueous	6:2 FTS	PFAS by ID	46	HQ	ng/L	5
001	MW-21-139_082922	Aqueous	PFBS	PFAS by ID	20	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFHpS	PFAS by ID	27	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFNS	PFAS by ID	0.89	HJ	ng/L	5
001	MW-21-139_082922	Aqueous	PFOSA	PFAS by ID	1.3	HJ	ng/L	5
001	MW-21-139_082922	Aqueous	PFPeS	PFAS by ID	23	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFHxS	PFAS by ID	230	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFBA	PFAS by ID	31	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFDA	PFAS by ID	6.9	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFHpA	PFAS by ID	55	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFHxA	PFAS by ID	78	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFNA	PFAS by ID	18	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFOA	PFAS by ID	83	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFPeA	PFAS by ID	80	H	ng/L	5
001	MW-21-139_082922	Aqueous	PFOS	PFAS by ID	1700		ng/L	5

(16 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XI01065-001**

Description: **MW-21-139_082922** Matrix: **Aqueous**

Date Sampled: **08/29/2022 1425** Project Name: **RACER Lansing**

Date Received: **09/01/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	10/20/2022 1350	MMM	09/27/2022 1111	55203
2	SOP SPE	PFAS by ID SOP	10	10/21/2022 2250	MMM	09/27/2022 1111	55203

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	H	6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	H	6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	**39108-34-4**	**PFAS by ID SOP**	**53**	**H**	**6.9**	**1.4**	**ng/L**	**1**
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**46**	**HQ**	**6.9**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	HQ	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	H	6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	H	6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	H	6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	H	6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**20**	**H**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	H	3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**27**	**H**	**3.5**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	**68259-12-1**	**PFAS by ID SOP**	**0.89**	**HJ**	**3.5**	**0.62**	**ng/L**	**1**
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**1.3**	**HJ**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**23**	**H**	**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**230**	**H**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**31**	**H**	**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**6.9**	**H**	**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	H	3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**55**	**H**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**78**	**H**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**18**	**H**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**83**	**H**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**80**	**H**	**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	H	3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	H	3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	H	3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1700**		**35**	**17**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	HN	275	25-150		128	25-150
13C2_6:2FTS	HN	194	25-150		109	25-150
13C2_8:2FTS	H	122	25-150		98	25-150
13C2_PFDoA	H	83	25-150		78	25-150
13C2_PFTeDA	H	76	25-150		80	25-150
13C3_PFBS	H	88	25-150		96	25-150
13C3_PFHxS	H	91	25-150		94	25-150
13C3-HFPO-DA	H	91	25-150		103	25-150
13C4_PFBA	H	88	25-150		90	25-150
13C4_PFHpA	H	93	25-150		98	25-150
13C5_PFHxA	H	87	25-150		94	25-150
13C5_PFPeA	H	71	25-150		97	25-150
13C6_PFDA	H	91	25-150		82	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XI01065-001**
Description: **MW-21-139_082922**
Matrix: **Aqueous**
Date Sampled: **08/29/2022 1425**
Project Name: **RACER Lansing**
Date Received: **09/01/2022**
Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA	H	89	25-150		79	25-150
13C8_PFOA	H	99	25-150		94	25-150
13C8_PFOS	H	86	25-150		90	25-150
13C8_PFOSA	H	90	10-150		92	10-150
13C9_PFNA	H	91	25-150		94	25-150
d5-EtFOSAA	H	92	25-150		90	25-150
d3-MeFOSAA	H	95	25-150		91	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ55203-001
Batch: 55203
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/27/2022 1111

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	10/19/2022 1937
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	10/19/2022 1937
8:2 FTS	ND		1	8.0	1.6	ng/L	10/19/2022 1937
6:2 FTS	ND		1	8.0	2.0	ng/L	10/19/2022 1937
4:2 FTS	ND		1	8.0	0.87	ng/L	10/19/2022 1937
GenX	ND		1	8.0	2.1	ng/L	10/19/2022 1937
ADONA	ND		1	8.0	0.48	ng/L	10/19/2022 1937
EtFOSAA	ND		1	8.0	0.75	ng/L	10/19/2022 1937
MeFOSAA	ND		1	8.0	0.93	ng/L	10/19/2022 1937
PFBS	ND		1	4.0	0.41	ng/L	10/19/2022 1937
PFDS	ND		1	4.0	0.78	ng/L	10/19/2022 1937
PFHpS	ND		1	4.0	0.50	ng/L	10/19/2022 1937
PFNS	ND		1	4.0	0.71	ng/L	10/19/2022 1937
PFOSA	ND		1	4.0	0.61	ng/L	10/19/2022 1937
PFPeS	ND		1	4.0	0.59	ng/L	10/19/2022 1937
PFHxS	ND		1	4.0	0.55	ng/L	10/19/2022 1937
PFBA	ND		1	4.0	0.60	ng/L	10/19/2022 1937
PFDA	ND		1	4.0	0.52	ng/L	10/19/2022 1937
PFDoA	ND		1	4.0	0.47	ng/L	10/19/2022 1937
PFHpA	ND		1	4.0	0.45	ng/L	10/19/2022 1937
PFHxA	ND		1	4.0	0.69	ng/L	10/19/2022 1937
PFNA	ND		1	4.0	0.46	ng/L	10/19/2022 1937
PFOA	ND		1	4.0	0.83	ng/L	10/19/2022 1937
PFPeA	ND		1	4.0	0.54	ng/L	10/19/2022 1937
PFTeDA	ND		1	4.0	0.60	ng/L	10/19/2022 1937
PFTrDA	ND		1	4.0	0.53	ng/L	10/19/2022 1937
PFUdA	ND		1	4.0	0.63	ng/L	10/19/2022 1937
PFOS	ND		1	4.0	2.0	ng/L	10/19/2022 1937

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		103	25-150
13C2_6:2FTS		103	25-150
13C2_8:2FTS		106	25-150
13C2_PFDoA		89	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		96	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ55203-001
Batch: 55203
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/27/2022 1111

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		99	25-150
13C7_PFUdA		90	25-150
13C8_PFOA		94	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		97	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ55203-002
Batch: 55203
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/27/2022 1111

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	102	50-150	10/19/2022 1950
11Cl-PF3OUdS	15	15		1	102	50-150	10/19/2022 1950
8:2 FTS	15	18		1	117	50-150	10/19/2022 1950
6:2 FTS	15	18		1	116	50-150	10/19/2022 1950
4:2 FTS	15	16		1	107	50-150	10/19/2022 1950
GenX	32	35		1	109	50-150	10/19/2022 1950
ADONA	15	16		1	107	50-150	10/19/2022 1950
EtFOSAA	16	17		1	103	50-150	10/19/2022 1950
MeFOSAA	16	15		1	95	50-150	10/19/2022 1950
PFBS	14	15		1	107	50-150	10/19/2022 1950
PFDS	15	15		1	96	50-150	10/19/2022 1950
PFHpS	15	15		1	100	50-150	10/19/2022 1950
PFNS	15	16		1	105	50-150	10/19/2022 1950
PFOSA	16	17		1	107	50-150	10/19/2022 1950
PFPeS	15	16		1	109	50-150	10/19/2022 1950
PFHxS	15	15		1	100	50-150	10/19/2022 1950
PFBA	16	17		1	103	50-150	10/19/2022 1950
PFDA	16	17		1	109	50-150	10/19/2022 1950
PFDoA	16	16		1	103	50-150	10/19/2022 1950
PFHpA	16	18		1	115	50-150	10/19/2022 1950
PFHxA	16	17		1	105	50-150	10/19/2022 1950
PFNA	16	17		1	108	50-150	10/19/2022 1950
PFOA	16	17		1	105	50-150	10/19/2022 1950
PFPeA	16	18		1	110	50-150	10/19/2022 1950
PFTeDA	16	17		1	105	50-150	10/19/2022 1950
PFTrDA	16	15		1	92	50-150	10/19/2022 1950
PFUdA	16	17		1	104	50-150	10/19/2022 1950
PFOS	15	15		1	102	50-150	10/19/2022 1950

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		99	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		95	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		91	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ55203-002
Batch: 55203
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/27/2022 1111

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		94	25-150
13C7_PFUdA		88	25-150
13C8_PFOA		94	25-150
13C8_PFOS		93	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		98	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XI01065-001MS
Batch: 55203
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/27/2022 1111

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	14		1	109	50-150	10/20/2022 1403
11Cl-PF3OUdS	ND	13	13		1	101	50-150	10/20/2022 1403
8:2 FTS	53	13	66		1	101	50-150	10/20/2022 1403
6:2 FTS	46	13	60		1	104	50-150	10/20/2022 1403
4:2 FTS	ND	13	14		1	104	50-150	10/20/2022 1403
GenX	ND	28	31		1	112	50-150	10/20/2022 1403
ADONA	ND	13	14		1	105	50-150	10/20/2022 1403
EtFOSAA	ND	14	15		1	107	50-150	10/20/2022 1403
MeFOSAA	ND	14	14		1	98	50-150	10/20/2022 1403
PFBS	20	12	32		1	100	50-150	10/20/2022 1403
PFDS	ND	13	13		1	98	50-150	10/20/2022 1403
PFHpS	27	13	41		1	103	50-150	10/20/2022 1403
PFNS	0.89	13	14		1	95	50-150	10/20/2022 1403
PFOSA	1.3	14	15		1	100	50-150	10/20/2022 1403
PFPeS	23	13	37		1	114	50-150	10/20/2022 1403
PFHxS	230	13	240		1	89	50-150	10/20/2022 1403
PFBA	31	14	44		1	95	50-150	10/20/2022 1403
PFDA	6.9	14	22		1	106	50-150	10/20/2022 1403
PFDoA	ND	14	14		1	104	50-150	10/20/2022 1403
PFHpA	55	14	69		1	95	50-150	10/20/2022 1403
PFHxA	78	14	92		1	97	50-150	10/20/2022 1403
PFNA	18	14	32		1	101	50-150	10/20/2022 1403
PFOA	83	14	98		1	104	50-150	10/20/2022 1403
PFPeA	80	14	92		1	88	50-150	10/20/2022 1403
PFTeDA	ND	14	15		1	107	50-150	10/20/2022 1403
PFTrDA	ND	14	13		1	95	50-150	10/20/2022 1403
PFUdA	ND	14	14		1	103	50-150	10/20/2022 1403
PFOS	1700	13	1700	N	1	-169	50-150	10/20/2022 1403

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	278	25-150
13C2_6:2FTS	N	201	25-150
13C2_8:2FTS		123	25-150
13C2_PFDoA		85	25-150
13C2_PFTeDA		83	25-150
13C3_PFBS		88	25-150
13C3_PFHxS		92	25-150
13C3-HFPO-DA		91	25-150
13C4_PFBA		89	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		88	25-150
13C5_PFPeA		71	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XI01065-001MS
Batch: 55203
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/27/2022 1111

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		94	25-150
13C7_PFUdA		91	25-150
13C8_PFOA		100	25-150
13C8_PFOS		88	25-150
13C8_PFOSA		91	10-150
13C9_PFNA		90	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 138326

Plant 2

Client: Arcadis	Report to Contact: Kaitlyn Hunt	Telephone No. / E-mail: 947 777 5215 / Kaitlyn.Hunt@arcadis.com	Quote No.
Address: 28550 Cabot Dr Suite 500	Sampler's Signature: X Donald Richmond	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Novi	State: MI	Zip Code: 48377	Printed Name: Donald Richmond		
Project Name: Roger Lansing			
Project No.: 30112892	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Sample Type (G=Grab C=Composite)	Matrix: Aqueous	Matrix: Solid	Matrix: Other (Air)	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Other Filtered	PFAS via our standard SOP 537 modified with isotope dilution per ASTM 5.1
MW-21-139_08292	8/29/22	1425	G	X			X 2							X

Lab Barcode: X101065
KES2
Remarks / Cooler ID.

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☒ Standard ☐ Rush (Specify)	Sample Disposal: ☐ Return to Client ☒ Disposal by Lab	Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown	QC Requirements (Specify)	
1. Relinquished by: Austin Westhuis/Arcadis	Date: 8/31/22	Time:	1. Received by: fedex	Date: 8/31/22	Time:
2. Relinquished by:	Date:	Time:	2. Received by:	Date:	Time:
3. Relinquished by:	Date:	Time:	3. Received by:	Date:	Time:
4. Relinquished by: fedex	Date: 9.1.22	Time: 1626	4. Laboratory received by:	Date: 9.1.22	Time: 1626

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle): (Yes) No Ice Pack
Receipt Temp: 3.4 °C
Temp Blank: ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: MF005N2-01

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: ARCADIS Cooler Inspected by/date: KDRW / 09/01/2022 Lot #: XI01065

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other: _____

☑ Yes	☐ No			1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA		2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.4 / 3.4 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☐ No	☑ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		11. Was adequate sample volume available?
☑ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☑ Yes	☐ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote # 35329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA _____ were received with bubbles >6 mm in diameter.

Samples(s) NA _____ were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Qualtrax ID: 56360 Pace® Analytical Services, LLC Page 1 of 1

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Marina Samp

Project Name: RACER Lansing PFAS

Project Number: 3012892.0370B

Lot Number:**XH04037**

Date Completed:09/05/2022

09/07/2022 3:23 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Case Narrative
Arcadis U.S., Inc.
Lot Number: XH04037

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

The method blank associated with batch 52513 had 6:2 FTS detected at a concentration that was above the MDL but below the PQL. All samples associated with this method blank that have detections for 6:2 FTS have been flagged with a "B".

Surrogate recovery for the following samples was outside the upper control limit: XH04037-001, XH04037-002, XH04037-004, XH04037-005, XH04037-007. These samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Sample XH04037-003 had surrogates recovered outside of the acceptance limits. The sample was re-extracted and all data has been reported.

Surrogate recovery for the following sample was outside control limits: XH04037-006. Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XH04037

Project Name: RACER Lansing PFAS

Project Number: 3012892.0370B

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MichAve-MH-3_080222	Aqueous	08/02/2022 0840	08/03/2022
002	MichAve-MH-4_080222	Aqueous	08/02/2022 0910	08/03/2022
003	Verlinden-MH-5_080222	Aqueous	08/02/2022 0930	08/03/2022
004	Verlinden-MH-4_080222	Aqueous	08/02/2022 0950	08/03/2022
005	Verlinden-MH-3_080222	Aqueous	08/02/2022 1010	08/03/2022
006	Dup-01_080222	Aqueous	08/02/2022	08/03/2022
007	Verlinden-MH-2_080222	Aqueous	08/02/2022 1035	08/03/2022

(7 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XH04037

Project Name: RACER Lansing PFAS

Project Number: 3012892.0370B

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MichAve-MH-3_080222	Aqueous	PFBS	PFAS by ID	2.8	J	ng/L	6
001	MichAve-MH-3_080222	Aqueous	PFHxS	PFAS by ID	1.5	J	ng/L	6
001	MichAve-MH-3_080222	Aqueous	PFBA	PFAS by ID	6.4		ng/L	6
001	MichAve-MH-3_080222	Aqueous	PFHpA	PFAS by ID	2.1	J	ng/L	6
001	MichAve-MH-3_080222	Aqueous	PFHxA	PFAS by ID	2.4	J	ng/L	6
001	MichAve-MH-3_080222	Aqueous	PFOA	PFAS by ID	3.2	J	ng/L	6
001	MichAve-MH-3_080222	Aqueous	PFPeA	PFAS by ID	4.4		ng/L	6
001	MichAve-MH-3_080222	Aqueous	PFOS	PFAS by ID	2.7	J	ng/L	6
002	MichAve-MH-4_080222	Aqueous	PFBS	PFAS by ID	2.4	J	ng/L	8
002	MichAve-MH-4_080222	Aqueous	PFHxS	PFAS by ID	2.6	J	ng/L	8
002	MichAve-MH-4_080222	Aqueous	PFBA	PFAS by ID	11		ng/L	8
002	MichAve-MH-4_080222	Aqueous	PFDA	PFAS by ID	1.6	J	ng/L	8
002	MichAve-MH-4_080222	Aqueous	PFHpA	PFAS by ID	8.3		ng/L	8
002	MichAve-MH-4_080222	Aqueous	PFHxA	PFAS by ID	8.1		ng/L	8
002	MichAve-MH-4_080222	Aqueous	PFNA	PFAS by ID	2.3	J	ng/L	8
002	MichAve-MH-4_080222	Aqueous	PFOA	PFAS by ID	16		ng/L	8
002	MichAve-MH-4_080222	Aqueous	PFPeA	PFAS by ID	8.5		ng/L	8
002	MichAve-MH-4_080222	Aqueous	PFOS	PFAS by ID	15		ng/L	8
003	Verlinden-MH-5_080222	Aqueous	PFBS	PFAS by ID	2.7	J	ng/L	10
003	Verlinden-MH-5_080222	Aqueous	PFHxS	PFAS by ID	1.4	J	ng/L	10
003	Verlinden-MH-5_080222	Aqueous	PFBA	PFAS by ID	23		ng/L	10
003	Verlinden-MH-5_080222	Aqueous	PFDA	PFAS by ID	0.60	J	ng/L	10
003	Verlinden-MH-5_080222	Aqueous	PFHpA	PFAS by ID	22		ng/L	10
003	Verlinden-MH-5_080222	Aqueous	PFHxA	PFAS by ID	45		ng/L	10
003	Verlinden-MH-5_080222	Aqueous	PFNA	PFAS by ID	2.1	J	ng/L	10
003	Verlinden-MH-5_080222	Aqueous	PFOA	PFAS by ID	22		ng/L	10
003	Verlinden-MH-5_080222	Aqueous	PFPeA	PFAS by ID	80		ng/L	10
003	Verlinden-MH-5_080222	Aqueous	PFOS	PFAS by ID	6.3		ng/L	10
003	Verlinden-MH-5_080222	Aqueous	6:2 FTS	PFAS by ID	14	B	ng/L	12
004	Verlinden-MH-4_080222	Aqueous	PFBS	PFAS by ID	6.8		ng/L	14
004	Verlinden-MH-4_080222	Aqueous	PFHxS	PFAS by ID	2.2	J	ng/L	14
004	Verlinden-MH-4_080222	Aqueous	PFBA	PFAS by ID	29		ng/L	14
004	Verlinden-MH-4_080222	Aqueous	PFDA	PFAS by ID	1.5	J	ng/L	14
004	Verlinden-MH-4_080222	Aqueous	PFHpA	PFAS by ID	29		ng/L	14
004	Verlinden-MH-4_080222	Aqueous	PFHxA	PFAS by ID	49		ng/L	14
004	Verlinden-MH-4_080222	Aqueous	PFNA	PFAS by ID	2.1	J	ng/L	14
004	Verlinden-MH-4_080222	Aqueous	PFOA	PFAS by ID	23		ng/L	14
004	Verlinden-MH-4_080222	Aqueous	PFPeA	PFAS by ID	77		ng/L	14
004	Verlinden-MH-4_080222	Aqueous	PFOS	PFAS by ID	12		ng/L	14
005	Verlinden-MH-3_080222	Aqueous	PFBS	PFAS by ID	4.4		ng/L	16
005	Verlinden-MH-3_080222	Aqueous	PFHxS	PFAS by ID	2.1	J	ng/L	16
005	Verlinden-MH-3_080222	Aqueous	PFBA	PFAS by ID	24		ng/L	16
005	Verlinden-MH-3_080222	Aqueous	PFDA	PFAS by ID	1.4	J	ng/L	16

Detection Summary (Continued)

Lot Number: XH04037

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
005	Verlinden-MH-3_080222	Aqueous	PFHpA	PFAS by ID	32		ng/L	16
005	Verlinden-MH-3_080222	Aqueous	PFHxA	PFAS by ID	46		ng/L	16
005	Verlinden-MH-3_080222	Aqueous	PFNA	PFAS by ID	2.3	J	ng/L	16
005	Verlinden-MH-3_080222	Aqueous	PFOA	PFAS by ID	26		ng/L	16
005	Verlinden-MH-3_080222	Aqueous	PFPeA	PFAS by ID	67		ng/L	16
005	Verlinden-MH-3_080222	Aqueous	PFOS	PFAS by ID	10		ng/L	16
006	Dup-01_080222	Aqueous	PFBS	PFAS by ID	4.5		ng/L	18
006	Dup-01_080222	Aqueous	PFHxS	PFAS by ID	2.6	J	ng/L	18
006	Dup-01_080222	Aqueous	PFBA	PFAS by ID	25		ng/L	18
006	Dup-01_080222	Aqueous	PFDA	PFAS by ID	1.7	J	ng/L	18
006	Dup-01_080222	Aqueous	PFHpA	PFAS by ID	31		ng/L	18
006	Dup-01_080222	Aqueous	PFHxA	PFAS by ID	47		ng/L	18
006	Dup-01_080222	Aqueous	PFNA	PFAS by ID	2.7	J	ng/L	18
006	Dup-01_080222	Aqueous	PFOA	PFAS by ID	25		ng/L	18
006	Dup-01_080222	Aqueous	PFPeA	PFAS by ID	74		ng/L	18
006	Dup-01_080222	Aqueous	PFOS	PFAS by ID	12		ng/L	18
007	Verlinden-MH-2_080222	Aqueous	EtFOSAA	PFAS by ID	1.5	J	ng/L	20
007	Verlinden-MH-2_080222	Aqueous	PFBS	PFAS by ID	2.5	J	ng/L	20
007	Verlinden-MH-2_080222	Aqueous	PFHxS	PFAS by ID	2.0	J	ng/L	20
007	Verlinden-MH-2_080222	Aqueous	PFBA	PFAS by ID	16		ng/L	20
007	Verlinden-MH-2_080222	Aqueous	PFDA	PFAS by ID	2.8	J	ng/L	20
007	Verlinden-MH-2_080222	Aqueous	PFHpA	PFAS by ID	27		ng/L	20
007	Verlinden-MH-2_080222	Aqueous	PFHxA	PFAS by ID	46		ng/L	20
007	Verlinden-MH-2_080222	Aqueous	PFNA	PFAS by ID	3.4	J	ng/L	20
007	Verlinden-MH-2_080222	Aqueous	PFOA	PFAS by ID	24		ng/L	20
007	Verlinden-MH-2_080222	Aqueous	PFPeA	PFAS by ID	40		ng/L	20
007	Verlinden-MH-2_080222	Aqueous	PFOS	PFAS by ID	15		ng/L	20

(70 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-001**

Description: **MichAve-MH-3_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 0840** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 1836	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	0.65	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.8	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.8	0.85	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	0.73	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	0.91	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.8**	**J**	**3.9**	**0.40**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.76	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.60	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.5**	**J**	**3.9**	**0.54**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**6.4**		**3.9**	**0.59**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.1**	**J**	**3.9**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.4**	**J**	**3.9**	**0.67**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	0.45	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**3.2**	**J**	**3.9**	**0.81**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**4.4**		**3.9**	**0.53**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.61	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.7**	**J**	**3.9**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	227	25-150
13C2_6:2FTS	N	312	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		62	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		103	25-150
13C7_PFUdA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-001**

Description: **MichAve-MH-3_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 0840** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		101	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		108	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-002**

Description: **MichAve-MH-4_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 0910** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 1909	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.2	0.49	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.2	0.68	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.2	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.2	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.2	0.89	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.2	0.49	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.2	0.77	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.2	0.95	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.4**	**J**	**4.1**	**0.42**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	0.79	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	0.51	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	0.73	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	0.63	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	0.61	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.6**	**J**	**4.1**	**0.56**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**4.1**	**0.61**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.6**	**J**	**4.1**	**0.54**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	0.48	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**8.3**		**4.1**	**0.46**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**8.1**		**4.1**	**0.70**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.3**	**J**	**4.1**	**0.47**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**16**		**4.1**	**0.85**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**8.5**		**4.1**	**0.56**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	0.61	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	0.54	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	0.64	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**15**		**4.1**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	240	25-150
13C2_6:2FTS	N	314	25-150
13C2_8:2FTS		130	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		74	25-150
13C3_PFBS		94	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		90	25-150
13C4_PFBA		55	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		85	25-150
13C6_PFDA		107	25-150
13C7_PFUdA		115	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-002**

Description: **MichAve-MH-4_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 0910** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		101	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		113	25-150
d3-MeFOSAA		112	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-003**

Description: **Verlinden-MH-5_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 0930** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 1920	ALM	08/24/2022 0857	52048
2	SOP SPE	PFAS by ID SOP	1	08/31/2022 1350	ALM	08/29/2022 1015	52513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	0.65	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.9	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**17**	**Q**	**7.9**	**2.0**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.9	0.86	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	0.74	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	0.92	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.7**	**J**	**3.9**	**0.41**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.77	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.60	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.4**	**J**	**3.9**	**0.54**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**23**		**3.9**	**0.59**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.60**	**J**	**3.9**	**0.52**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**22**		**3.9**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**45**		**3.9**	**0.68**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.1**	**J**	**3.9**	**0.45**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**22**		**3.9**	**0.82**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**80**		**3.9**	**0.54**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.62	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**6.3**		**3.9**	**2.0**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	238	25-150	N	196	25-150
13C2_6:2FTS	N	269	25-150		139	25-150
13C2_8:2FTS		107	25-150		105	25-150
13C2_PFDoA		104	25-150		97	25-150
13C2_PFTeDA		100	25-150		97	25-150
13C3_PFBS		102	25-150		96	25-150
13C3_PFHxS		107	25-150		107	25-150
13C3-HFPO-DA		94	25-150		97	25-150
13C4_PFBA		60	25-150		63	25-150
13C4_PFHpA		117	25-150		108	25-150
13C5_PFHxA		109	25-150		107	25-150
13C5_PFPeA		90	25-150		90	25-150
13C6_PFDA		105	25-150		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-003**

Description: **Verlinden-MH-5_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 0930** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		111	25-150		97	25-150
13C8_PFOA		107	25-150		108	25-150
13C8_PFOS		102	25-150		97	25-150
13C8_PFOSA		103	10-150		105	10-150
13C9_PFNA		102	25-150		105	25-150
d5-EtFOSAA		106	25-150		99	25-150
d3-MeFOSAA		106	25-150		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-003**

Description: **Verlinden-MH-5_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 0930** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 1920	ALM	08/24/2022 0857	52048
2	SOP SPE	PFAS by ID SOP	1	08/31/2022 1350	ALM	08/29/2022 1015	52513

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	0.48	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	0.67	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	1.6	ng/L	2
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**14**	**B**	**8.0**	**2.0**	**ng/L**	**2**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.0	0.88	ng/L	2
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.1	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	0.49	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	0.75	ng/L	2
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	0.94	ng/L	2
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.0	0.42	ng/L	2
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.78	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.71	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.62	ng/L	2
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.60	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.3**	**J**	**4.0**	**0.55**	**ng/L**	**2**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**23**		**4.0**	**0.60**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.57**	**J**	**4.0**	**0.53**	**ng/L**	**2**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	2
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**24**		**4.0**	**0.45**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**41**		**4.0**	**0.69**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.8**	**J**	**4.0**	**0.46**	**ng/L**	**2**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**24**		**4.0**	**0.83**	**ng/L**	**2**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**71**		**4.0**	**0.55**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.60	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.53	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.63	ng/L	2
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**5.9**		**4.0**	**2.0**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	238	25-150	N	196	25-150
13C2_6:2FTS	N	269	25-150		139	25-150
13C2_8:2FTS		107	25-150		105	25-150
13C2_PFDoA		104	25-150		97	25-150
13C2_PFTeDA		100	25-150		97	25-150
13C3_PFBS		102	25-150		96	25-150
13C3_PFHxS		107	25-150		107	25-150
13C3-HFPO-DA		94	25-150		97	25-150
13C4_PFBA		60	25-150		63	25-150
13C4_PFHpA		117	25-150		108	25-150
13C5_PFHxA		109	25-150		107	25-150
13C5_PFPeA		90	25-150		90	25-150
13C6_PFDA		105	25-150		103	25-150

LOQ = Limit of Quantitation
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E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-003**

Description: **Verlinden-MH-5_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 0930** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		111	25-150		97	25-150
13C8_PFOA		107	25-150		108	25-150
13C8_PFOS		102	25-150		97	25-150
13C8_PFOSA		103	10-150		105	10-150
13C9_PFNA		102	25-150		105	25-150
d5-EtFOSAA		106	25-150		99	25-150
d3-MeFOSAA		106	25-150		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-004**

Description: **Verlinden-MH-4_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 0950** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 1931	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	0.67	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.0	0.88	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	0.49	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	0.75	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	0.94	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**6.8**		**4.0**	**0.42**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.78	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.71	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.62	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.2**	**J**	**4.0**	**0.55**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**29**		**4.0**	**0.60**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.5**	**J**	**4.0**	**0.53**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**29**		**4.0**	**0.45**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**49**		**4.0**	**0.69**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.1**	**J**	**4.0**	**0.46**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**23**		**4.0**	**0.83**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**77**		**4.0**	**0.55**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.53	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.63	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**12**		**4.0**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	233	25-150
13C2_6:2FTS	N	262	25-150
13C2_8:2FTS		135	25-150
13C2_PFDoA		95	25-150
13C2_PFTeDA		66	25-150
13C3_PFBS		98	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		64	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		93	25-150
13C6_PFDA		110	25-150
13C7_PFUdA		107	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-004**

Description: **Verlinden-MH-4_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 0950** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		116	25-150
d3-MeFOSAA		115	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-005**

Description: **Verlinden-MH-3_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1010** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 1942	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	0.66	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.9	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.9	0.87	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	0.74	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	0.92	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**4.4**		**4.0**	**0.41**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.77	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.71	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.1**	**J**	**4.0**	**0.55**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**24**		**4.0**	**0.60**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.4**	**J**	**4.0**	**0.52**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**32**		**4.0**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**46**		**4.0**	**0.68**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.3**	**J**	**4.0**	**0.46**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**26**		**4.0**	**0.82**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**67**		**4.0**	**0.54**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.62	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**10**		**4.0**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	233	25-150
13C2_6:2FTS	N	312	25-150
13C2_8:2FTS		137	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		98	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		63	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		90	25-150
13C6_PFDA		115	25-150
13C7_PFUdA		115	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-005**

Description: **Verlinden-MH-3_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1010** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		118	25-150
d3-MeFOSAA		117	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
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E = Quantitation of compound exceeded the calibration range
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-006**

Description: **Dup-01_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 1953	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	0.67	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.0	0.88	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	0.49	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	0.75	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	0.94	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**4.5**		**4.0**	**0.42**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.78	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.71	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.62	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.6**	**J**	**4.0**	**0.55**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**25**		**4.0**	**0.60**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.7**	**J**	**4.0**	**0.53**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**31**		**4.0**	**0.45**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**47**		**4.0**	**0.69**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.7**	**J**	**4.0**	**0.46**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**25**		**4.0**	**0.83**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**74**		**4.0**	**0.55**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	Q	4.0	0.60	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.53	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.63	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**12**		**4.0**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	230	25-150
13C2_6:2FTS	N	301	25-150
13C2_8:2FTS		124	25-150
13C2_PFDoA		73	25-150
13C2_PFTeDA	N	19	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		113	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		65	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		88	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		99	25-150

LOQ = Limit of Quantitation
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E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-006**

Description: **Dup-01_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		107	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		90	10-150
13C9_PFNA		107	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-007**

Description: **Verlinden-MH-2_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1035** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 2004	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	0.66	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.0	0.87	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	**2991-50-6**	**PFAS by ID SOP**	**1.5**	**J**	**8.0**	**0.75**	**ng/L**	**1**
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	0.93	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.5**	**J**	**4.0**	**0.41**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.78	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.71	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.0**	**J**	**4.0**	**0.55**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**16**		**4.0**	**0.60**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**2.8**	**J**	**4.0**	**0.52**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**27**		**4.0**	**0.45**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**46**		**4.0**	**0.69**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**3.4**	**J**	**4.0**	**0.46**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**24**		**4.0**	**0.83**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**40**		**4.0**	**0.54**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.53	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.63	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**15**		**4.0**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	234	25-150
13C2_6:2FTS	N	290	25-150
13C2_8:2FTS		137	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		63	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		88	25-150
13C4_PFBA		57	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		86	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04037-007**

Description: **Verlinden-MH-2_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1035** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **3012892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		107	25-150
d3-MeFOSAA		110	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ52048-001
Batch: 52048
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	08/24/2022 1803
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	08/24/2022 1803
8:2 FTS	ND		1	8.0	1.6	ng/L	08/24/2022 1803
6:2 FTS	ND		1	8.0	2.0	ng/L	08/24/2022 1803
4:2 FTS	ND		1	8.0	0.87	ng/L	08/24/2022 1803
GenX	ND		1	8.0	2.1	ng/L	08/24/2022 1803
ADONA	ND		1	8.0	0.48	ng/L	08/24/2022 1803
EtFOSAA	ND		1	8.0	0.75	ng/L	08/24/2022 1803
MeFOSAA	ND		1	8.0	0.93	ng/L	08/24/2022 1803
PFBS	ND		1	4.0	0.41	ng/L	08/24/2022 1803
PFDS	ND		1	4.0	0.78	ng/L	08/24/2022 1803
PFHpS	ND		1	4.0	0.50	ng/L	08/24/2022 1803
PFNS	ND		1	4.0	0.71	ng/L	08/24/2022 1803
PFOSA	ND		1	4.0	0.61	ng/L	08/24/2022 1803
PFPeS	ND		1	4.0	0.59	ng/L	08/24/2022 1803
PFHxS	ND		1	4.0	0.55	ng/L	08/24/2022 1803
PFBA	ND		1	4.0	0.60	ng/L	08/24/2022 1803
PFDA	ND		1	4.0	0.52	ng/L	08/24/2022 1803
PFDoA	ND		1	4.0	0.47	ng/L	08/24/2022 1803
PFHpA	ND		1	4.0	0.45	ng/L	08/24/2022 1803
PFHxA	ND		1	4.0	0.69	ng/L	08/24/2022 1803
PFNA	ND		1	4.0	0.46	ng/L	08/24/2022 1803
PFOA	ND		1	4.0	0.83	ng/L	08/24/2022 1803
PFPeA	ND		1	4.0	0.54	ng/L	08/24/2022 1803
PFTeDA	ND		1	4.0	0.60	ng/L	08/24/2022 1803
PFTrDA	ND		1	4.0	0.53	ng/L	08/24/2022 1803
PFUdA	ND		1	4.0	0.63	ng/L	08/24/2022 1803
PFOS	ND		1	4.0	2.0	ng/L	08/24/2022 1803

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		98	25-150
13C2_6:2FTS	N	302	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		96	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		105	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ52048-001
Batch: 52048
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		100	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		105	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		99	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ52048-002
Batch: 52048
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	94	50-150	08/24/2022 1813
11Cl-PF3OUdS	15	13		1	86	50-150	08/24/2022 1813
8:2 FTS	15	16		1	102	50-150	08/24/2022 1813
6:2 FTS	15	14		1	94	50-150	08/24/2022 1813
4:2 FTS	15	15		1	101	50-150	08/24/2022 1813
GenX	32	35		1	109	50-150	08/24/2022 1813
ADONA	15	14		1	96	50-150	08/24/2022 1813
EtFOSAA	16	14		1	89	50-150	08/24/2022 1813
MeFOSAA	16	15		1	95	50-150	08/24/2022 1813
PFBS	14	14		1	100	50-150	08/24/2022 1813
PFDS	15	14		1	91	50-150	08/24/2022 1813
PFHpS	15	15		1	96	50-150	08/24/2022 1813
PFNS	15	15		1	96	50-150	08/24/2022 1813
PFOSA	16	16		1	98	50-150	08/24/2022 1813
PFPeS	15	15		1	97	50-150	08/24/2022 1813
PFHxS	15	14		1	95	50-150	08/24/2022 1813
PFBA	16	15		1	95	50-150	08/24/2022 1813
PFDA	16	16		1	102	50-150	08/24/2022 1813
PFDoA	16	15		1	96	50-150	08/24/2022 1813
PFHpA	16	15		1	97	50-150	08/24/2022 1813
PFHxA	16	16		1	97	50-150	08/24/2022 1813
PFNA	16	15		1	94	50-150	08/24/2022 1813
PFOA	16	15		1	95	50-150	08/24/2022 1813
PFPeA	16	16		1	101	50-150	08/24/2022 1813
PFTeDA	16	15		1	95	50-150	08/24/2022 1813
PFTrDA	16	14		1	85	50-150	08/24/2022 1813
PFUdA	16	14		1	88	50-150	08/24/2022 1813
PFOS	15	15		1	98	50-150	08/24/2022 1813

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		105	25-150
13C2_6:2FTS	N	409	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		109	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ52048-002
Batch: 52048
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		104	25-150
13C7_PFUdA		108	25-150
13C8_PFOA		111	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		107	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XH04037-001MS
Batch: 52048
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	15	14		1	92	50-150	08/24/2022 1847
11Cl-PF3OUdS	ND	15	12		1	79	50-150	08/24/2022 1847
8:2 FTS	ND	16	16		1	101	50-150	08/24/2022 1847
6:2 FTS	ND	16	15		1	95	50-150	08/24/2022 1847
4:2 FTS	ND	15	14		1	92	50-150	08/24/2022 1847
GenX	ND	33	35		1	105	50-150	08/24/2022 1847
ADONA	ND	15	15		1	94	50-150	08/24/2022 1847
EtFOSAA	ND	16	16		1	99	50-150	08/24/2022 1847
MeFOSAA	ND	16	16		1	99	50-150	08/24/2022 1847
PFBS	2.8	14	17		1	98	50-150	08/24/2022 1847
PFDS	ND	16	15		1	92	50-150	08/24/2022 1847
PFHpS	ND	16	14		1	91	50-150	08/24/2022 1847
PFNS	ND	16	15		1	95	50-150	08/24/2022 1847
PFOSA	ND	16	16		1	97	50-150	08/24/2022 1847
PFPeS	ND	15	17		1	110	50-150	08/24/2022 1847
PFHxS	1.5	15	16		1	98	50-150	08/24/2022 1847
PFBA	6.4	16	22		1	95	50-150	08/24/2022 1847
PFDA	ND	16	16		1	97	50-150	08/24/2022 1847
PFDoA	ND	16	15		1	89	50-150	08/24/2022 1847
PFHpA	2.1	16	18		1	97	50-150	08/24/2022 1847
PFHxA	2.4	16	19		1	100	50-150	08/24/2022 1847
PFNA	ND	16	15		1	91	50-150	08/24/2022 1847
PFOA	3.2	16	19		1	97	50-150	08/24/2022 1847
PFPeA	4.4	16	20		1	95	50-150	08/24/2022 1847
PFTeDA	ND	16	16		1	98	50-150	08/24/2022 1847
PFTrDA	ND	16	14		1	86	50-150	08/24/2022 1847
PFUdA	ND	16	15		1	92	50-150	08/24/2022 1847
PFOS	2.7	15	18		1	99	50-150	08/24/2022 1847

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	217	25-150
13C2_6:2FTS	N	274	25-150
13C2_8:2FTS		110	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		63	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		90	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XH04037-001MS
Batch: 52048
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		103	25-150
13C7_PFUdA		109	25-150
13C8_PFOA		106	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XH04037-001MD
Batch: 52048
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	15	15		1	100	5.8	50-150	30	08/24/2022 1858
11Cl-PF3OUdS	ND	15	13		1	85	5.8	50-150	30	08/24/2022 1858
8:2 FTS	ND	15	18		1	114	10	50-150	30	08/24/2022 1858
6:2 FTS	ND	15	15		1	100	2.4	50-150	30	08/24/2022 1858
4:2 FTS	ND	15	14		1	95	1.2	50-150	30	08/24/2022 1858
GenX	ND	32	38		1	119	9.8	50-150	30	08/24/2022 1858
ADONA	ND	15	15		1	100	4.1	50-150	30	08/24/2022 1858
EtFOSAA	ND	16	16		1	99	1.8	50-150	30	08/24/2022 1858
MeFOSAA	ND	16	17		1	104	3.1	50-150	30	08/24/2022 1858
PFBS	2.8	14	17		1	97	2.2	50-150	30	08/24/2022 1858
PFDS	ND	15	14		1	91	3.6	50-150	30	08/24/2022 1858
PFHpS	ND	15	16		1	101	8.9	50-150	30	08/24/2022 1858
PFNS	ND	15	15		1	96	0.46	50-150	30	08/24/2022 1858
PFOSA	ND	16	17		1	104	5.4	50-150	30	08/24/2022 1858
PFPeS	ND	15	17		1	116	3.0	50-150	30	08/24/2022 1858
PFHxS	1.5	15	17		1	105	4.6	50-150	30	08/24/2022 1858
PFBA	6.4	16	23		1	104	5.1	50-150	30	08/24/2022 1858
PFDA	ND	16	16		1	103	3.7	50-150	30	08/24/2022 1858
PFDoA	ND	16	16		1	100	9.8	50-150	30	08/24/2022 1858
PFHpA	2.1	16	18		1	102	2.1	50-150	30	08/24/2022 1858
PFHxA	2.4	16	19		1	102	0.16	50-150	30	08/24/2022 1858
PFNA	ND	16	16		1	99	6.6	50-150	30	08/24/2022 1858
PFOA	3.2	16	20		1	108	7.0	50-150	30	08/24/2022 1858
PFPeA	4.4	16	21		1	101	3.6	50-150	30	08/24/2022 1858
PFTeDA	ND	16	17		1	105	4.7	50-150	30	08/24/2022 1858
PFTrDA	ND	16	15		1	95	7.0	50-150	30	08/24/2022 1858
PFUdA	ND	16	17		1	105	12	50-150	30	08/24/2022 1858
PFOS	2.7	15	19		1	108	6.2	50-150	30	08/24/2022 1858

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	213	25-150
13C2_6:2FTS	N	255	25-150
13C2_8:2FTS		108	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		95	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		90	25-150
13C4_PFBA		59	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		87	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XH04037-001MD
Batch: 52048
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		105	25-150
13C7_PFUdA		102	25-150
13C8_PFOA		99	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		99	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		105	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ52513-001
Batch: 52513
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/29/2022 1015

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	08/31/2022 1222
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	08/31/2022 1222
8:2 FTS	ND		1	8.0	1.6	ng/L	08/31/2022 1222
6:2 FTS	**5.1**	**J**	**1**	**8.0**	**2.0**	**ng/L**	**08/31/2022 1222**
4:2 FTS	ND		1	8.0	0.87	ng/L	08/31/2022 1222
GenX	ND		1	8.0	2.1	ng/L	08/31/2022 1222
ADONA	ND		1	8.0	0.48	ng/L	08/31/2022 1222
EtFOSAA	ND		1	8.0	0.75	ng/L	08/31/2022 1222
MeFOSAA	ND		1	8.0	0.93	ng/L	08/31/2022 1222
PFBS	ND		1	4.0	0.41	ng/L	08/31/2022 1222
PFDS	ND		1	4.0	0.78	ng/L	08/31/2022 1222
PFHpS	ND		1	4.0	0.50	ng/L	08/31/2022 1222
PFNS	ND		1	4.0	0.71	ng/L	08/31/2022 1222
PFOSA	ND		1	4.0	0.61	ng/L	08/31/2022 1222
PFPeS	ND		1	4.0	0.59	ng/L	08/31/2022 1222
PFHxS	ND		1	4.0	0.55	ng/L	08/31/2022 1222
PFBA	ND		1	4.0	0.60	ng/L	08/31/2022 1222
PFDA	ND		1	4.0	0.52	ng/L	08/31/2022 1222
PFDoA	ND		1	4.0	0.47	ng/L	08/31/2022 1222
PFHpA	ND		1	4.0	0.45	ng/L	08/31/2022 1222
PFHxA	ND		1	4.0	0.69	ng/L	08/31/2022 1222
PFNA	ND		1	4.0	0.46	ng/L	08/31/2022 1222
PFOA	ND		1	4.0	0.83	ng/L	08/31/2022 1222
PFPeA	ND		1	4.0	0.54	ng/L	08/31/2022 1222
PFTeDA	ND		1	4.0	0.60	ng/L	08/31/2022 1222
PFTrDA	ND		1	4.0	0.53	ng/L	08/31/2022 1222
PFUdA	ND		1	4.0	0.63	ng/L	08/31/2022 1222
PFOS	ND		1	4.0	2.0	ng/L	08/31/2022 1222

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		101	25-150
13C2_6:2FTS		122	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		104	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		109	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		107	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ52513-001
Batch: 52513
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/29/2022 1015

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		102	25-150
13C7_PFUdA		104	25-150
13C8_PFOA		109	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ52513-002
Batch: 52513
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/29/2022 1015

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	98	50-150	08/31/2022 1233
11Cl-PF3OUdS	15	13		1	88	50-150	08/31/2022 1233
8:2 FTS	15	16		1	107	50-150	08/31/2022 1233
6:2 FTS	15	15		1	100	50-150	08/31/2022 1233
4:2 FTS	15	17		1	111	50-150	08/31/2022 1233
GenX	32	34		1	107	50-150	08/31/2022 1233
ADONA	15	14		1	92	50-150	08/31/2022 1233
EtFOSAA	16	16		1	98	50-150	08/31/2022 1233
MeFOSAA	16	15		1	97	50-150	08/31/2022 1233
PFBS	14	14		1	98	50-150	08/31/2022 1233
PFDS	15	14		1	90	50-150	08/31/2022 1233
PFHpS	15	15		1	99	50-150	08/31/2022 1233
PFNS	15	14		1	93	50-150	08/31/2022 1233
PFOSA	16	16		1	99	50-150	08/31/2022 1233
PFPeS	15	15		1	98	50-150	08/31/2022 1233
PFHxS	15	14		1	98	50-150	08/31/2022 1233
PFBA	16	16		1	101	50-150	08/31/2022 1233
PFDA	16	15		1	96	50-150	08/31/2022 1233
PFDoA	16	16		1	101	50-150	08/31/2022 1233
PFHpA	16	15		1	96	50-150	08/31/2022 1233
PFHxA	16	16		1	100	50-150	08/31/2022 1233
PFNA	16	15		1	95	50-150	08/31/2022 1233
PFOA	16	16		1	102	50-150	08/31/2022 1233
PFPeA	16	15		1	96	50-150	08/31/2022 1233
PFTeDA	16	16		1	100	50-150	08/31/2022 1233
PFTrDA	16	17		1	108	50-150	08/31/2022 1233
PFUdA	16	16		1	98	50-150	08/31/2022 1233
PFOS	15	15		1	102	50-150	08/31/2022 1233

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		92	25-150
13C2_6:2FTS		111	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		103	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		104	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		105	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ52513-002
Batch: 52513
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/29/2022 1015

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		108	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		105	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCSD

Sample ID: XQ52513-003
Batch: 52513
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/29/2022 1015

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	15	14		1	95	2.7	50-150	30	08/31/2022 1244
11Cl-PF3OUdS	15	13		1	84	4.1	50-150	30	08/31/2022 1244
8:2 FTS	15	17		1	108	1.3	50-150	30	08/31/2022 1244
6:2 FTS	15	15		1	96	4.5	50-150	30	08/31/2022 1244
4:2 FTS	15	15		1	99	12	50-150	30	08/31/2022 1244
GenX	32	34		1	106	0.83	50-150	30	08/31/2022 1244
ADONA	15	14		1	92	0.24	50-150	30	08/31/2022 1244
EtFOSAA	16	15		1	97	1.6	50-150	30	08/31/2022 1244
MeFOSAA	16	16		1	98	0.86	50-150	30	08/31/2022 1244
PFBS	14	14		1	99	1.5	50-150	30	08/31/2022 1244
PFDS	15	15		1	98	7.9	50-150	30	08/31/2022 1244
PFHpS	15	15		1	102	2.5	50-150	30	08/31/2022 1244
PFNS	15	14		1	94	0.88	50-150	30	08/31/2022 1244
PFOSA	16	16		1	101	2.0	50-150	30	08/31/2022 1244
PFPeS	15	15		1	98	0.65	50-150	30	08/31/2022 1244
PFHxS	15	14		1	99	0.84	50-150	30	08/31/2022 1244
PFBA	16	16		1	102	0.30	50-150	30	08/31/2022 1244
PFDA	16	17		1	104	7.5	50-150	30	08/31/2022 1244
PFDoA	16	16		1	101	0.13	50-150	30	08/31/2022 1244
PFHpA	16	17		1	105	8.6	50-150	30	08/31/2022 1244
PFHxA	16	16		1	98	2.4	50-150	30	08/31/2022 1244
PFNA	16	16		1	97	2.2	50-150	30	08/31/2022 1244
PFOA	16	16		1	97	5.0	50-150	30	08/31/2022 1244
PFPeA	16	16		1	101	5.1	50-150	30	08/31/2022 1244
PFTeDA	16	16		1	101	1.3	50-150	30	08/31/2022 1244
PFTrDA	16	17		1	106	2.4	50-150	30	08/31/2022 1244
PFUdA	16	15		1	95	3.4	50-150	30	08/31/2022 1244
PFOS	15	15		1	100	2.3	50-150	30	08/31/2022 1244

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		99	25-150
13C2_6:2FTS		109	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		100	25-150
13C3_PFBS		99	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		102	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		104	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCSD

Sample ID: XQ52513-003
Batch: 52513
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/29/2022 1015

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		98	25-150
13C7_PFUdA		99	25-150
13C8_PFOA		104	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		102	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 137883

Client: Arcadis	Report to Contact: Marina Samp	Telephone No. / E-mail: 248-994-2318 / marina.samp@arcadis.com
Address: 28550 Cabot Dr. Ste. 500	Sampler's Signature: x Anyssa Mandich	Quote No.
City: Novi / State: MI / Zip Code: 48377	Printed Name: Anyssa Mandich	Page: 1 of 1
Project Name: RACER Lansing PFAS Delineation		
Project No.: 30112892.0370B	P.O. No.	

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Customer Sample Identification	Matrix: Aqueous	Solid	Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	Zn Ac/ NaOH	Other	Analysis (Attach list if more space is needed): PFAS EPA 537M (modified) (ANT) (24)	Remarks / Cooler ID.
MichAve-MH-3_080222	8/2/22	0840	6	X			6							6	MS/MSD
MichAve-MH-4_080222	8/2/22	0910	6	X			2							2	
Verlinden-MH-5_080222	8/2/22	0930	6	X			2							2	Please provide results + QC along w/ EDD for all samples
Verlinden-MH-4_080222	8/2/22	0950	6	X			2							2	
Verlinden-MH-3_080222	8/2/22	1010	6	X			2							2	
DUP-01_080222	8/2/22	—	6	X			2							2	
Verlinden-MH-2_080222	8/2/22	1035	6	X			2							2	

XH04037
KES2

Turn Around Time Required (Prior lab approval required for expedited TAT.): X Standard ☐ Rush (Specify)	Sample Disposal: ☐ Return to Client X Disposal by Lab	Possible Hazard Identification: X Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown	QC Requirements (Specify)		
1. Relinquished by: Anyssa Mandich / Arcadis	Date: 8/2/22	Time: 1730	1. Received by: FedEx	Date: 8/2/22	Time: 1730
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	Date: 8/3/22	Time: 1550	4. Laboratory received by: Allyson Greene	Date: 8/3/22	Time: 1550
Note: All samples are retained for four weeks from receipt unless other arrangements are made.			LAB USE ONLY Received on Ice (Circle) Yes No Ice Pack	Receipt Temp: 2.0 °C	Temp Blank: 2°F ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003IN2-01

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: Arcadis Cooler Inspected by/date: KSC / 08/04/2022 Lot #: XH04037

Means of receipt: ☑ Pace ☐ Client ☐ UPS ☐ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

2.6 / 2.6 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		11. Was adequate sample volume available?
☑ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☑ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote # _____

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA, ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Document No.: ME000V3-01 Document Revised: 9/28/2020
Orig./Corrected temp. upon receipt: 2-6 / 2-6 °C
Analyst Initials: KSC

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Marina Samp

Project Name: RACER Lansing PFAS

Project Number: 30112892.0370B

Lot Number:**XH04038**

Date Completed:08/29/2022
Revision Date: 08/29/2022

Kathy Smith

08/29/2022 3:50 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Case Narrative
Arcadis U.S., Inc.
Lot Number: XH04038

This report supersedes and replaces any prior reports issued under this lot number.

This report was revised August 29, 2022 to update sample IDs.

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Samples XH04038-001, XH04038-002, XH04038-003, XH04038-004, XH04038-005, XH04038-006, XH04038-007, XH04038-008 had surrogates recovered above the acceptance limits. There were no detections above the LOQ for these compounds in the sample and the data has been reported.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XH04038

Project Name: RACER Lansing PFAS

Project Number: 30112892.0370B

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	Osborn-MH-1_080222	Aqueous	08/02/2022 1105	08/03/2022
002	Osborn-CB-2_080222	Aqueous	08/02/2022 1125	08/03/2022
003	Osborn-CB-2_Drain_080222	Aqueous	08/02/2022 1135	08/03/2022
004	P3-MH-284_080222	Aqueous	08/02/2022 1345	08/03/2022
005	P2-MH-30_080222	Aqueous	08/02/2022 1450	08/03/2022
006	P2-MH-2_080222	Aqueous	08/02/2022 1510	08/03/2022
007	FB-01_080222	Aqueous	08/02/2022 1542	08/03/2022
008	EB-01_080222	Aqueous	08/02/2022 1542	08/03/2022

(8 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XH04038

Project Name: RACER Lansing PFAS

Project Number: 30112892.0370B

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	Osborn-MH-1_080222	Aqueous	PFBS	PFAS by ID	1.3	J	ng/L	6
001	Osborn-MH-1_080222	Aqueous	PFPeS	PFAS by ID	0.61	J	ng/L	6
001	Osborn-MH-1_080222	Aqueous	PFHxS	PFAS by ID	1.7	J	ng/L	6
001	Osborn-MH-1_080222	Aqueous	PFBA	PFAS by ID	12		ng/L	6
001	Osborn-MH-1_080222	Aqueous	PFDA	PFAS by ID	0.79	J	ng/L	6
001	Osborn-MH-1_080222	Aqueous	PFHpA	PFAS by ID	9.0		ng/L	6
001	Osborn-MH-1_080222	Aqueous	PFHxA	PFAS by ID	13		ng/L	6
001	Osborn-MH-1_080222	Aqueous	PFNA	PFAS by ID	1.9	J	ng/L	6
001	Osborn-MH-1_080222	Aqueous	PFOA	PFAS by ID	29		ng/L	6
001	Osborn-MH-1_080222	Aqueous	PFPeA	PFAS by ID	9.9		ng/L	6
001	Osborn-MH-1_080222	Aqueous	PFOS	PFAS by ID	9.6		ng/L	6
002	Osborn-CB-2_080222	Aqueous	PFBS	PFAS by ID	0.95	J	ng/L	8
002	Osborn-CB-2_080222	Aqueous	PFOSA	PFAS by ID	0.94	J	ng/L	8
002	Osborn-CB-2_080222	Aqueous	PFHxS	PFAS by ID	1.1	J	ng/L	8
002	Osborn-CB-2_080222	Aqueous	PFBA	PFAS by ID	13		ng/L	8
002	Osborn-CB-2_080222	Aqueous	PFDA	PFAS by ID	3.6	J	ng/L	8
002	Osborn-CB-2_080222	Aqueous	PFHpA	PFAS by ID	8.8		ng/L	8
002	Osborn-CB-2_080222	Aqueous	PFHxA	PFAS by ID	13		ng/L	8
002	Osborn-CB-2_080222	Aqueous	PFNA	PFAS by ID	4.9		ng/L	8
002	Osborn-CB-2_080222	Aqueous	PFOA	PFAS by ID	27		ng/L	8
002	Osborn-CB-2_080222	Aqueous	PFPeA	PFAS by ID	12		ng/L	8
002	Osborn-CB-2_080222	Aqueous	PFOS	PFAS by ID	25		ng/L	8
003	Osborn-CB-2_Drain_080222	Aqueous	PFBS	PFAS by ID	1.1	J	ng/L	10
003	Osborn-CB-2_Drain_080222	Aqueous	PFHxS	PFAS by ID	0.90	J	ng/L	10
003	Osborn-CB-2_Drain_080222	Aqueous	PFBA	PFAS by ID	12		ng/L	10
003	Osborn-CB-2_Drain_080222	Aqueous	PFDA	PFAS by ID	3.9	J	ng/L	10
003	Osborn-CB-2_Drain_080222	Aqueous	PFHpA	PFAS by ID	8.1		ng/L	10
003	Osborn-CB-2_Drain_080222	Aqueous	PFHxA	PFAS by ID	13		ng/L	10
003	Osborn-CB-2_Drain_080222	Aqueous	PFNA	PFAS by ID	4.7		ng/L	10
003	Osborn-CB-2_Drain_080222	Aqueous	PFOA	PFAS by ID	25		ng/L	10
003	Osborn-CB-2_Drain_080222	Aqueous	PFPeA	PFAS by ID	9.9		ng/L	10
003	Osborn-CB-2_Drain_080222	Aqueous	PFOS	PFAS by ID	25		ng/L	10
004	P3-MH-284_080222	Aqueous	6:2 FTS	PFAS by ID	2.4	JQ	ng/L	12
004	P3-MH-284_080222	Aqueous	PFBA	PFAS by ID	3.9	J	ng/L	12
004	P3-MH-284_080222	Aqueous	PFHpA	PFAS by ID	1.0	J	ng/L	12
004	P3-MH-284_080222	Aqueous	PFNA	PFAS by ID	0.54	J	ng/L	12
004	P3-MH-284_080222	Aqueous	PFOA	PFAS by ID	1.8	J	ng/L	12
004	P3-MH-284_080222	Aqueous	PFPeA	PFAS by ID	1.3	J	ng/L	12
004	P3-MH-284_080222	Aqueous	PFOS	PFAS by ID	16		ng/L	12
005	P2-MH-30_080222	Aqueous	PFBS	PFAS by ID	11		ng/L	14
005	P2-MH-30_080222	Aqueous	PFHxS	PFAS by ID	2.8	J	ng/L	14
005	P2-MH-30_080222	Aqueous	PFBA	PFAS by ID	11		ng/L	14
005	P2-MH-30_080222	Aqueous	PFHpA	PFAS by ID	6.2		ng/L	14

Detection Summary (Continued)

Lot Number: XH04038

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
005	P2-MH-30_080222	Aqueous	PFHxA	PFAS by ID	9.7		ng/L	14
005	P2-MH-30_080222	Aqueous	PFNA	PFAS by ID	1.3	J	ng/L	14
005	P2-MH-30_080222	Aqueous	PFOA	PFAS by ID	14		ng/L	14
005	P2-MH-30_080222	Aqueous	PFPeA	PFAS by ID	8.4		ng/L	14
005	P2-MH-30_080222	Aqueous	PFOS	PFAS by ID	17		ng/L	14
006	P2-MH-2_080222	Aqueous	PFBS	PFAS by ID	6.9		ng/L	16
006	P2-MH-2_080222	Aqueous	PFHxS	PFAS by ID	3.2	J	ng/L	16
006	P2-MH-2_080222	Aqueous	PFBA	PFAS by ID	11		ng/L	16
006	P2-MH-2_080222	Aqueous	PFDA	PFAS by ID	0.80	J	ng/L	16
006	P2-MH-2_080222	Aqueous	PFHpA	PFAS by ID	6.4		ng/L	16
006	P2-MH-2_080222	Aqueous	PFHxA	PFAS by ID	10		ng/L	16
006	P2-MH-2_080222	Aqueous	PFNA	PFAS by ID	1.5	J	ng/L	16
006	P2-MH-2_080222	Aqueous	PFOA	PFAS by ID	14		ng/L	16
006	P2-MH-2_080222	Aqueous	PFPeA	PFAS by ID	8.5		ng/L	16
006	P2-MH-2_080222	Aqueous	PFOS	PFAS by ID	14		ng/L	16

(58 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-001**

Description: **Osborn-MH-1_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1105** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 2014	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	0.66	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.9	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.9	0.86	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	0.74	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	0.92	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.3**	**J**	**4.0**	**0.41**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.77	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.61**	**J**	**4.0**	**0.59**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.7**	**J**	**4.0**	**0.54**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**12**		**4.0**	**0.59**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.79**	**J**	**4.0**	**0.52**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**9.0**		**4.0**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**13**		**4.0**	**0.68**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.9**	**J**	**4.0**	**0.46**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**29**		**4.0**	**0.82**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**9.9**		**4.0**	**0.54**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.62	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**9.6**		**4.0**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	201	25-150
13C2_6:2FTS	N	307	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		95	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		67	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		97	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		108	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-001**

Description: **Osborn-MH-1_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1105** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		106	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		107	25-150
d3-MeFOSAA		111	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-002**

Description: **Osborn-CB-2_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1125** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 2025	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	0.66	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.9	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.9	0.86	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	0.74	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	0.92	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.95**	**J**	**4.0**	**0.41**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.77	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.94**	**J**	**4.0**	**0.61**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.1**	**J**	**4.0**	**0.54**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**13**		**4.0**	**0.59**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**3.6**	**J**	**4.0**	**0.52**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**8.8**		**4.0**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**13**		**4.0**	**0.68**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**4.9**		**4.0**	**0.46**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**27**		**4.0**	**0.82**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**12**		**4.0**	**0.54**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.62	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**25**		**4.0**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	206	25-150
13C2_6:2FTS	N	249	25-150
13C2_8:2FTS		119	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		110	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		78	25-150
13C4_PFHpA		115	25-150
13C5_PFHxA		112	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		110	25-150
13C7_PFUdA		109	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-002**

Description: **Osborn-CB-2_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1125** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		102	25-150
d5-EtFOSAA		109	25-150
d3-MeFOSAA		112	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-003**

Description: **Osborn-CB-2_Drain_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1135** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 2058	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.2	0.49	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.2	0.68	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.2	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.2	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.2	0.90	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.2	0.50	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.2	0.77	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.2	0.96	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.1**	**J**	**4.1**	**0.42**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	0.80	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	0.51	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	0.73	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	0.63	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	0.61	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.90**	**J**	**4.1**	**0.57**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**12**		**4.1**	**0.61**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**3.9**	**J**	**4.1**	**0.54**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	0.48	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**8.1**		**4.1**	**0.46**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**13**		**4.1**	**0.70**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**4.7**		**4.1**	**0.47**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**25**		**4.1**	**0.85**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**9.9**		**4.1**	**0.56**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	0.61	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	0.54	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	0.64	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**25**		**4.1**	**2.1**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	178	25-150
13C2_6:2FTS	N	322	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		77	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-003**

Description: **Osborn-CB-2_Drain_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1135** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		98	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-004**

Description: **P3-MH-284_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1345** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 2109	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.3	0.50	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.3	0.69	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.3	1.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**2.4**	**JQ**	**8.3**	**2.1**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.3	0.91	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.3	2.2	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.3	0.50	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.3	0.78	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.3	0.97	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.1	0.43	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	0.81	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	0.52	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	0.74	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	0.64	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	0.62	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.1	0.57	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.9**	**J**	**4.1**	**0.62**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.1	0.54	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	0.49	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.0**	**J**	**4.1**	**0.46**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.1	0.71	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.54**	**J**	**4.1**	**0.48**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.8**	**J**	**4.1**	**0.86**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.3**	**J**	**4.1**	**0.56**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	0.62	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	0.55	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	0.65	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**16**		**4.1**	**2.1**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	264	25-150
13C2_6:2FTS	N	314	25-150
13C2_8:2FTS		143	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		84	25-150
13C3_PFBS		92	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		87	25-150
13C4_PFBA		50	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		80	25-150
13C6_PFDA		112	25-150
13C7_PFUdA		109	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-004**

Description: **P3-MH-284_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1345** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		106	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		120	25-150
d3-MeFOSAA		122	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-005**

Description: **P2-MH-30_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1450** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 2120	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	0.66	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.9	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.9	0.86	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	0.74	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	0.92	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**11**		**4.0**	**0.41**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.77	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.8**	**J**	**4.0**	**0.54**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**4.0**	**0.59**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.52	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.2**		**4.0**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**9.7**		**4.0**	**0.68**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.3**	**J**	**4.0**	**0.46**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**14**		**4.0**	**0.82**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**8.4**		**4.0**	**0.54**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.62	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**17**		**4.0**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	257	25-150
13C2_6:2FTS	N	298	25-150
13C2_8:2FTS	N	169	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		90	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		79	25-150
13C4_PFBA		42	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		88	25-150
13C5_PFPeA		68	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		116	25-150

LOQ = Limit of Quantitation
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DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-005**

Description: **P2-MH-30_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1450** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		118	25-150
d3-MeFOSAA		125	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-006**

Description: **P2-MH-2_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1510** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 2131	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	0.65	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.9	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.9	0.86	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	0.74	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	0.92	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**6.9**		**3.9**	**0.41**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.77	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.60	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.2**	**J**	**3.9**	**0.54**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.9**	**0.59**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.80**	**J**	**3.9**	**0.52**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.4**		**3.9**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**10**		**3.9**	**0.68**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.5**	**J**	**3.9**	**0.45**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**14**		**3.9**	**0.82**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**8.5**		**3.9**	**0.54**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.62	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**14**		**3.9**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	273	25-150
13C2_6:2FTS	N	319	25-150
13C2_8:2FTS	N	191	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		84	25-150
13C3_PFBS		90	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		79	25-150
13C4_PFBA		45	25-150
13C4_PFHpA		102	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		71	25-150
13C6_PFDA		115	25-150
13C7_PFUdA		115	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**		Laboratory ID: **XH04038-006**
Description: **P2-MH-2_080222**		Matrix: **Aqueous**
Date Sampled: **08/02/2022 1510**	Project Name: **RACER Lansing PFAS**	
Date Received: **08/03/2022**	Project Number: **30112892.0370B**	

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		108	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		123	25-150
d3-MeFOSAA		131	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-007**

Description: **FB-01_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1542** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 2142	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	0.66	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.0	0.87	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	0.75	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	0.93	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.0	0.41	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.78	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.50	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.71	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.61	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.59	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.0	0.55	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.52	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.47	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.0	0.45	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.0	0.69	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	0.46	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.0	0.83	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.0	0.54	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.60	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.53	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.63	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.0	2.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		106	25-150
13C2_6:2FTS	N	490	25-150
13C2_8:2FTS		104	25-150
13C2_PFDoA		96	25-150
13C2_PFTeDA		85	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		106	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-007**

Description: **FB-01_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1542** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		95	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		102	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-008**

Description: **EB-01_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1542** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	08/24/2022 2153	ALM	08/24/2022 0857	52048

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.3	0.50	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.3	0.68	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.3	1.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.3	2.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.3	0.90	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.3	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.3	0.50	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.3	0.78	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.3	0.96	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.1	0.43	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	0.80	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	0.52	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	0.74	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	0.63	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	0.61	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.1	0.57	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.1	0.62	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.1	0.54	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	0.49	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.1	0.46	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.1	0.71	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.1	0.48	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.1	0.86	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.1	0.56	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	0.62	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	0.55	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	0.65	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.1	2.1	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		110	25-150
13C2_6:2FTS	N	284	25-150
13C2_8:2FTS		105	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		98	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		88	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		111	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		108	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH04038-008**

Description: **EB-01_080222** Matrix: **Aqueous**

Date Sampled: **08/02/2022 1542** Project Name: **RACER Lansing PFAS**

Date Received: **08/03/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		102	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ52048-001
Batch: 52048
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	08/24/2022 1803
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	08/24/2022 1803
8:2 FTS	ND		1	8.0	1.6	ng/L	08/24/2022 1803
6:2 FTS	ND		1	8.0	2.0	ng/L	08/24/2022 1803
4:2 FTS	ND		1	8.0	0.87	ng/L	08/24/2022 1803
GenX	ND		1	8.0	2.1	ng/L	08/24/2022 1803
ADONA	ND		1	8.0	0.48	ng/L	08/24/2022 1803
EtFOSAA	ND		1	8.0	0.75	ng/L	08/24/2022 1803
MeFOSAA	ND		1	8.0	0.93	ng/L	08/24/2022 1803
PFBS	ND		1	4.0	0.41	ng/L	08/24/2022 1803
PFDS	ND		1	4.0	0.78	ng/L	08/24/2022 1803
PFHpS	ND		1	4.0	0.50	ng/L	08/24/2022 1803
PFNS	ND		1	4.0	0.71	ng/L	08/24/2022 1803
PFOSA	ND		1	4.0	0.61	ng/L	08/24/2022 1803
PFPeS	ND		1	4.0	0.59	ng/L	08/24/2022 1803
PFHxS	ND		1	4.0	0.55	ng/L	08/24/2022 1803
PFBA	ND		1	4.0	0.60	ng/L	08/24/2022 1803
PFDA	ND		1	4.0	0.52	ng/L	08/24/2022 1803
PFDoA	ND		1	4.0	0.47	ng/L	08/24/2022 1803
PFHpA	ND		1	4.0	0.45	ng/L	08/24/2022 1803
PFHxA	ND		1	4.0	0.69	ng/L	08/24/2022 1803
PFNA	ND		1	4.0	0.46	ng/L	08/24/2022 1803
PFOA	ND		1	4.0	0.83	ng/L	08/24/2022 1803
PFPeA	ND		1	4.0	0.54	ng/L	08/24/2022 1803
PFTeDA	ND		1	4.0	0.60	ng/L	08/24/2022 1803
PFTrDA	ND		1	4.0	0.53	ng/L	08/24/2022 1803
PFUdA	ND		1	4.0	0.63	ng/L	08/24/2022 1803
PFOS	ND		1	4.0	2.0	ng/L	08/24/2022 1803

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		98	25-150
13C2_6:2FTS	N	302	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		96	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		105	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ52048-001
Batch: 52048
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		100	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		105	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		99	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ52048-002
Batch: 52048
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	14		1	94	50-150	08/24/2022 1813
11Cl-PF3OUdS	15	13		1	86	50-150	08/24/2022 1813
8:2 FTS	15	16		1	102	50-150	08/24/2022 1813
6:2 FTS	15	14		1	94	50-150	08/24/2022 1813
4:2 FTS	15	15		1	101	50-150	08/24/2022 1813
GenX	32	35		1	109	50-150	08/24/2022 1813
ADONA	15	14		1	96	50-150	08/24/2022 1813
EtFOSAA	16	14		1	89	50-150	08/24/2022 1813
MeFOSAA	16	15		1	95	50-150	08/24/2022 1813
PFBS	14	14		1	100	50-150	08/24/2022 1813
PFDS	15	14		1	91	50-150	08/24/2022 1813
PFHpS	15	15		1	96	50-150	08/24/2022 1813
PFNS	15	15		1	96	50-150	08/24/2022 1813
PFOSA	16	16		1	98	50-150	08/24/2022 1813
PFPeS	15	15		1	97	50-150	08/24/2022 1813
PFHxS	15	14		1	95	50-150	08/24/2022 1813
PFBA	16	15		1	95	50-150	08/24/2022 1813
PFDA	16	16		1	102	50-150	08/24/2022 1813
PFDoA	16	15		1	96	50-150	08/24/2022 1813
PFHpA	16	15		1	97	50-150	08/24/2022 1813
PFHxA	16	16		1	97	50-150	08/24/2022 1813
PFNA	16	15		1	94	50-150	08/24/2022 1813
PFOA	16	15		1	95	50-150	08/24/2022 1813
PFPeA	16	16		1	101	50-150	08/24/2022 1813
PFTeDA	16	15		1	95	50-150	08/24/2022 1813
PFTrDA	16	14		1	85	50-150	08/24/2022 1813
PFUdA	16	14		1	88	50-150	08/24/2022 1813
PFOS	15	15		1	98	50-150	08/24/2022 1813

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		105	25-150
13C2_6:2FTS	N	409	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		109	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ52048-002
Batch: 52048
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 08/24/2022 0857

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		104	25-150
13C7_PFUdA		108	25-150
13C8_PFOA		111	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		107	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 137884

Client: Arcadis	Report to Contact: Marina Samp	Telephone No. / E-mail: 248-994-2318 / marina.samp@arcadis.com	Quote No.
Address: 28550 Cabot Dr., Ste 500	Sampler's Signature: x Ryan Mandich	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Novi State: MI Zip Code: 48377	Printed Name: Anyssa Mandich		XH04038
Project Name: RACER Lansing PFAS Delineation			KESZ
Project No.: 30112892.0370B	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab / Composite	Matrix: Aqueous	Matrix: Solid non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	SDS Kit	Field Filtered	PFAS EPA 537 M (Mod, List of 18)	Remarks / Cooler I.D.
Osborn-MH-1_080222	8/2/22	1105	G	X		2							2	Please provide results + QC along w/ EDD for all Samples
Osborn-CB-2_080222	8/2/22	1125	G	X		2							2	
Osborn-CB-2_Prim_080222	8/2/22	1135	G	X		2							2	
P3-MH-284_080222	8/2/22	1345	G	X		2							2	
P2-MH-30_080222	8/2/22	1450	G	X		2							2	
P2-MH-2_080222	8/2/22	1510	G	X		2							2	
FB-01_080222	8/2/22	1542	G	X		2							2	
EB-01_080222	8/2/22	1542	G	X		2							2	

Turn Around Time Required (Prior Lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by: Anyssa Mandich/Arcadis	Date: 8/2/22	Time: 1730	1. Received by: FedEx	Date: 8/2/22	Time: 1730
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: fedex	Date: 8.3.22	Time: 1550	4. Laboratory received by: Kathryn Means	Date: 8.3.22	Time: 1550

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on ice (Circle) Yes No Ice Pack — Receipt Temp: 1.9 °C — Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: Arcadis — Cooler Inspected by/date: KSC / 08/04/2022 — Lot #: XH04038

Means of receipt: ✓ Pace ☐ Client ☐ UPS ☐ FedEx ☐ Other: ____

☐ Yes	✓ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	✓ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt: 1.9 / 1.9 °C NA / NA °C NA / NA °C NA / NA °C — %Solid Snap-Cup ID: NA

Method: ✓ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C

Method of coolant: ✓ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

✓ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
✓ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
✓ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
✓ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
✓ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
✓ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
✓ Yes	☐ No		9. Were tests to be performed listed on the COC?
✓ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
✓ Yes	☐ No		11. Was adequate sample volume available?
✓ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
✓ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	✓ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼" or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	✓ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	✓ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	✓ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	✓ No	☐ NA	18. Was the quote number listed on the container label? If yes. Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Document No.: MF0003V8-01 Document Revised: 9/20/2020

Orig./Corrected temp. upon receipt: 1.9 / 1.9 °C

Analyst Initials: ____

Qualtrax ID: 56360

Pace® Analytical Services, LLC

Page 1 of 1

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Marina Samp

Project Name: RACER Lansing PFAS

Project Number: 30112892.0370B

Lot Number:**XH13003**

Date Completed:09/23/2022

Kathy Smith

09/23/2022 4:29 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XH13003

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a DoD/DOE accredited laboratory; however, the following analyses are currently not listed on our DoD/DOE scope of accreditation: Drinking Water: pH EPA 150.1, Turbidity EPA 18.01, Metals EPA 200.7

& 200.8, Mercury EPA 245.1, Anions EPA 300.0, Cyanide EPA 335.4, Nitrates EPA 353.2, Orthophosphate & Phosphorus EPA 365.1, EDB/DBCP EPA 504.1, HPC SIMPLATE, Color SM 2120 B-2011, Alkalinity SM 2320 B-2011, Specific Conductance SM 2510 B-2011, Residue-filterable (TDS) SM 2540 C, Calcium Hardness (CaCO2) SM 3500-Ca B-2011, TRC SM 4500 Cl G-2011, pH SM 4500 H=B-2011, E.Coli, Total Coliform; Non-Potable Water: Metals EPA 200.7, Strontium EPA 200.8, Chlorate EPA 300.0, Cyanide EPA 335.4, Phenolics EPA 420.4, 2-Methyl-4,6-Dinitrophenol EPA 625.1, Propane RSK-175, Specific Conductance SM 2510 B-2011, Salinity SM250 B, Residue- total SM 2540 B, Sulfite SM 4500 SO32- B-2011, Amenable Cyanide SM 4500-CN- G-2011, BOD & CBOD SM 5210 B, MBAS SM 5540 C-2011; Solid and Chemical Materials: Boron & Titanium SW-846 6010D, Boron, Molybdenum, & Titanium SW-846 6020B, Alcohols & Glycols SW-846 8015C, Pentachlorophenol SW-846 8151A, Ethyl Acetate, Hexane, & n-Hexane SW-846 8260D, SVOC 1,4-Dioxane, 3&4-Methylphenols, 4-Dimethyl aminoazobenzene, 1,4-Naphthoquinone, 3,5-Dinitroaniline, PETN SW-846 8270E, Amenable Cyanide SW-846 9012B; Boron & Titanium SW-846 6010D, Molybdenum SW-846 6020B, Ethylene Glycol SW-846 8015B, Pentachlorophenol SW-846 8151A, Chloroprene SW-846 8260B, SVOC 1,3,5-Trinitrobenzene, 1,4-Dioxane, 1,4-Naphthoquinone, 1,4-Phenylenediamine, 2,5-Dinitrotoluene, 2,6-Dinitrotoluene, 3-Methylcholanthrene, 4- Aminobiphenyl, 4-Dimethyl aminoazobenzene, 4-Nitroquinoline-1-oxide, 7,12- Dimethylbenzo(a)anthracene, Chlorobenzilate, Diallate, Ethyl methanesulfonate, Isodrin, Isosafrole, Methyl methanesulfonate, n-Nitrosomethylethylamine, n-Nitrosomorpholine, n-Nitrosopiperidine, Piperonyl butoxide, Pronamide, Safrole, 3,5-Dinitroaniline, PETN SW-846 8270E, Oil & Grease SW-846 9071B.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

The method blank, laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for prep batch 53414 exceeded acceptance criteria for the following analytes: 6:2 FTS EIS. The data has been reported.

The laboratory control sample duplicate (LCSD) for prep batch 53414 exceeded acceptance criteria for the following analytes: PFTeDA. These analytes were biased high and were not detected in the samples affected; the data has been reported.

Surrogate recovery for the following sample was outside the upper control limit: XH13003-001. This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Manual Integration Summary

Arcadis U.S., Inc.

Lot Number: XH13003

Project Name: RACER Lansing PFAS

Project Number: 30112892.0370B

Where applicable, analytes for which manual integration occurred have been flagged with the following:

Qualifier	Technical Justification	Qualifier	Technical Justification	Qualifier	Technical Justification
M-01	Split peak	M-07	Low fit	M-13	Error
M-02	Peak tailing	M-08	Peak not found	M-14	Baseline
M-03	Incorrect auto integration	M-09	Analyte not Identified by the Data System	M-15	Other
M-04	Poor chromatography	M-10	Analyte misidentified by the Data System	M-16	Retention time shift
M-05	Manually assigned peak	M-11	Invalid integration	M-17	Shouldering
M-06	Wrong isomer	M-12	Wrong peak		

A summary of instances where manual integration occurred is included below:

Method	Sample	Run Number	Parameter	Qualifier
PFAS by ID SOP	XH13003-001	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XH13003-001	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XH13003-001	1	Perfluoro-n-pentanoic acid (PFPeA)	M-03
PFAS by ID SOP	XH13003-001	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XQ53414-002	1	9-chlorohexadecafluoro-3-oxanone-1-	M-03
PFAS by ID SOP	XQ53414-003	1	N-ethylperfluoro-1-	M-03
PFAS by ID SOP	XQ53414-003	1	N-methylperfluoro-1-	M-03
PFAS by ID SOP	XQ53414-002	1	N-methylperfluoro-1-	M-03
PFAS by ID SOP	XQ53414-003	1	Perfluoro-n-dodecanoic acid (PFDoA)	M-03
PFAS by ID SOP	XQ53414-002	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XQ53414-001	1	13C2_6:2FTS	M-03
PFAS by ID SOP	XQ53414-003	1	13C2_PFTeDA	M-03
PFAS by ID SOP	XQ53414-002	1	13C2_PFTeDA	M-03

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XH13003

Project Name: RACER Lansing PFAS

Project Number: 30112892.0370B

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	P2-MH-W_081222	Aqueous	08/12/2022 1050	08/13/2022

(1 sample)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XH13003

Project Name: RACER Lansing PFAS

Project Number: 30112892.0370B

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	P2-MH-W_081222	Aqueous	PFBS	PFAS by ID	1.1	J	ng/L	6
001	P2-MH-W_081222	Aqueous	PFHxS	PFAS by ID	1.5	JM-03	ng/L	6
001	P2-MH-W_081222	Aqueous	PFBA	PFAS by ID	3.3	J	ng/L	6
001	P2-MH-W_081222	Aqueous	PFOA	PFAS by ID	2.8	JM-03	ng/L	6
001	P2-MH-W_081222	Aqueous	PFPeA	PFAS by ID	1.5	JM-03	ng/L	6
001	P2-MH-W_081222	Aqueous	PFOS	PFAS by ID	2.8	JM-03	ng/L	6

(6 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH13003-001**

Description: **P2-MH-W_081222** Matrix: **Aqueous**

Date Sampled: **08/12/2022 1050** Project Name: **RACER Lansing PFAS**

Date Received: **08/13/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	09/20/2022 1739	LAB	09/07/2022 0918	53414

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	LOD	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	3.8	U	7.6	3.8	1.9	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	3.8	U	7.6	3.8	1.9	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	3.8	U	7.6	3.8	1.9	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	3.8	UQ	7.6	3.8	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	3.8	UQ	7.6	3.8	1.9	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	3.8	U	7.6	3.8	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	3.8	U	7.6	3.8	1.9	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	3.8	U	7.6	3.8	1.9	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	3.8	U	7.6	3.8	1.9	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.1**	**J**	**3.8**	1.9	**0.95**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.5**	**JM-03**	**3.8**	1.9	**0.95**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.3**	**J**	**3.8**	1.9	**0.95**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.8**	**JM-03**	**3.8**	1.9	**0.95**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.5**	**JM-03**	**3.8**	1.9	**0.95**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	1.9	UL	3.8	1.9	0.95	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	1.9	U	3.8	1.9	0.95	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.8**	**JM-03**	**3.8**	1.9	**0.95**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	204	50-150
13C2_6:2FTS	N	413	50-150
13C2_8:2FTS		119	50-150
13C2_PFDoA		93	50-150
13C2_PFTeDA		105	50-150
13C3_PFBS		106	50-150
13C3_PFHxS		100	50-150
13C3-HFPO-DA		100	50-150
13C4_PFBA		67	50-150
13C4_PFHpA		105	50-150
13C5_PFHxA		105	50-150
13C5_PFPeA		98	50-150
13C6_PFDA		91	50-150
13C7_PFUdA		104	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
U = Not detected at or above the LOD
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
LOD = Limit of Detection
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XH13003-001**

Description: **P2-MH-W_081222** Matrix: **Aqueous**

Date Sampled: **08/12/2022 1050** Project Name: **RACER Lansing PFAS**

Date Received: **08/13/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		117	50-150
13C8_PFOS		112	50-150
13C8_PFOSA		103	50-150
13C9_PFNA		101	50-150
d5-EtFOSAA		106	50-150
d3-MeFOSAA		114	50-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
U = Not detected at or above the LOD	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis	LOD = Limit of Detection		S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ53414-001
Batch: 53414
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/07/2022 0918

Parameter	Result	Q	Dil	LOQ	LOD	DL	Units	Analysis Date
9Cl-PF3ONS	4.0	U	1	8.0	4.0	2.0	ng/L	09/20/2022 1707
11Cl-PF3OUdS	4.0	U	1	8.0	4.0	2.0	ng/L	09/20/2022 1707
8:2 FTS	4.0	U	1	8.0	4.0	2.0	ng/L	09/20/2022 1707
6:2 FTS	4.0	U	1	8.0	4.0	2.0	ng/L	09/20/2022 1707
4:2 FTS	4.0	U	1	8.0	4.0	2.0	ng/L	09/20/2022 1707
GenX	4.0	U	1	8.0	4.0	2.0	ng/L	09/20/2022 1707
ADONA	4.0	U	1	8.0	4.0	2.0	ng/L	09/20/2022 1707
EtFOSAA	4.0	U	1	8.0	4.0	2.0	ng/L	09/20/2022 1707
MeFOSAA	4.0	U	1	8.0	4.0	2.0	ng/L	09/20/2022 1707
PFBS	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFDS	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFHpS	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFNS	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFOSA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFPeS	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFHxS	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFBA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFDA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFDoA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFHpA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFHxA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFNA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFOA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFPeA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFTeDA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFTrDA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFUdA	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707
PFOS	2.0	U	1	4.0	2.0	1.0	ng/L	09/20/2022 1707

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		116	50-150
13C2_6:2FTS	M-03N	325	50-150
13C2_8:2FTS		135	50-150
13C2_PFDoA		92	50-150
13C2_PFTeDA		97	50-150
13C3_PFBS		111	50-150
13C3_PFHxS		98	50-150
13C3-HFPO-DA		93	50-150
13C4_PFBA		104	50-150
13C4_PFHpA		101	50-150
13C5_PFHxA		98	50-150
13C5_PFPeA		98	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ53414-001
Batch: 53414
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/07/2022 0918

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		93	50-150
13C7_PFUdA		103	50-150
13C8_PFOA		117	50-150
13C8_PFOS		107	50-150
13C8_PFOSA		97	50-150
13C9_PFNA		102	50-150
d5-EtFOSAA		100	50-150
d3-MeFOSAA		103	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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PFAS by LC/MS/MS - LCS

Sample ID: XQ53414-002
Batch: 53414
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/07/2022 0918

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15	M-03	1	102	50-150	09/20/2022 1718
11Cl-PF3OUdS	15	13		1	89	50-150	09/20/2022 1718
8:2 FTS	15	14		1	94	67-138	09/20/2022 1718
6:2 FTS	15	16		1	105	64-140	09/20/2022 1718
4:2 FTS	15	14		1	96	63-143	09/20/2022 1718
GenX	32	38		1	118	50-150	09/20/2022 1718
ADONA	15	17		1	115	50-150	09/20/2022 1718
EtFOSAA	16	20		1	126	61-135	09/20/2022 1718
MeFOSAA	16	15	M-03	1	95	65-136	09/20/2022 1718
PFBS	14	15		1	107	72-130	09/20/2022 1718
PFDS	15	16		1	107	53-142	09/20/2022 1718
PFHpS	15	16		1	102	69-134	09/20/2022 1718
PFNS	15	16		1	103	69-127	09/20/2022 1718
PFOSA	16	18		1	110	67-137	09/20/2022 1718
PFPeS	15	18		1	122	71-127	09/20/2022 1718
PFHxS	15	16		1	108	68-131	09/20/2022 1718
PFBA	16	17		1	109	73-129	09/20/2022 1718
PFDA	16	18		1	111	71-129	09/20/2022 1718
PFDoA	16	17		1	108	72-134	09/20/2022 1718
PFHpA	16	18		1	114	72-130	09/20/2022 1718
PFHxA	16	17		1	103	72-129	09/20/2022 1718
PFNA	16	16		1	98	69-130	09/20/2022 1718
PFOA	16	18	M-03	1	110	71-133	09/20/2022 1718
PFPeA	16	17		1	108	72-129	09/20/2022 1718
PFTeDA	16	21		1	131	71-132	09/20/2022 1718
PFTrDA	16	16		1	103	65-144	09/20/2022 1718
PFUdA	16	17		1	103	69-133	09/20/2022 1718
PFOS	15	16		1	105	65-140	09/20/2022 1718

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		115	50-150
13C2_6:2FTS	N	307	50-150
13C2_8:2FTS		115	50-150
13C2_PFDoA		92	50-150
13C2_PFTeDA	M-03	110	50-150
13C3_PFBS		105	50-150
13C3_PFHxS		96	50-150
13C3-HFPO-DA		109	50-150
13C4_PFBA		99	50-150
13C4_PFHpA		93	50-150
13C5_PFHxA		100	50-150
13C5_PFPeA		104	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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PFAS by LC/MS/MS - LCS

Sample ID: XQ53414-002
Batch: 53414
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/07/2022 0918

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		91	50-150
13C7_PFUdA		104	50-150
13C8_PFOA		114	50-150
13C8_PFOS		100	50-150
13C8_PFOSA		101	50-150
13C9_PFNA		105	50-150
d5-EtFOSAA		87	50-150
d3-MeFOSAA		112	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCSD

Sample ID: XQ53414-003
Batch: 53414
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/07/2022 0918

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	15	15		1	99	2.2	50-150	30	09/20/2022 1729
11Cl-PF3OUdS	15	15		1	98	9.7	50-150	30	09/20/2022 1729
8:2 FTS	15	14		1	92	2.6	67-138	30	09/20/2022 1729
6:2 FTS	15	16		1	102	2.8	64-140	30	09/20/2022 1729
4:2 FTS	15	13		1	86	11	63-143	30	09/20/2022 1729
GenX	32	45		1	141	17	50-150	30	09/20/2022 1729
ADONA	15	17		1	113	1.6	50-150	30	09/20/2022 1729
EtFOSAA	16	15	M-03,+	1	91	33	61-135	30	09/20/2022 1729
MeFOSAA	16	15	M-03	1	93	2.3	65-136	30	09/20/2022 1729
PFBS	14	14		1	101	5.4	72-130	30	09/20/2022 1729
PFDS	15	15		1	94	13	53-142	30	09/20/2022 1729
PFHpS	15	16		1	102	0.16	69-134	30	09/20/2022 1729
PFNS	15	16		1	104	0.52	69-127	30	09/20/2022 1729
PFOSA	16	16		1	101	9.4	67-137	30	09/20/2022 1729
PFPeS	15	14		1	95	24	71-127	30	09/20/2022 1729
PFHxS	15	16		1	108	0.27	68-131	30	09/20/2022 1729
PFBA	16	17		1	104	4.5	73-129	30	09/20/2022 1729
PFDA	16	17		1	105	5.1	71-129	30	09/20/2022 1729
PFDoA	16	16	M-03	1	103	5.2	72-134	30	09/20/2022 1729
PFHpA	16	17		1	109	5.1	72-130	30	09/20/2022 1729
PFHxA	16	16		1	102	1.6	72-129	30	09/20/2022 1729
PFNA	16	18		1	111	12	69-130	30	09/20/2022 1729
PFOA	16	17		1	104	5.4	71-133	30	09/20/2022 1729
PFPeA	16	15		1	93	15	72-129	30	09/20/2022 1729
PFTeDA	16	22	N	1	135	2.9	71-132	30	09/20/2022 1729
PFTrDA	16	18		1	114	10	65-144	30	09/20/2022 1729
PFUdA	16	16		1	98	5.8	69-133	30	09/20/2022 1729
PFOS	15	14		1	97	8.3	65-140	30	09/20/2022 1729

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		113	50-150
13C2_6:2FTS	N	236	50-150
13C2_8:2FTS		116	50-150
13C2_PFDoA		93	50-150
13C2_PFTeDA	M-03	103	50-150
13C3_PFBS		110	50-150
13C3_PFHxS		90	50-150
13C3-HFPO-DA		90	50-150
13C4_PFBA		105	50-150
13C4_PFHpA		102	50-150
13C5_PFHxA		107	50-150
13C5_PFPeA		109	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCSD

Sample ID: XQ53414-003
Batch: 53414
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 09/07/2022 0918

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	50-150
13C7_PFUdA		106	50-150
13C8_PFOA		108	50-150
13C8_PFOS		106	50-150
13C8_PFOSA		105	50-150
13C9_PFNA		101	50-150
d5-EtFOSAA		110	50-150
d3-MeFOSAA		107	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
LOD = Limit of Detection

U = Not detected at or above the LOD
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 137885

Client: Arcadis	Report to Contact: Marina Sampe	Telephone No. / E-mail: 248-994-2318 / marina.sampe@arcadis.com	Quote No.
Address: 28550 Cabot Dr., Ste 500	Sampler's Signature: x Amyssa Mandich	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Novi	State: MI	Zip Code: 48377	Printed Name: Amyssa Mandich		XH13003
Project Name: RACER Lansing PFAS Delineation			KES2
Project No.: 30112892.0370B	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab/Composite	Matrix: Aqueous	Soil	Non-Aqueous	No of Containers by Preservative Type: Unpres	HCl	HNO3	H2SO4	NaOH	Ascorbic Acid	Zinma Acetate	PFAS EPA 537M (modified) DoD 5.3	Remarks / Cooler I.D.
P2-MH-W-081222	8/12/22	1050	G	X			2							2	Please provide results + QC along w/ EDD for all samples

Turn Around Time Required (Prior lab approval required for expedited TAT.): X Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client X Disposal by Lab

Possible Hazard Identification: X Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Amyssa Mandich / Arcadis	8/12/2022	1115	1. Received by: FedEx	8/12/2022	1115
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	08/13/22	0855	4. Laboratory receipt by: Thalia N Roberts	08/13/22	0853

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on Ice (Circle) (Yes) No Ice Pack — Receipt Temp. 3.7 °C — Temp Blank ☐ Y (✓) N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s), PINK-Field/Client Copy

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

Pace Analytical

Bottle Order (ME003OB-01)
Issuing Authority: Pace ENV - WCOL

Revised:1/7/2021
Page 1 of 1

Analysis	Matrix	# of Samples	# of bottles / sample	Total #of Bottles	Preservative	Bottle Size	Bottle Type
PFAS - QSM Table B-15	A	24	2	48	None	250mL	HDPE
1L PFAS Free Water							
2x250mL bottles for FB							

Quote: 25015 **Delivery:** FedEx

Number of COC needed: 3 **Type of COC needed:** Regular

Form Completed By: KES **Date Ordered:** 7/14/2022

Date Needed: 7/27/2022 **Number of Coolers Needed:** 2

Project Number or Name: PFAS

Contact Name: Anyssa Mandich **Phone #:**

Client Name: Arcadis

Address: 2247 N. Eifert Road
Holt, MI 48842

Special Instructions:
ship with client/use for rtn labels FedEx - 1180-9455-7
pre-printed labels
Include Return Airbills DI water Required

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: Arcadis Cooler Inspected by/date: KNR / 08/13/2022 Lot #: XE13003

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other: _____

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.7 / 3.7 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 8 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)? _____
☑ Yes	☐ No		11. Was adequate sample volume available?
☑ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☑ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote # _____

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Qualtrax ID: 56360 Pace® Analytical Services, LLC Page 1 of 1

Analytical Laboratory Report

Report ID: S41459.01(01)+QC01
Generated on 10/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S41459.01-S41459.02
Project: 30112892.04100 / Racer Lansing
Collected Date(s): 10/14/2022
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S41459.01	MW-22-154_101422	Groundwater	10/14/22 15:15
S41459.02	Trip Blank	Water	10/14/22 00:01

Analytical Laboratory Report

Lab Sample ID: S41459.01
Sample Tag: MW-22-154_101422
Collected Date/Time: 10/14/2022 15:15
Matrix: Groundwater
COC Reference: 154887

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/21/22 13:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S41459.02
Sample Tag: Trip Blank
Collected Date/Time: 10/14/2022 00:01
Matrix: Water
COC Reference: 154887

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/18/22 10:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 15:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S41459.01(01)+QC01
Generated on 10/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S41459.01-S41459.02
Project: 30112892.04100 / Racer Lansing
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

QC Report Sections

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Surrogates per QC Sample (Pages 12-13)
Internal Standards per Lab Sample (Pages 14-15)
Internal Standards per QC Sample (Pages 16-17)
Batch QC Results (Pages 18-19)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S41459.01
Sample Tag: MW-22-154_101422
Collected Date/Time: 10/14/2022 15:15
Matrix: Groundwater
COC Reference: 154887

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/21/22 13:25	221021A9	VS221021W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S41459.02

Sample Tag: Trip Blank

Collected Date/Time: 10/14/2022 00:01

Matrix: Water

COC Reference: 154887

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 15:20	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41459.02	1,4-Dioxane	SW8260B - SIM	10/20/22 15:20	221020A9

Organics - Volatiles, Prep Batch ID: VS221021W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41459.01	1,4-Dioxane	SW8260B - SIM	10/21/22 13:25	221021A9

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS221021W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
No Surrogates				

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
No Surrogates				

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
No Surrogates				

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41459.01

Sample Tag: MW-22-154_101422

Collected Date/Time: 10/14/2022 15:15

Matrix: Groundwater

COC Reference: 154887

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221021A9, Run Date: 10/21/2022 13:25, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**103.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41459.02

Sample Tag: Trip Blank

Collected Date/Time: 10/14/2022 00:01

Matrix: Water

COC Reference: 154887

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 15:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**96.2**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.9**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**88.5**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221021W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**113.4**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**113.8**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.45	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		89.7	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		85.1	70.0	130.0	5.3	30.0

Organics - Volatiles, Prep Batch ID: VS221021W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.47	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		84.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		82.8	70.0	130.0	2.1	30.0

Merit Laboratories Login Checklist

Lab Set ID: S41459
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.04100 / Racer Lansing
Submitted: 10/14/2022 16:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.3
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1 — 154881

CHAIN OF CUSTODY RECORD

Plant 6

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 517-861-0138 CELL NO.: 810-225-1928 P.O. NO.:
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.04100/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☒ OTHER 1-Week
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs	Special Instructions
41459.01	10/14/22	1515	MW-22-154_101422	GW	3		3						X	* See TAT Request *
.02	10/14/22	—	Trip Blank	GW	2		2						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis ☒ Sampler DATE 10/14/22 TIME 1615
RECEIVED BY: SIGNATURE/ORGANIZATION Merit Drop Box DATE 10/14/22 TIME 1615
RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 8.3°C

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

* Please also email results to: Patrick.Curry@arcadis.com, Alex.Villhauer@arcadis.com, and Caitlin.Cisco@arcadis.com

Analytical Laboratory Report

Supplemental Report

Report ID: S41459.01(02)+QC02
Generated on 10/26/2022
Replaces report S41459.01(01) generated on 10/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S41459.01-S41459.02
Project: 30112892.04100 / Racer Lansing
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Maya Murshak
Technical Director

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Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

VOCs added based on COC request

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

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x	Preserved from bulk sample

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Abbreviation	Description
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MSD	Matrix Spike Duplicate
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E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S41459.01	MW-22-154_101422	Groundwater	10/14/22 15:15
S41459.02	Trip Blank	Water	10/14/22 00:01

Lab Sample ID: S41459.01
Sample Tag: MW-22-154_101422
Collected Date/Time: 10/14/2022 15:15
Matrix: Groundwater
COC Reference: 154887

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/21/22 13:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

TCL Volatile Organics 8260 PAL, Method: SW5030C/8260C, Run Date: 10/26/22 05:44, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	30		ug/L	1	76-13-1	
Acetone	Not detected	20		ug/L	1	67-64-1	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
Methyl Acetate	Not detected	10		ug/L	1	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
2-Butanone (MEK)	Not detected	20		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	1		ug/L	1	75-71-8	
Chloromethane	Not detected	1		ug/L	1	74-87-3	
Vinyl chloride	1	1		ug/L	1	75-01-4	
Bromomethane	Not detected	2		ug/L	1	74-83-9	
Chloroethane	Not detected	1		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	5	1		ug/L	1	156-59-2	
Chloroform	Not detected	1		ug/L	1	67-66-3	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
Cyclohexane	Not detected	1		ug/L	1	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	10		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Methyl cyclohexane	Not detected	20		ug/L	1	108-87-2	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	

Lab Sample ID: S41459.01 (continued)

Sample Tag: MW-22-154_101422

TCL Volatile Organics 8260 PAL, Method: SW5030C/8260C, Run Date: 10/26/22 05:44, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
Dibromochloromethane	Not detected	1		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	1		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2-Dibromo-3-chloropropane	Not detected	1		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	2		ug/L	1	120-82-1	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Naphthalene	Not detected	1		ug/L	1	91-20-3	

Lab Sample ID: S41459.02
Sample Tag: Trip Blank
Collected Date/Time: 10/14/2022 00:01
Matrix: Water
COC Reference: 154887

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/18/22 10:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 15:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S41459.01(02)+QC02
Generated on 10/26/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S41459.01-S41459.02
Project: 30112892.04100 / Racer Lansing
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

QC Report Sections

Cover Page (Page 9)
Analysis Summary (Pages 10-11)
Prep Batch Summary (Page 12)
Surrogates per Lab Sample (Page 13)
Surrogates per QC Sample (Pages 14-16)
Internal Standards per Lab Sample (Pages 17-18)
Internal Standards per QC Sample (Pages 19-21)
Batch QC Results (Pages 22-27)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S41459.01
Sample Tag: MW-22-154_101422
Collected Date/Time: 10/14/2022 15:15
Matrix: Groundwater
COC Reference: 154887

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/21/22 13:25	221021A9	VS221021W1	Yes	BLK/LCS/LCSD
TCL Volatile Organics 8260 PAL	SW5030C/8260C	10/26/22 05:44	221025B9	VF221025W2	Yes	BLK/LCS/LCSD

Lab Sample ID: S41459.02
Sample Tag: Trip Blank
Collected Date/Time: 10/14/2022 00:01
Matrix: Water
COC Reference: 154887

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 15:20	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF221025W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41459.01	TCL Volatile Organics 8260 PAL	SW5030C/8260C	10/26/22 05:44	221025B9

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41459.02	1,4-Dioxane	SW8260B - SIM	10/20/22 15:20	221020A9

Organics - Volatiles, Prep Batch ID: VS221021W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41459.01	1,4-Dioxane	SW8260B - SIM	10/21/22 13:25	221021A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S41459.01

Sample Tag: MW-22-154_101422

Collected Date/Time: 10/14/2022 15:15

Matrix: Groundwater

COC Reference: 154887

Organics - Volatiles, Analysis: TCL Volatile Organics 8260 PAL

Run in Batch: 221025B9, Run Date: 10/26/2022 05:44, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**106.8**	80.0	124.0
1,2-Dichloroethane-D4		**105.3**	72.0	125.0
Toluene-D8		**100.0**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF221025W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221025B9.BLKW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 23:15, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.0**	80.0	124.0
1,2-Dichloroethane-D4		**97.3**	72.0	125.0
Toluene-D8		**98.9**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 21:58, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**103.0**	80.0	124.0
1,2-Dichloroethane-D4		**98.4**	72.0	125.0
Toluene-D8		**99.9**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221025B9.LCSDW25B, Parent Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 22:18, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**103.3**	80.0	124.0
1,2-Dichloroethane-D4		**93.4**	72.0	125.0
Toluene-D8		**100.4**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS221021W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41459.01

Sample Tag: MW-22-154_101422

Collected Date/Time: 10/14/2022 15:15

Matrix: Groundwater

COC Reference: 154887

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221021A9, Run Date: 10/21/2022 13:25, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**103.4**	50.0	200.0

Organics - Volatiles, Analysis: TCL Volatile Organics 8260 PAL

Run in Batch: 221025B9, Run Date: 10/26/2022 05:44, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**99.9**	50.0	200.0
1,4-Difluorobenzene		**100.1**	50.0	200.0
Chlorobenzene-D5		**103.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**110.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41459.02

Sample Tag: Trip Blank

Collected Date/Time: 10/14/2022 00:01

Matrix: Water

COC Reference: 154887

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 15:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF221025W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221025B9.BLKW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 23:15, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**103.0**	50.0	200.0
1,4-Difluorobenzene		**102.7**	50.0	200.0
Chlorobenzene-D5		**103.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**106.7**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 21:58, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.8**	50.0	200.0
1,4-Difluorobenzene		**102.7**	50.0	200.0
Chlorobenzene-D5		**104.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**105.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221025B9.LCSDW25B, Parent Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 22:18, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.1**	50.0	200.0
1,4-Difluorobenzene		**99.7**	50.0	200.0
Chlorobenzene-D5		**98.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.5**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**96.2**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.9**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**88.5**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221021W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**113.4**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**113.8**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**107.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF221025W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221025B9.BLKW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 23:15, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,1,2-Trichloro-1,2,2-trifluoroethane		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Carbon disulfide		ND	1.00	ug/l
Methyl Acetate		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Chloroform		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
Cyclohexane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Methyl cyclohexane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l
Bromoform		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF221025W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 221025B9.BLKW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 23:15, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 21:58, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,1,2-Trichloro-1,2,2-trifluoroethane		95.1	75.1	135.9
Acetone		95.9	29.9	161.5
Carbon disulfide		97.4	63.8	137.4
Methyl Acetate		99.2	64.7	125.4
tert-Methyl butyl ether (MTBE)		101.0	73.2	122.4
2-Butanone (MEK)		99.0	44.0	134.4
Dichlorodifluoromethane		121.3	10.0	222.8
Chloromethane		119.7	23.8	166.5
Vinyl chloride		115.5	43.5	149.1
Bromomethane		109.2	56.8	151.3
Chloroethane		103.4	53.4	149.4
Trichlorofluoromethane		107.5	59.7	151.8
1,1-Dichloroethene		97.8	69.6	139.4
Methylene chloride		103.0	73.3	121.1
trans-1,2-Dichloroethene		99.7	73.6	129.3
1,1-Dichloroethane		103.1	71.5	126.2
cis-1,2-Dichloroethene		102.5	76.6	122.1
Chloroform		102.2	78.4	124.0
1,1,1-Trichloroethane		96.6	79.4	130.9
Cyclohexane		92.5	10.0	169.1
4-Methyl-2-pentanone (MIBK)		105.1	71.6	125.2
2-Hexanone		104.5	55.4	136.9
Carbon tetrachloride		96.0	72.6	133.0
Benzene		101.8	79.9	124.9
1,2-Dichloroethane		102.5	76.0	126.3
Trichloroethene		99.6	79.7	124.2
1,2-Dichloropropane		102.8	78.6	126.4
Bromodichloromethane		102.8	80.4	128.2
Methyl cyclohexane		94.4	76.6	131.3
cis-1,3-Dichloropropene		103.2	79.8	129.9
Toluene		98.8	79.8	124.5
trans-1,3-Dichloropropene		100.1	74.0	131.3
1,1,2-Trichloroethane		102.2	78.7	123.1
Tetrachloroethene		101.6	74.5	124.5
Dibromochloromethane		99.4	74.6	127.2
1,2-Dibromoethane		99.9	70.3	133.7

Organics - Volatiles, Prep Batch ID: VF221025W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 21:58, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chlorobenzene		99.7	79.2	122.7
1,1,2,2-Tetrachloroethane		100.4	79.8	126.3
Ethylbenzene		99.0	79.5	129.1
p,m-Xylene		99.8	79.4	132.2
o-Xylene		97.0	80.2	131.0
Styrene		100.3	69.5	126.7
Isopropylbenzene		97.6	74.4	121.5
Bromoform		99.5	69.4	128.0
1,3-Dichlorobenzene		97.2	77.0	131.3
1,4-Dichlorobenzene		97.8	20.7	137.7
1,2-Dichlorobenzene		98.2	10.0	166.2
1,2-Dibromo-3-chloropropane		95.9	21.2	189.4
1,2,4-Trichlorobenzene		100.1	27.4	143.4
n-Propylbenzene		99.9	82.0	130.7
Naphthalene		99.1	32.9	135.8

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221025B9.LCSDW25B, Parent Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 22:18, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloro-1,2,2-trifluoroethane		93.9	75.1	135.9	1.3	30.0
Acetone		89.3	29.9	161.5	7.0	30.0
Carbon disulfide		95.4	63.8	137.4	2.1	30.0
Methyl Acetate		95.5	64.7	125.4	3.7	30.0
tert-Methyl butyl ether (MTBE)		99.0	73.2	122.4	2.0	30.0
2-Butanone (MEK)		98.7	44.0	134.4	0.3	30.0
Dichlorodifluoromethane		120.4	10.0	222.8	0.7	30.0
Chloromethane		118.5	23.8	166.5	1.0	30.0
Vinyl chloride		115.2	43.5	149.1	0.3	30.0
Bromomethane		106.2	56.8	151.3	2.7	30.0
Chloroethane		100.0	53.4	149.4	3.3	30.0
Trichlorofluoromethane		104.2	59.7	151.8	3.1	30.0
1,1-Dichloroethene		95.8	69.6	139.4	2.1	30.0
Methylene chloride		101.3	73.3	121.1	1.7	30.0
trans-1,2-Dichloroethene		98.1	73.6	129.3	1.6	30.0
1,1-Dichloroethane		98.5	71.5	126.2	4.5	30.0
cis-1,2-Dichloroethene		100.8	76.6	122.1	1.8	30.0
Chloroform		100.9	78.4	124.0	1.3	30.0
1,1,1-Trichloroethane		96.5	79.4	130.9	0.1	30.0
Cyclohexane		89.3	10.0	169.1	3.6	30.0
4-Methyl-2-pentanone (MIBK)		100.7	71.6	125.2	4.3	30.0
2-Hexanone		99.4	55.4	136.9	4.9	30.0
Carbon tetrachloride		97.9	72.6	133.0	1.9	30.0
Benzene		100.8	79.9	124.9	1.0	30.0
1,2-Dichloroethane		103.0	76.0	126.3	0.4	30.0
Trichloroethene		99.3	79.7	124.2	0.3	30.0

Organics - Volatiles, Prep Batch ID: VF221025W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 221025B9.LCSDW25B, Parent Sample ID: 221025B9.LCSW25B

Run in Batch: 221025B9, Run Date: 10/25/2022 22:18, Prep Date: 10/25/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,2-Dichloropropane		104.0	78.6	126.4	1.2	30.0
Bromodichloromethane		101.7	80.4	128.2	1.0	30.0
Methyl cyclohexane		93.6	76.6	131.3	0.9	30.0
cis-1,3-Dichloropropene		102.0	79.8	129.9	1.2	30.0
Toluene		99.5	79.8	124.5	0.7	30.0
trans-1,3-Dichloropropene		99.0	74.0	131.3	1.1	30.0
1,1,2-Trichloroethane		102.4	78.7	123.1	0.2	30.0
Tetrachloroethene		102.7	74.5	124.5	1.1	30.0
Dibromochloromethane		104.4	74.6	127.2	4.9	30.0
1,2-Dibromoethane		103.9	70.3	133.7	3.9	30.0
Chlorobenzene		102.6	79.2	122.7	2.9	30.0
1,1,2,2-Tetrachloroethane		104.1	79.8	126.3	3.6	30.0
Ethylbenzene		102.0	79.5	129.1	3.0	30.0
p,m-Xylene		101.9	79.4	132.2	2.1	30.0
o-Xylene		100.1	80.2	131.0	3.2	30.0
Styrene		102.6	69.5	126.7	2.2	30.0
Isopropylbenzene		101.2	74.4	121.5	3.6	30.0
Bromoform		102.7	69.4	128.0	3.1	30.0
1,3-Dichlorobenzene		98.3	77.0	131.3	1.2	30.0
1,4-Dichlorobenzene		100.3	20.7	137.7	2.4	30.0
1,2-Dichlorobenzene		100.6	10.0	166.2	2.4	30.0
1,2-Dibromo-3-chloropropane		97.7	21.2	189.4	1.9	30.0
1,2,4-Trichlorobenzene		104.0	27.4	143.4	3.8	30.0
n-Propylbenzene		100.6	82.0	130.7	0.7	30.0
Naphthalene		103.9	32.9	135.8	4.8	30.0

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.45	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		89.7	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		85.1	70.0	130.0	5.3	30.0

Organics - Volatiles, Prep Batch ID: VS221021W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221021A9.BLKS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 13:04, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.47	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:02, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		84.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221021A9.LCSDS20A, Parent Sample ID: 221021A9.LCSS20A

Run in Batch: 221021A9, Run Date: 10/21/2022 12:23, Prep Date: 10/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		82.8	70.0	130.0	2.1	30.0

Merit Laboratories Login Checklist

Lab Set ID: S41459
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.04100 / Racer Lansing
Submitted: 10/14/2022 16:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.3
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1 — 154881

CHAIN OF CUSTODY RECORD

Plant 6

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 517-861-0138 CELL NO.: 810-225-1928 P.O. NO.:
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.04100/RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☒ OTHER 1-Week
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☒ Other MI
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs	Special Instructions
41459.01	10/14/22	1515	MW-22-154_101422	GW	3		3						X	* See TAT Request *
.02	10/14/22	—	Trip Blank	GW	2		2						X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis ☒ Sampler DATE 10/14/22 TIME 1615
RECEIVED BY: SIGNATURE/ORGANIZATION Merit Drop Box DATE 10/14/22 TIME 1615
RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 8.3°C

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

* Please also email results to: Patrick.Curry@arcadis.com, Alex.Villhauer@arcadis.com, and Caitlin.Cisco@arcadis.com

Analytical Laboratory Report

Report ID: S42114.01(01)+QC01
Generated on 11/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S42114.01-S42114.02
Project: 30112892.0470B / Racer Lansing
Collected Date(s): 11/02/2022
Submitted Date/Time: 11/03/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470B

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW3510C	SW 846 Method 3510C Revision 3 December 1996
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs
SW8270D	SW 846 Method 8270D Revision 4 February 2007

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S42114.01	MW-16-79_110222	Groundwater	11/02/22 17:00
S42114.02	Trip Blank	Water	11/02/22 00:01

Lab Sample ID: S42114.01
Sample Tag: MW-16-79_110222
Collected Date/Time: 11/02/2022 17:00
Matrix: Groundwater
COC Reference: 155479

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.8	IR
2	1L Amber	None	Yes	5.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/07/22 13:00	BML	
BNA Extraction	Completed	SW3510C	11/08/22 11:00	TAW	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 11/09/22 22:07, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acenaphthene	Not detected	5		ug/L	7.5	83-32-9	
Acenaphthylene	Not detected	5		ug/L	7.5	208-96-8	
Anthracene	Not detected	5		ug/L	7.5	120-12-7	
Benzo(a)anthracene	Not detected	4		ug/L	7.5	56-55-3	X
Benzo(b)fluoranthene	Not detected	4		ug/L	7.5	205-99-2	X
Benzo(k)fluoranthene	Not detected	4		ug/L	7.5	207-08-9	X
Benzo(ghi)perylene	Not detected	4		ug/L	7.5	191-24-2	X
Benzo(a)pyrene	Not detected	4		ug/L	7.5	50-32-8	X
bis(2-Chloroethoxy)methane	Not detected	5		ug/L	7.5	111-91-1	
bis(2-Chloroethyl)ether	Not detected	5		ug/L	7.5	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	5		ug/L	7.5	108-60-1	
bis(2-Ethylhexyl)phthalate	Not detected	5		ug/L	7.5	117-81-7	
4-Bromophenyl phenyl ether	Not detected	5		ug/L	7.5	101-55-3	
Butyl benzyl phthalate	Not detected	5		ug/L	7.5	85-68-7	
4-Chloroaniline	Not detected	10		ug/L	7.5	106-47-8	
2-Chloronaphthalene	Not detected	5		ug/L	7.5	91-58-7	
4-Chloro-3-methylphenol	Not detected	5		ug/L	7.5	59-50-7	
2-Chlorophenol	Not detected	10		ug/L	7.5	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	5		ug/L	7.5	7005-72-3	
Chrysene	9	4		ug/L	7.5	218-01-9	X
3-, 4-Methylphenol (p,m-Cresol)	Not detected	20		ug/L	7.5	3/4-CRESOL	
2-Methylphenol (o-Cresol)	Not detected	10		ug/L	7.5	95-48-7	
Dibenzo(ah)anthracene	Not detected	4		ug/L	7.5	53-70-3	X
Dibenzofuran	Not detected	4		ug/L	7.5	132-64-9	
di-n-Butyl phthalate	Not detected	5		ug/L	7.5	84-74-2	
1,2-Dichlorobenzene	Not detected	4		ug/L	7.5	95-50-1	X
1,3-Dichlorobenzene	Not detected	4		ug/L	7.5	541-73-1	X
1,4-Dichlorobenzene	Not detected	4		ug/L	7.5	106-46-7	X
3,3'-Dichlorobenzidine	Not detected	5		ug/L	7.5	91-94-1	
2,4-Dichlorophenol	Not detected	10		ug/L	7.5	120-83-2	
Diethyl phthalate	Not detected	5		ug/L	7.5	84-66-2	
2,4-Dimethylphenol	Not detected	5		ug/L	7.5	105-67-9	
Dimethyl phthalate	Not detected	5		ug/L	7.5	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	20		ug/L	7.5	534-52-1	

X-Elevated reporting limit due to matrix interference

Lab Sample ID: S42114.01 (continued)
Sample Tag: MW-16-79_110222

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 11/09/22 22:07, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2,4-Dinitrophenol	Not detected	25		ug/L	7.5	51-28-5	
2,4-Dinitrotoluene	Not detected	5		ug/L	7.5	121-14-2	
2,6-Dinitrotoluene	Not detected	5		ug/L	7.5	606-20-2	
1,2-Diphenylhydrazine*	Not detected	5		ug/L	7.5	122-66-7	
di-n-Octyl phthalate	Not detected	5		ug/L	7.5	117-84-0	
Fluoranthene	Not detected	4		ug/L	7.5	206-44-0	X
Fluorene	Not detected	5		ug/L	7.5	86-73-7	
Hexachlorobenzene	Not detected	5		ug/L	7.5	118-74-1	
Hexachlorobutadiene	Not detected	10		ug/L	7.5	87-68-3	
Hexachlorocyclopentadiene*	Not detected	5		ug/L	7.5	77-47-4	
Hexachloroethane	Not detected	5		ug/L	7.5	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	4		ug/L	7.5	193-39-5	X
Isophorone	Not detected	5		ug/L	7.5	78-59-1	
2-Methylnaphthalene	Not detected	5		ug/L	7.5	91-57-6	
Naphthalene	Not detected	5		ug/L	7.5	91-20-3	
2-Nitroaniline	Not detected	25		ug/L	7.5	88-74-4	
3-Nitroaniline	Not detected	25		ug/L	7.5	99-09-2	
4-Nitroaniline	Not detected	25		ug/L	7.5	100-01-6	
Nitrobenzene	Not detected	5		ug/L	7.5	98-95-3	
2-Nitrophenol	Not detected	5		ug/L	7.5	88-75-5	
4-Nitrophenol	Not detected	25		ug/L	7.5	100-02-7	
N-Nitrosodiphenylamine	Not detected	5		ug/L	7.5	86-30-6	
N-Nitrosodi-n-propylamine	Not detected	5		ug/L	7.5	621-64-7	
Pentachlorophenol	Not detected	5		ug/L	7.5	87-86-5	
Phenanthrene	9	4		ug/L	7.5	85-01-8	X
Phenol	Not detected	5		ug/L	7.5	108-95-2	
Pyrene	5	5		ug/L	7.5	129-00-0	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	7.5	120-82-1	
2,4,5-Trichlorophenol	Not detected	5		ug/L	7.5	95-95-4	
2,4,6-Trichlorophenol	Not detected	4		ug/L	7.5	88-06-2	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/11/22 20:48, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 04:54, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	

X-Elevated reporting limit due to matrix interference

Lab Sample ID: S42114.01 (continued)
Sample Tag: MW-16-79_110222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 04:54, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	

Lab Sample ID: S42114.01 (continued)
Sample Tag: MW-16-79_110222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 04:54, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S42114.02
Sample Tag: Trip Blank
Collected Date/Time: 11/02/2022 00:01
Matrix: Water
COC Reference: 155479

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	5.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/07/22 13:00	BML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 01:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S42114.02 (continued)
Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 01:41, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Quality Control Report

Report ID: S42114.01(01)+QC01
Generated on 11/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S42114.01-S42114.02
Project: 30112892.0470B / Racer Lansing
Submitted Date/Time: 11/03/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470B

QC Report Sections

Cover Page (Page 12)
Analysis Summary (Pages 13-14)
Prep Batch Summary (Page 15)
Surrogates per Lab Sample (Pages 16-17)
Surrogates per QC Sample (Pages 18-20)
Internal Standards per Lab Sample (Pages 21-22)
Internal Standards per QC Sample (Pages 23-25)
Batch QC Results (Pages 26-36)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S42114.01
Sample Tag: MW-16-79_110222
Collected Date/Time: 11/02/2022 17:00
Matrix: Groundwater
COC Reference: 155479

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Semi-Volatiles						
Semi-Volatile Organics - MDEQ	SW8270D	11/09/22 22:07	P221109B	SF221108W1	Yes	BLK/LCS/LCSD
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/11/22 20:48	221111B9	VS221111W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	11/05/22 04:54	221104C9	VF221104W4	Yes	BLK/LCS/LCSD

Lab Sample ID: S42114.02

Sample Tag: Trip Blank

Collected Date/Time: 11/02/2022 00:01

Matrix: Water

COC Reference: 155479

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	11/05/22 01:41	221104C9	VF221104W4	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Semi-Volatiles, Prep Batch ID: SF221108W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42114.01	Semi-Volatile Organics - MDEQ	SW8270D	11/09/22 22:07	P221109B

Organics - Volatiles, Prep Batch ID: VF221104W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42114.01	Volatile Organics - DEQ List	SW5030C/8260C	11/05/22 04:54	221104C9
S42114.02	Volatile Organics - DEQ List	SW5030C/8260C	11/05/22 01:41	221104C9

Organics - Volatiles, Prep Batch ID: VS221111W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42114.01	1,4-Dioxane	SW8260B - SIM	11/11/22 20:48	221111B9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42114.01

Sample Tag: MW-16-79_110222

Collected Date/Time: 11/02/2022 17:00

Matrix: Groundwater

COC Reference: 155479

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P221109B, Run Date: 11/09/2022 22:07, Matrix: WW, Dilution: 7.5

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		**23.9**	10.0	110.0
Phenol-D5		**17.7**	10.0	110.0
Nitrobenzene-D5		**61.1**	10.0	114.0
2-Fluorobiphenyl		**76.4**	10.0	116.0
2,4,6-Tribromophenol		**60.6**	10.0	123.0
Terphenyl-D14		**80.7**	10.0	141.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221104C9, Run Date: 11/05/2022 04:54, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**102.1**	80.0	124.0
1,2-Dichloroethane-D4		**107.5**	72.0	125.0
Toluene-D8		**98.3**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42114.02

Sample Tag: Trip Blank

Collected Date/Time: 11/02/2022 00:01

Matrix: Water

COC Reference: 155479

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221104C9, Run Date: 11/05/2022 01:41, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**101.5**	80.0	124.0
1,2-Dichloroethane-D4		**99.5**	72.0	125.0
Toluene-D8		**97.7**	89.0	112.0

Organics - Semi-Volatiles, Prep Batch ID: SF221108W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: P221109.BLKW08A

Run in Batch: P221109, Run Date: 11/09/2022 15:02, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Blank (BLK)

Lab Sample ID: P221109B.BLKW08A

Run in Batch: P221109B, Run Date: 11/09/2022 19:33, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		**27.0**	10.0	110.0
Phenol-D5		**18.4**	10.0	110.0
Nitrobenzene-D5		**63.6**	10.0	114.0
2-Fluorobiphenyl		**61.1**	10.0	116.0
2,4,6-Tribromophenol		**55.3**	10.0	123.0
Terphenyl-D14		**64.7**	10.0	141.0

Laboratory Control Sample (LCS)

Lab Sample ID: P221109B.LCSW08A

Run in Batch: P221109B, Run Date: 11/09/2022 20:04, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		**34.3**	10.0	110.0
Phenol-D5		**24.7**	10.0	110.0
Nitrobenzene-D5		**73.9**	10.0	114.0
2-Fluorobiphenyl		**73.9**	10.0	116.0
2,4,6-Tribromophenol		**75.0**	10.0	123.0
Terphenyl-D14		**77.5**	10.0	141.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: P221109B.LCSDW08A, Parent Sample ID: P221109B.LCSW08A

Run in Batch: P221109B, Run Date: 11/09/2022 20:36, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		**33.7**	10.0	110.0
Phenol-D5		**24.4**	10.0	110.0
Nitrobenzene-D5		**73.7**	10.0	114.0
2-Fluorobiphenyl		**73.8**	10.0	116.0
2,4,6-Tribromophenol		**68.2**	10.0	123.0
Terphenyl-D14		**77.9**	10.0	141.0

Organics - Volatiles, Prep Batch ID: VF221104W4

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221104C9.BLKW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 01:22, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**101.6**	80.0	124.0
1,2-Dichloroethane-D4		**100.9**	72.0	125.0
Toluene-D8		**97.9**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:04, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.1**	80.0	124.0
1,2-Dichloroethane-D4		**102.9**	72.0	125.0
Toluene-D8		**98.3**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221104C9.LCSDW04B, Parent Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:23, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**100.6**	80.0	124.0
1,2-Dichloroethane-D4		**97.6**	72.0	125.0
Toluene-D8		**98.3**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS221111W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221111B9.BLKW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 20:26, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:04, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111B9.LCSDW11A, Parent Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:25, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42114.01

Sample Tag: MW-16-79_110222

Collected Date/Time: 11/02/2022 17:00

Matrix: Groundwater

COC Reference: 155479

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P221109B, Run Date: 11/09/2022 22:07, Matrix: WW, Dilution: 7.5

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		**96.2**	50.0	200.0
Naphthalene-D8		**94.8**	50.0	200.0
Acenaphthalene-D10		**94.9**	50.0	200.0
Phenanthrene-D10		**93.9**	50.0	200.0
Chrysene-D12		**92.5**	50.0	200.0
Perylene-D12		**89.1**	50.0	200.0

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/11/2022 20:48, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**114.2**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221104C9, Run Date: 11/05/2022 04:54, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.1**	50.0	200.0
1,4-Difluorobenzene		**105.3**	50.0	200.0
Chlorobenzene-D5		**108.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**109.2**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42114.02

Sample Tag: Trip Blank

Collected Date/Time: 11/02/2022 00:01

Matrix: Water

COC Reference: 155479

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221104C9, Run Date: 11/05/2022 01:41, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**101.1**	50.0	200.0
1,4-Difluorobenzene		**103.5**	50.0	200.0
Chlorobenzene-D5		**103.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**102.1**	50.0	200.0

Organics - Semi-Volatiles, Prep Batch ID: SF221108W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: P221109.BLKW08A

Run in Batch: P221109, Run Date: 11/09/2022 15:02, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Chrysene-D12		**146.4**	50.0	200.0
Acenaphthalene-D10		**146.3**	50.0	200.0

Blank (BLK)

Lab Sample ID: P221109B.BLKW08A

Run in Batch: P221109B, Run Date: 11/09/2022 19:33, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		**94.8**	50.0	200.0
Naphthalene-D8		**89.7**	50.0	200.0
Acenaphthalene-D10		**92.4**	50.0	200.0
Phenanthrene-D10		**92.0**	50.0	200.0
Chrysene-D12		**82.7**	50.0	200.0
Perylene-D12		**78.9**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: P221109B.LCSW08A

Run in Batch: P221109B, Run Date: 11/09/2022 20:04, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		**90.7**	50.0	200.0
Naphthalene-D8		**88.9**	50.0	200.0
Acenaphthalene-D10		**88.8**	50.0	200.0
Phenanthrene-D10		**90.2**	50.0	200.0
Chrysene-D12		**88.3**	50.0	200.0
Perylene-D12		**86.5**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: P221109B.LCSDW08A, Parent Sample ID: P221109B.LCSW08A

Run in Batch: P221109B, Run Date: 11/09/2022 20:36, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		**93.7**	50.0	200.0
Naphthalene-D8		**90.8**	50.0	200.0
Acenaphthalene-D10		**91.4**	50.0	200.0
Phenanthrene-D10		**89.7**	50.0	200.0
Chrysene-D12		**87.4**	50.0	200.0
Perylene-D12		**87.1**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF221104W4

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221104C9.BLKW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 01:22, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.6**	50.0	200.0
1,4-Difluorobenzene		**105.0**	50.0	200.0
Chlorobenzene-D5		**105.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**104.8**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:04, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.9**	50.0	200.0
1,4-Difluorobenzene		**102.7**	50.0	200.0
Chlorobenzene-D5		**102.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**104.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221104C9.LCSDW04B, Parent Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:23, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**101.4**	50.0	200.0
1,4-Difluorobenzene		**101.6**	50.0	200.0
Chlorobenzene-D5		**100.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**98.3**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221111W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221111B9.BLKW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 20:26, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**106.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:04, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**108.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111B9.LCSDW11A, Parent Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:25, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**96.8**	50.0	200.0

Organics - Semi-Volatiles, Prep Batch ID: SF221108W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: P221109.BLKW08A

Run in Batch: P221109, Run Date: 11/09/2022 15:02, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.00001	mg/l
Hexachlorobenzene		ND	0.00001	mg/l
Hexachlorobutadiene		ND	0.00001	mg/l
Hexachlorocyclopentadiene		ND	0.00001	mg/l

Blank (BLK)

Lab Sample ID: P221109B.BLKW08A

Run in Batch: P221109B, Run Date: 11/09/2022 19:33, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Acenaphthene		ND	0.00050	mg/l
Acenaphthylene		ND	0.00050	mg/l
Anthracene		ND	0.00050	mg/l
Benzo(a)anthracene		ND	0.00050	mg/l
Benzo(b)fluoranthene		ND	0.00050	mg/l
Benzo(k)fluoranthene		ND	0.00050	mg/l
Benzo(ghi)perylene		ND	0.00050	mg/l
Benzo(a)pyrene		ND	0.00050	mg/l
bis(2-Chloroethoxy)methane		ND	0.00050	mg/l
bis(2-Chloroethyl)ether		ND	0.00050	mg/l
bis(2-Chloroisopropyl)ether		ND	0.00050	mg/l
bis(2-Ethylhexyl)phthalate		ND	0.00050	mg/l
4-Bromophenyl phenyl ether		ND	0.00050	mg/l
Butyl benzyl phthalate		ND	0.00050	mg/l
4-Chloroaniline		ND	0.00050	mg/l
2-Chloronaphthalene		ND	0.00050	mg/l
4-Chloro-3-methylphenol		ND	0.00050	mg/l
2-Chlorophenol		ND	0.00050	mg/l
4-Chlorophenyl phenyl ether		ND	0.00050	mg/l
Chrysene		ND	0.00050	mg/l
3-, 4-Methylphenol (p,m-Cresol)		ND	0.00050	mg/l
2-Methylphenol (o-Cresol)		ND	0.00050	mg/l
Dibenzo(ah)anthracene		ND	0.00050	mg/l
Dibenzofuran		ND	0.00050	mg/l
di-n-Butyl phthalate		ND	0.00050	mg/l
1,2-Dichlorobenzene		ND	0.00050	mg/l
1,3-Dichlorobenzene		ND	0.00050	mg/l
1,4-Dichlorobenzene		ND	0.00050	mg/l
3,3'-Dichlorobenzidine		ND	0.00050	mg/l
2,4-Dichlorophenol		ND	0.00050	mg/l
Diethyl phthalate		ND	0.00050	mg/l
2,4-Dimethylphenol		ND	0.00050	mg/l
Dimethyl phthalate		ND	0.00050	mg/l
4,6-Dinitro-2-methylphenol		ND	0.00050	mg/l
2,4-Dinitrophenol		ND	0.00050	mg/l
2,4-Dinitrotoluene		ND	0.00050	mg/l
2,6-Dinitrotoluene		ND	0.00050	mg/l

Organics - Semi-Volatiles, Prep Batch ID: SF221108W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: P221109B.BLKW08A

Run in Batch: P221109B, Run Date: 11/09/2022 19:33, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,2-Diphenylhydrazine		ND	0.00050	mg/l
di-n-Octyl phthalate		ND	0.00050	mg/l
Fluoranthene		ND	0.00050	mg/l
Fluorene		ND	0.00050	mg/l
Hexachlorobenzene		ND	0.00050	mg/l
Hexachlorobutadiene		ND	0.00050	mg/l
Hexachlorocyclopentadiene		ND	0.00050	mg/l
Hexachloroethane		ND	0.00050	mg/l
Indeno(1,2,3-cd)pyrene		ND	0.00050	mg/l
Isophorone		ND	0.00050	mg/l
2-Methylnaphthalene		ND	0.00050	mg/l
Naphthalene		ND	0.00050	mg/l
2-Nitroaniline		ND	0.00050	mg/l
3-Nitroaniline		ND	0.00050	mg/l
4-Nitroaniline		ND	0.00050	mg/l
Nitrobenzene		ND	0.00050	mg/l
2-Nitrophenol		ND	0.00050	mg/l
4-Nitrophenol		ND	0.00050	mg/l
N-Nitrosodiphenylamine		ND	0.00050	mg/l
N-Nitrosodi-n-propylamine		ND	0.00050	mg/l
Pentachlorophenol		ND	0.00050	mg/l
Phenanthrene		ND	0.00050	mg/l
Phenol		ND	0.00050	mg/l
Pyrene		ND	0.00050	mg/l
1,2,4-Trichlorobenzene		ND	0.00050	mg/l
2,4,5-Trichlorophenol		ND	0.00050	mg/l
2,4,6-Trichlorophenol		ND	0.00050	mg/l

Laboratory Control Sample (LCS)

Lab Sample ID: P221109B.LCSW08A

Run in Batch: P221109B, Run Date: 11/09/2022 20:04, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Acenaphthene		74.0	27	111
Acenaphthylene		68.1	16	116
Anthracene		74.8	31	119
Benzo(a)anthracene		78.1	35	119
Benzo(b)fluoranthene		83.4	27	129
Benzo(k)fluoranthene		80.1	36	120
Benzo(ghi)perylene		71.1	31	126
Benzo(a)pyrene		89.1	32	121
bis(2-Chloroethoxy)methane		75.1	23	106
bis(2-Chloroethyl)ether		68.5	29	94
bis(2-Chloroisopropyl)ether		71.1	23	91
bis(2-Ethylhexyl)phthalate		81.6	35	121
4-Bromophenyl phenyl ether		74.8	27	122
Butyl benzyl phthalate		85.1	36	117

Organics - Semi-Volatiles, Prep Batch ID: SF221108W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: P221109B.LCSW08A

Run in Batch: P221109B, Run Date: 11/09/2022 20:04, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
4-Chloroaniline		43.4	19	91
2-Chloronaphthalene		70.0	21	109
4-Chloro-3-methylphenol		71.5	36	105
2-Chlorophenol		61.1	24	94
4-Chlorophenyl phenyl ether		76.5	31	114
Chrysene		78.7	34	119
3-, 4-Methylphenol (p,m-Cresol)		52.2	21	90
2-Methylphenol (o-Cresol)		54.6	23	79
Dibenzo(ah)anthracene		72.2	32	119
Dibenzofuran		75.9	29	115
di-n-Butyl phthalate		77.2	34	121
1,2-Dichlorobenzene		53.5	11	88
1,3-Dichlorobenzene		49.6	10	85
1,4-Dichlorobenzene		50.5	10	85
3,3'-Dichlorobenzidine		51.8	27	110
2,4-Dichlorophenol		73.0	33	106
Diethyl phthalate		80.2	36	116
2,4-Dimethylphenol		70.9	30	105
Dimethyl phthalate		79.4	35	116
4,6-Dinitro-2-methylphenol		74.9	19	116
2,4-Dinitrophenol		62.8	10	125
2,4-Dinitrotoluene		78.7	33	119
2,6-Dinitrotoluene		76.4	34	117
1,2-Diphenylhydrazine		74.7	34	113
di-n-Octyl phthalate		92.9	30	133
Fluoranthene		79.9	35	121
Fluorene		78.3	32	114
Hexachlorobenzene		69.2	26	126
Hexachlorobutadiene		52.5	10	95
Hexachlorocyclopentadiene		17.2	10	90
Hexachloroethane		48.0	10	82
Indeno(1,2,3-cd)pyrene		72.5	31	124
Isophorone		59.1	26	104
2-Methylnaphthalene		68.2	21	103
Naphthalene		65.7	21	99
2-Nitroaniline		74.1	34	111
3-Nitroaniline		51.9	34	111
4-Nitroaniline		56.5	34	100
Nitrobenzene		91.5	30	98
2-Nitrophenol		74.0	31	108
4-Nitrophenol		39.2	10	90
N-Nitrosodiphenylamine		60.3	31	120
N-Nitrosodi-n-propylamine		73.8	33	102
Pentachlorophenol		76.3	10	108
Phenanthrene		77.6	35	113
Phenol		27.1	10	43

Organics - Semi-Volatiles, Prep Batch ID: SF221108W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: P221109B.LCSW08A

Run in Batch: P221109B, Run Date: 11/09/2022 20:04, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Pyrene		82.4	33	120
1,2,4-Trichlorobenzene		56.6	10	98
2,4,5-Trichlorophenol		78.3	31	120
2,4,6-Trichlorophenol		79.1	31	114

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: P221109B.LCSDW08A, Parent Sample ID: P221109B.LCSW08A

Run in Batch: P221109B, Run Date: 11/09/2022 20:36, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Acenaphthene		72.3	27	111	2.2	30.0
Acenaphthylene		68.2	16	116	0.1	30.0
Anthracene		74.7	31	119	0.1	30.0
Benzo(a)anthracene		79.3	35	119	1.5	30.0
Benzo(b)fluoranthene		83.7	27	129	0.3	30.0
Benzo(k)fluoranthene		79.8	36	120	0.4	30.0
Benzo(ghi)perylene		69.8	31	126	1.8	30.0
Benzo(a)pyrene		87.2	32	121	2.1	30.0
bis(2-Chloroethoxy)methane		74.0	23	106	1.4	30.0
bis(2-Chloroethyl)ether		67.4	29	94	1.5	30.0
bis(2-Chloroisopropyl)ether		70.7	23	91	0.5	30.0
bis(2-Ethylhexyl)phthalate		82.8	35	121	1.4	30.0
4-Bromophenyl phenyl ether		75.5	27	122	0.9	30.0
Butyl benzyl phthalate		86.5	36	117	1.7	30.0
4-Chloroaniline		43.2	19	91	0.5	30.0
2-Chloronaphthalene		70.3	21	109	0.4	30.0
4-Chloro-3-methylphenol		71.6	36	105	0.2	30.0
2-Chlorophenol		59.5	24	94	2.8	30.0
4-Chlorophenyl phenyl ether		75.0	31	114	2.1	30.0
Chrysene		80.8	34	119	2.7	30.0
3-, 4-Methylphenol (p,m-Cresol)		50.5	21	90	3.3	30.0
2-Methylphenol (o-Cresol)		53.5	23	79	2.1	30.0
Dibenzo(ah)anthracene		70.1	32	119	2.8	30.0
Dibenzofuran		74.0	29	115	2.5	30.0
di-n-Butyl phthalate		78.4	34	121	1.6	30.0
1,2-Dichlorobenzene		52.3	11	88	2.2	30.0
1,3-Dichlorobenzene		49.0	10	85	1.2	30.0
1,4-Dichlorobenzene		50.5	10	85	0.2	30.0
3,3'-Dichlorobenzidine		53.3	27	110	2.9	30.0
2,4-Dichlorophenol		73.9	33	106	1.3	30.0
Diethyl phthalate		77.9	36	116	2.9	30.0
2,4-Dimethylphenol		70.2	30	105	1.0	30.0
Dimethyl phthalate		77.1	35	116	3.0	30.0
4,6-Dinitro-2-methylphenol		74.9	19	116	0.0	30.0
2,4-Dinitrophenol		62.0	10	125	1.2	30.0
2,4-Dinitrotoluene		77.1	33	119	2.1	30.0
2,6-Dinitrotoluene		76.9	34	117	0.7	30.0

Organics - Semi-Volatiles, Prep Batch ID: SF221108W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: P221109B.LCSDW08A, Parent Sample ID: P221109B.LCSW08A

Run in Batch: P221109B, Run Date: 11/09/2022 20:36, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,2-Diphenylhydrazine		78.3	34	113	4.8	30.0
di-n-Octyl phthalate		93.1	30	133	0.2	30.0
Fluoranthene		80.3	35	121	0.5	30.0
Fluorene		77.5	32	114	0.9	30.0
Hexachlorobenzene		71.7	26	126	3.6	30.0
Hexachlorobutadiene		50.5	10	95	3.8	30.0
Hexachlorocyclopentadiene		16.7	10	90	2.5	30.0
Hexachloroethane		47.7	10	82	0.7	30.0
Indeno(1,2,3-cd)pyrene		71.5	31	124	1.4	30.0
Isophorone		58.6	26	104	0.8	30.0
2-Methylnaphthalene		67.4	21	103	1.3	30.0
Naphthalene		63.2	21	99	3.9	30.0
2-Nitroaniline		72.2	34	111	2.7	30.0
3-Nitroaniline		51.8	34	111	0.1	30.0
4-Nitroaniline		56.0	34	100	0.7	30.0
Nitrobenzene		90.3	30	98	1.4	30.0
2-Nitrophenol		73.5	31	108	0.7	30.0
4-Nitrophenol		38.3	10	90	2.3	30.0
N-Nitrosodiphenylamine		62.4	31	120	3.5	30.0
N-Nitrosodi-n-propylamine		73.2	33	102	0.7	30.0
Pentachlorophenol		74.4	10	108	2.5	30.0
Phenanthrene		76.4	35	113	1.5	30.0
Phenol		27.1	10	43	0.1	30.0
Pyrene		83.3	33	120	1.1	30.0
1,2,4-Trichlorobenzene		56.4	10	98	0.4	30.0
2,4,5-Trichlorophenol		75.5	31	120	3.7	30.0
2,4,6-Trichlorophenol		78.4	31	114	1.0	30.0

Organics - Volatiles, Prep Batch ID: VF221104W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221104C9.BLKW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 01:22, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF221104W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 221104C9.BLKW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 01:22, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:04, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		97.5	67.4	121.2
Acetone		81.0	29.9	161.5
Methyl iodide		97.6	68.8	116.4
Carbon disulfide		90.4	63.8	137.4
tert-Methyl butyl ether (MTBE)		90.8	73.2	122.4
Acrylonitrile		98.5	69.9	128.9
2-Butanone (MEK)		88.2	44.0	134.4
Dichlorodifluoromethane		105.4	10.0	222.8
Chloromethane		109.2	23.8	166.5
Vinyl chloride		105.9	43.5	149.1
Bromomethane		103.6	56.8	151.3
Chloroethane		96.1	53.4	149.4
Trichlorofluoromethane		97.4	59.7	151.8
1,1-Dichloroethene		91.3	69.6	139.4
Methylene chloride		98.7	73.3	121.1
trans-1,2-Dichloroethene		94.7	73.6	129.3
1,1-Dichloroethane		96.6	71.5	126.2
cis-1,2-Dichloroethene		98.1	76.6	122.1
Tetrahydrofuran		88.1	59.0	117.9
Chloroform		98.2	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF221104W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:04, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		101.3	78.2	120.8
1,1,1-Trichloroethane		92.4	79.4	130.9
4-Methyl-2-pentanone (MIBK)		90.0	71.6	125.2
2-Hexanone		89.2	55.4	136.9
Carbon tetrachloride		88.4	72.6	133.0
Benzene		95.3	79.9	124.9
1,2-Dichloroethane		96.2	76.0	126.3
Trichloroethene		92.3	79.7	124.2
1,2-Dichloropropane		97.6	78.6	126.4
Bromodichloromethane		95.8	80.4	128.2
Dibromomethane		99.5	76.9	122.1
cis-1,3-Dichloropropene		96.7	79.8	129.9
Toluene		92.8	79.8	124.5
trans-1,3-Dichloropropene		95.8	74.0	131.3
1,1,2-Trichloroethane		97.4	78.7	123.1
Tetrachloroethene		94.2	74.5	124.5
trans-1,4-Dichloro-2-butene		95.9	68.6	135.4
Dibromochloromethane		100.3	74.6	127.2
1,2-Dibromoethane		100.8	70.3	133.7
Chlorobenzene		100.1	79.2	122.7
1,1,1,2-Tetrachloroethane		98.8	80.3	128.2
Ethylbenzene		97.8	79.5	129.1
p,m-Xylene		97.6	79.4	132.2
o-Xylene		95.3	80.2	131.0
Styrene		100.1	69.5	126.7
Isopropylbenzene		95.2	74.4	121.5
Bromoform		98.1	69.4	128.0
1,1,2,2-Tetrachloroethane		100.4	79.8	126.3
1,2,3-Trichloropropane		102.4	78.3	138.8
n-Propylbenzene		96.0	82.0	130.7
Bromobenzene		101.9	78.7	124.6
1,3,5-Trimethylbenzene		95.7	81.3	128.9
tert-Butylbenzene		90.6	80.7	128.9
1,2,4-Trimethylbenzene		98.2	81.4	130.8
sec-Butylbenzene		88.6	77.4	129.8
p-Isopropyltoluene		90.4	79.8	137.5
1,3-Dichlorobenzene		95.8	77.0	131.3
1,4-Dichlorobenzene		96.5	20.7	137.7
1,2-Dichlorobenzene		97.8	10.0	166.2
1,2,3-Trimethylbenzene		91.5	76.3	124.2
n-Butylbenzene		89.2	80.0	133.3
Hexachloroethane		82.5	23.8	138.1
1,2-Dibromo-3-chloropropane		84.8	21.2	189.4
1,2,4-Trichlorobenzene		92.9	27.4	143.4
1,2,3-Trichlorobenzene		90.9	75.4	131.4
Naphthalene		86.1	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF221104W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:04, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		70.6	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221104C9.LCSDW04B, Parent Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:23, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		92.2	67.4	121.2	5.5	30.0
Acetone		79.0	29.9	161.5	2.4	30.0
Methyl iodide		93.6	68.8	116.4	4.2	30.0
Carbon disulfide		86.8	63.8	137.4	4.1	30.0
tert-Methyl butyl ether (MTBE)		87.1	73.2	122.4	4.2	30.0
Acrylonitrile		94.7	69.9	128.9	3.9	30.0
2-Butanone (MEK)		86.2	44.0	134.4	2.3	30.0
Dichlorodifluoromethane		101.9	10.0	222.8	3.4	30.0
Chloromethane		100.4	23.8	166.5	8.4	30.0
Vinyl chloride		101.5	43.5	149.1	4.3	30.0
Bromomethane		97.9	56.8	151.3	5.7	30.0
Chloroethane		92.4	53.4	149.4	3.9	30.0
Trichlorofluoromethane		92.9	59.7	151.8	4.8	30.0
1,1-Dichloroethene		87.1	69.6	139.4	4.7	30.0
Methylene chloride		93.7	73.3	121.1	5.2	30.0
trans-1,2-Dichloroethene		89.4	73.6	129.3	5.8	30.0
1,1-Dichloroethane		91.7	71.5	126.2	5.2	30.0
cis-1,2-Dichloroethene		93.8	76.6	122.1	4.5	30.0
Tetrahydrofuran		85.3	59.0	117.9	3.2	30.0
Chloroform		93.5	78.4	124.0	4.8	30.0
Bromochloromethane		98.4	78.2	120.8	2.9	30.0
1,1,1-Trichloroethane		87.5	79.4	130.9	5.4	30.0
4-Methyl-2-pentanone (MIBK)		84.8	71.6	125.2	5.9	30.0
2-Hexanone		85.0	55.4	136.9	4.9	30.0
Carbon tetrachloride		87.2	72.6	133.0	1.4	30.0
Benzene		91.7	79.9	124.9	3.8	30.0
1,2-Dichloroethane		92.7	76.0	126.3	3.7	30.0
Trichloroethene		90.3	79.7	124.2	2.2	30.0
1,2-Dichloropropane		94.3	78.6	126.4	3.5	30.0
Bromodichloromethane		94.0	80.4	128.2	2.0	30.0
Dibromomethane		98.3	76.9	122.1	1.2	30.0
cis-1,3-Dichloropropene		95.3	79.8	129.9	1.5	30.0
Toluene		91.1	79.8	124.5	1.8	30.0
trans-1,3-Dichloropropene		91.5	74.0	131.3	4.5	30.0
1,1,2-Trichloroethane		95.2	78.7	123.1	2.3	30.0
Tetrachloroethene		91.1	74.5	124.5	3.3	30.0
trans-1,4-Dichloro-2-butene		91.9	68.6	135.4	4.2	30.0
Dibromochloromethane		99.2	74.6	127.2	1.1	30.0
1,2-Dibromoethane		100.4	70.3	133.7	0.4	30.0
Chlorobenzene		98.1	79.2	122.7	2.0	30.0

Organics - Volatiles, Prep Batch ID: VF221104W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 221104C9.LCSDW04B, Parent Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:23, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		96.3	80.3	128.2	2.5	30.0
Ethylbenzene		93.9	79.5	129.1	4.0	30.0
p,m-Xylene		96.4	79.4	132.2	1.3	30.0
o-Xylene		93.9	80.2	131.0	1.5	30.0
Styrene		96.6	69.5	126.7	3.6	30.0
Isopropylbenzene		93.4	74.4	121.5	1.9	30.0
Bromoform		95.6	69.4	128.0	2.6	30.0
1,1,2,2-Tetrachloroethane		98.2	79.8	126.3	2.2	30.0
1,2,3-Trichloropropane		98.0	78.3	138.8	4.5	30.0
n-Propylbenzene		93.8	82.0	130.7	2.3	30.0
Bromobenzene		97.9	78.7	124.6	3.9	30.0
1,3,5-Trimethylbenzene		95.0	81.3	128.9	0.7	30.0
tert-Butylbenzene		88.6	80.7	128.9	2.1	30.0
1,2,4-Trimethylbenzene		94.7	81.4	130.8	3.7	30.0
sec-Butylbenzene		90.3	77.4	129.8	2.0	30.0
p-Isopropyltoluene		91.5	79.8	137.5	1.2	30.0
1,3-Dichlorobenzene		96.4	77.0	131.3	0.6	30.0
1,4-Dichlorobenzene		97.5	20.7	137.7	1.1	30.0
1,2-Dichlorobenzene		99.0	10.0	166.2	1.3	30.0
1,2,3-Trimethylbenzene		92.1	76.3	124.2	0.6	30.0
n-Butylbenzene		90.6	80.0	133.3	1.5	30.0
Hexachloroethane		85.0	23.8	138.1	3.0	30.0
1,2-Dibromo-3-chloropropane		88.8	21.2	189.4	4.7	30.0
1,2,4-Trichlorobenzene		93.9	27.4	143.4	1.1	30.0
1,2,3-Trichlorobenzene		89.9	75.4	131.4	1.2	30.0
Naphthalene		86.9	32.9	135.8	0.9	30.0
2-Methylnaphthalene		68.6	25.5	165.5	3.0	30.0

Organics - Volatiles, Prep Batch ID: VS221111W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221111B9.BLKW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 20:26, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.47	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:04, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		83.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111B9.LCSDW11A, Parent Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:25, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		85.9	70.0	130.0	3.4	30.0

Merit Laboratories Login Checklist

Lab Set ID: S42114
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470B / Racer Lansing
Submitted: 11/03/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 5.8
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1 155479

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO: 947-777-5215 CELL NO. P.O. NO.
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO.

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY
ADDRESS
CITY STATE ZIP CODE
PHONE NO. E-MAIL ADDRESS

PROJECT NO./NAME: 30112892.0470B / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☐ Other
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane 8260B SIMS	VOCs 8260B - SIMS	SVOCs
42114.01	11/2/22	1700	MW-16-79_110222	GW	5	2	3						X	X	X
.02	11/2/22	—	Trip Blank	GW	1		1							X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis ☒ Sampler DATE 11/2/22 TIME 1810
RECEIVED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis DATE 11/2/22 TIME 1810
RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis DATE 11/2/22 TIME 1332
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RELINQUISHED BY: SIGNATURE/ORGANIZATION Merit Drop Box DATE 11/3/22 TIME 08/5
RECEIVED BY: SIGNATURE/ORGANIZATION [signature] DATE 11/3/22 TIME 08/5

SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS
SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS

NOTES: TEMP. ON ARRIVAL 5.8

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Analytical Laboratory Report

Report ID: S42115.01(01)+QC01
Generated on 11/15/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S42115.01-S42115.23
Project: 30112892.0470B / Racer Lansing
Collected Date(s): 11/01/2022 - 11/02/2022
Submitted Date/Time: 11/03/2022 08:15
Sampled by: Austin Westhuis / Billy Cobern
P.O. #: 30112892.0470B

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E300.0	EPA Method 300.0 Revision 2.1 (1993)
N/A	Not Applicable
SM4500-N(org)/NH	Standard Method 4500 N(org)B / NH3D 2011
SM4500-PE	Standard Method 4500 P E 2011 / 4500 P B(5) 2011
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (23 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S42115.01	MW-20-129_110122	Groundwater	11/01/22 13:30
S42115.02	MW-19-122_110122	Groundwater	11/01/22 15:15
S42115.03	MW-19-124_110122	Groundwater	11/01/22 16:20
S42115.04	MW-20-126_110122	Groundwater	11/01/22 17:30
S42115.05	MW-16-77_110222	Groundwater	11/02/22 09:40
S42115.06	MW-21-139_110222	Groundwater	11/02/22 09:55
S42115.07	MW-21-142_110222	Groundwater	11/02/22 12:00
S42115.08	MW-16-78_110222	Groundwater	11/02/22 13:35
S42115.09	MW-19-115_110222	Groundwater	11/02/22 14:55
S42115.10	MW-19-116_110222	Groundwater	11/02/22 16:15
S42115.11	MW-22-153_110222	Groundwater	11/02/22 17:05
S42115.12	Trip Blank	Water	11/02/22 00:01
S42115.13	MW-13-45_110122	Groundwater	11/01/22 13:15
S42115.14	MW-13-43_110122	Groundwater	11/01/22 14:15
S42115.15	MW-16-75_110122	Groundwater	11/01/22 15:45
S42115.16	MW-16-74_110122	Groundwater	11/01/22 17:05
S42115.17	TW-15-12_110222	Groundwater	11/02/22 09:50
S42115.18	MW-20-127_110222	Groundwater	11/02/22 11:05
S42115.19	MW-20-128_110222	Groundwater	11/02/22 12:45
S42115.20	MW-19-123_110222	Groundwater	11/02/22 14:10
S42115.21	MW-19-121_110222	Groundwater	11/02/22 15:45
S42115.22	MW-14-61_110222	Groundwater	11/02/22 16:50
S42115.23	DUP-05_110222	Groundwater	11/02/22 00:01

Analytical Laboratory Report

Lab Sample ID: S42115.01
Sample Tag: MW-20-129_110122
Collected Date/Time: 11/01/2022 13:30
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 01:29, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	60	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.02
Sample Tag: MW-19-122_110122
Collected Date/Time: 11/01/2022 15:15
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/11/22 23:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	6	1		ug/L	1	123-91-1	

Lab Sample ID: S42115.03
Sample Tag: MW-19-124_110122
Collected Date/Time: 11/01/2022 16:20
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 01:51, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	137	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.04
Sample Tag: MW-20-126_110122
Collected Date/Time: 11/01/2022 17:30
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 02:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	85	1		ug/L	1	123-91-1	

Lab Sample ID: S42115.05
Sample Tag: MW-16-77_110222
Collected Date/Time: 11/02/2022 09:40
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/11/22 21:10, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.06
Sample Tag: MW-21-139_110222
Collected Date/Time: 11/02/2022 09:55
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/11/22 21:31, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.07
Sample Tag: MW-21-142_110222
Collected Date/Time: 11/02/2022 12:00
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 01:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	64	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.08
Sample Tag: MW-16-78_110222
Collected Date/Time: 11/02/2022 13:35
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/11/22 21:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.09
Sample Tag: MW-19-115_110222
Collected Date/Time: 11/02/2022 14:55
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/11/22 23:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	7	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.10
Sample Tag: MW-19-116_110222
Collected Date/Time: 11/02/2022 16:15
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 00:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	65	1		ug/L	1	123-91-1	

Lab Sample ID: S42115.11
Sample Tag: MW-22-153_110222
Collected Date/Time: 11/02/2022 17:05
Matrix: Groundwater
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/07/22 13:00	BML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 05:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	6	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	6	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S42115.11 (continued)
Sample Tag: MW-22-153_110222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 05:13, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S42115.12
Sample Tag: Trip Blank
Collected Date/Time: 11/02/2022 00:01
Matrix: Water
COC Reference: 155478

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/07/22 13:00	BML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 02:21, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S42115.12 (continued)
Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 02:21, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S42115.13
Sample Tag: MW-13-45_110122
Collected Date/Time: 11/01/2022 13:15
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 00:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	26	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.14
Sample Tag: MW-13-43_110122
Collected Date/Time: 11/01/2022 14:15
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/11/22 22:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.15
Sample Tag: MW-16-75_110122
Collected Date/Time: 11/01/2022 15:45
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/11/22 22:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Lab Sample ID: S42115.16
Sample Tag: MW-16-74_110122
Collected Date/Time: 11/01/2022 17:05
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/11/22 22:58, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.17
Sample Tag: TW-15-12_110222
Collected Date/Time: 11/02/2022 09:50
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR
1	125ml Plastic	None	Yes	2.6	IR
1	250ml Plastic	H2SO4	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Inorganics

Method: E300.0, Run Date: 11/03/22 11:45, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 11/06/22 21:42, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	4.6	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 11/04/22 20:33, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	3.0	0.3	0.2	mg/L	25	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 00:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.18
Sample Tag: MW-20-127_110222
Collected Date/Time: 11/02/2022 11:05
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR
1	125ml Plastic	None	Yes	2.6	IR
1	250ml Plastic	H2SO4	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Inorganics

Method: E300.0, Run Date: 11/03/22 11:58, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 11/06/22 22:14, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.8	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 11/04/22 16:28, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.04	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 02:34, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	126	1		ug/L	1	123-91-1	

Lab Sample ID: S42115.19
Sample Tag: MW-20-128_110222
Collected Date/Time: 11/02/2022 12:45
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR
1	125ml Plastic	None	Yes	2.6	IR
1	250ml Plastic	H2SO4	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Inorganics

Method: E300.0, Run Date: 11/03/22 12:11, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 11/06/22 22:31, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	1.6	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 11/04/22 20:39, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.6	0.3	0.2	mg/L	25	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 14:21, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.20
Sample Tag: MW-19-123_110222
Collected Date/Time: 11/02/2022 14:10
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR
1	125ml Plastic	None	Yes	2.6	IR
1	250ml Plastic	H2SO4	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Inorganics

Method: E300.0, Run Date: 11/03/22 12:24, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.04	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 11/06/22 22:46, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.3	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 11/04/22 16:32, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	Not detected	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 10:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	21	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42115.21
Sample Tag: MW-19-121_110222
Collected Date/Time: 11/02/2022 15:45
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR
1	125ml Plastic	None	Yes	2.6	IR
1	250ml Plastic	H2SO4	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Inorganics

Method: E300.0, Run Date: 11/03/22 12:04, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	15.0	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 11/06/22 22:59, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.8	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 11/04/22 20:42, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	15.3	0.3	0.2	mg/L	25	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 06:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S42115.22
Sample Tag: MW-14-61_110222
Collected Date/Time: 11/02/2022 16:50
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR
1	125ml Plastic	None	Yes	2.6	IR
1	250ml Plastic	H2SO4	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/07/22 13:00	BML	

Inorganics

Method: E300.0, Run Date: 11/03/22 12:14, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 11/06/22 23:23, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.3	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 11/04/22 16:36, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.13	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 09:57, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	21	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 05:33, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	

Lab Sample ID: S42115.22 (continued)
Sample Tag: MW-14-61_110222

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/05/22 05:33, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S42115.23
Sample Tag: DUP-05_110222
Collected Date/Time: 11/02/2022 00:01
Matrix: Groundwater
COC Reference: 155477

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	IR
1	125ml Plastic	None	Yes	2.6	IR
1	250ml Plastic	H2SO4	Yes	2.6	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Inorganics

Method: E300.0, Run Date: 11/03/22 12:24, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 11/06/22 23:42, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.7	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 11/04/22 16:39, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.04	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 06:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	122	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S42115.01(01)+QC01
Generated on 11/15/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S42115.01-S42115.23
Project: 30112892.0470B / Racer Lansing
Submitted Date/Time: 11/03/2022 08:15
Sampled by: Austin Westhuis / Billy Cobern
P.O. #: 30112892.0470B

QC Report Sections

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Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S42115.01
Sample Tag: MW-20-129_110122
Collected Date/Time: 11/01/2022 13:30
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 01:29	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.02
Sample Tag: MW-19-122_110122
Collected Date/Time: 11/01/2022 15:15
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/11/22 23:20	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.03
Sample Tag: MW-19-124_110122
Collected Date/Time: 11/01/2022 16:20
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 01:51	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.04
Sample Tag: MW-20-126_110122
Collected Date/Time: 11/01/2022 17:30
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 02:12	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.05
Sample Tag: MW-16-77_110222
Collected Date/Time: 11/02/2022 09:40
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/11/22 21:10	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.06
Sample Tag: MW-21-139_110222
Collected Date/Time: 11/02/2022 09:55
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/11/22 21:31	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.07
Sample Tag: MW-21-142_110222
Collected Date/Time: 11/02/2022 12:00
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 01:07	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.08
Sample Tag: MW-16-78_110222
Collected Date/Time: 11/02/2022 13:35
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/11/22 21:53	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.09
Sample Tag: MW-19-115_110222
Collected Date/Time: 11/02/2022 14:55
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/11/22 23:42	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.10
Sample Tag: MW-19-116_110222
Collected Date/Time: 11/02/2022 16:15
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 00:46	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.11
Sample Tag: MW-22-153_110222
Collected Date/Time: 11/02/2022 17:05
Matrix: Groundwater
COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	11/05/22 05:13	221104C9	VF221104W4	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.12

Sample Tag: Trip Blank

Collected Date/Time: 11/02/2022 00:01

Matrix: Water

COC Reference: 155478

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	11/05/22 02:21	221104C9	VF221104W4	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.13
Sample Tag: MW-13-45_110122
Collected Date/Time: 11/01/2022 13:15
Matrix: Groundwater
COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 00:25	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.14
Sample Tag: MW-13-43_110122
Collected Date/Time: 11/01/2022 14:15
Matrix: Groundwater
COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/11/22 22:15	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.15
Sample Tag: MW-16-75_110122
Collected Date/Time: 11/01/2022 15:45
Matrix: Groundwater
COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/11/22 22:37	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.16
Sample Tag: MW-16-74_110122
Collected Date/Time: 11/01/2022 17:05
Matrix: Groundwater
COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/11/22 22:58	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.17
Sample Tag: TW-15-12_110222
Collected Date/Time: 11/02/2022 09:50
Matrix: Groundwater
COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	11/03/22 11:45	NTRA221103-W1-B	NTRA221103-W1-B	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 21:42	TKN221106QC	TKN221106QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	11/04/22 20:33	PHS221104QC	PHS221104QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 00:04	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.18

Sample Tag: MW-20-127_110222

Collected Date/Time: 11/02/2022 11:05

Matrix: Groundwater

COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	11/03/22 11:58	NTRA221103-W1-B	NTRA221103-W1-B	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 22:14	TKN221106QC	TKN221106QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	11/04/22 16:28	PHS221104QC	PHS221104QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 02:34	221111B9	VS221111W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.19
Sample Tag: MW-20-128_110222
Collected Date/Time: 11/02/2022 12:45
Matrix: Groundwater
COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	11/03/22 12:11	NTRA221103-W1-B	NTRA221103-W1-B	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 22:31	TKN221106QC	TKN221106QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	11/04/22 20:39	PHS221104QC	PHS221104QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 14:21	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42115.20

Sample Tag: MW-19-123_110222

Collected Date/Time: 11/02/2022 14:10

Matrix: Groundwater

COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	11/03/22 12:24	NTRA221103-W1-B	NTRA221103-W1-B	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 22:46	TKN221106QC	TKN221106QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	11/04/22 16:32	PHS221104QC	PHS221104QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 10:19	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42115.21
Sample Tag: MW-19-121_110222
Collected Date/Time: 11/02/2022 15:45
Matrix: Groundwater
COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	11/03/22 12:04	NTRA221103-W1-A	NTRA221103-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 22:59	TKN221106QC	TKN221106QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	11/04/22 20:42	PHS221104QC	PHS221104QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 06:20	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42115.22

Sample Tag: MW-14-61_110222

Collected Date/Time: 11/02/2022 16:50

Matrix: Groundwater

COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	11/03/22 12:14	NTRA221103-W1-A	NTRA221103-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 23:23	TKN221106QC	TKN221106QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	11/04/22 16:36	PHS221104QC	PHS221104QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 09:57	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	11/05/22 05:33	221104C9	VF221104W4	Yes	BLK/LCS/LCSD

Lab Sample ID: S42115.23

Sample Tag: DUP-05_110222

Collected Date/Time: 11/02/2022 00:01

Matrix: Groundwater

COC Reference: 155477

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	11/03/22 12:24	NTRA221103-W1-A	NTRA221103-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 23:42	TKN221106QC	TKN221106QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	11/04/22 16:39	PHS221104QC	PHS221104QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 06:42	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Inorganics, Prep Batch ID: NTRA221103-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42115.21	Nitrate-N	E300.0	11/03/22 12:04	NTRA221103-W1-A
S42115.22	Nitrate-N	E300.0	11/03/22 12:14	NTRA221103-W1-A
S42115.23	Nitrate-N	E300.0	11/03/22 12:24	NTRA221103-W1-A

Inorganics, Prep Batch ID: NTRA221103-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42115.17	Nitrate-N	E300.0	11/03/22 11:45	NTRA221103-W1-B
S42115.18	Nitrate-N	E300.0	11/03/22 11:58	NTRA221103-W1-B
S42115.19	Nitrate-N	E300.0	11/03/22 12:11	NTRA221103-W1-B
S42115.20	Nitrate-N	E300.0	11/03/22 12:24	NTRA221103-W1-B

Inorganics, Prep Batch ID: PHS221104QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42115.17	Total Phosphorus	SM4500-PE	11/04/22 20:33	PHS221104QC
S42115.18	Total Phosphorus	SM4500-PE	11/04/22 16:28	PHS221104QC
S42115.19	Total Phosphorus	SM4500-PE	11/04/22 20:39	PHS221104QC
S42115.20	Total Phosphorus	SM4500-PE	11/04/22 16:32	PHS221104QC
S42115.21	Total Phosphorus	SM4500-PE	11/04/22 20:42	PHS221104QC
S42115.22	Total Phosphorus	SM4500-PE	11/04/22 16:36	PHS221104QC
S42115.23	Total Phosphorus	SM4500-PE	11/04/22 16:39	PHS221104QC

Inorganics, Prep Batch ID: TKN221106QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42115.17	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 21:42	TKN221106QC
S42115.18	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 22:14	TKN221106QC
S42115.19	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 22:31	TKN221106QC
S42115.20	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 22:46	TKN221106QC
S42115.21	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 22:59	TKN221106QC
S42115.22	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 23:23	TKN221106QC
S42115.23	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/06/22 23:42	TKN221106QC

Organics - Volatiles, Prep Batch ID: VF221104W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42115.11	Volatile Organics - DEQ List	SW5030C/8260C	11/05/22 05:13	221104C9
S42115.12	Volatile Organics - DEQ List	SW5030C/8260C	11/05/22 02:21	221104C9
S42115.22	Volatile Organics - DEQ List	SW5030C/8260C	11/05/22 05:33	221104C9

Organics - Volatiles, Prep Batch ID: VS221111W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42115.01	1,4-Dioxane	SW8260B - SIM	11/12/22 01:29	221111B9
S42115.02	1,4-Dioxane	SW8260B - SIM	11/11/22 23:20	221111B9
S42115.03	1,4-Dioxane	SW8260B - SIM	11/12/22 01:51	221111B9
S42115.04	1,4-Dioxane	SW8260B - SIM	11/12/22 02:12	221111B9
S42115.05	1,4-Dioxane	SW8260B - SIM	11/11/22 21:10	221111B9
S42115.06	1,4-Dioxane	SW8260B - SIM	11/11/22 21:31	221111B9

Organics - Volatiles, Prep Batch ID: VS221111W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42115.07	1,4-Dioxane	SW8260B - SIM	11/12/22 01:07	221111B9
S42115.08	1,4-Dioxane	SW8260B - SIM	11/11/22 21:53	221111B9
S42115.09	1,4-Dioxane	SW8260B - SIM	11/11/22 23:42	221111B9
S42115.10	1,4-Dioxane	SW8260B - SIM	11/12/22 00:46	221111B9
S42115.13	1,4-Dioxane	SW8260B - SIM	11/12/22 00:25	221111B9
S42115.14	1,4-Dioxane	SW8260B - SIM	11/11/22 22:15	221111B9
S42115.15	1,4-Dioxane	SW8260B - SIM	11/11/22 22:37	221111B9
S42115.16	1,4-Dioxane	SW8260B - SIM	11/11/22 22:58	221111B9
S42115.17	1,4-Dioxane	SW8260B - SIM	11/12/22 00:04	221111B9
S42115.18	1,4-Dioxane	SW8260B - SIM	11/12/22 02:34	221111B9

Organics - Volatiles, Prep Batch ID: VS221111W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42115.20	1,4-Dioxane	SW8260B - SIM	11/12/22 10:19	221111C9
S42115.21	1,4-Dioxane	SW8260B - SIM	11/12/22 06:20	221111C9
S42115.22	1,4-Dioxane	SW8260B - SIM	11/12/22 09:57	221111C9
S42115.23	1,4-Dioxane	SW8260B - SIM	11/12/22 06:42	221111C9

Organics - Volatiles, Prep Batch ID: VS221114W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42115.19	1,4-Dioxane	SW8260B - SIM	11/14/22 14:21	221114A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42115.11

Sample Tag: MW-22-153_110222

Collected Date/Time: 11/02/2022 17:05

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221104C9, Run Date: 11/05/2022 05:13, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.4**	80.0	124.0
1,2-Dichloroethane-D4		**111.9**	72.0	125.0
Toluene-D8		**98.3**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42115.12

Sample Tag: Trip Blank

Collected Date/Time: 11/02/2022 00:01

Matrix: Water

COC Reference: 155478

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221104C9, Run Date: 11/05/2022 02:21, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**103.8**	80.0	124.0
1,2-Dichloroethane-D4		**100.8**	72.0	125.0
Toluene-D8		**98.9**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42115.22

Sample Tag: MW-14-61_110222

Collected Date/Time: 11/02/2022 16:50

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221104C9, Run Date: 11/05/2022 05:33, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**102.3**	80.0	124.0
1,2-Dichloroethane-D4		**110.9**	72.0	125.0
Toluene-D8		**97.8**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF221104W4

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221104C9.BLKW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 01:22, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**101.6**	80.0	124.0
1,2-Dichloroethane-D4		**100.9**	72.0	125.0
Toluene-D8		**97.9**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:04, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.1**	80.0	124.0
1,2-Dichloroethane-D4		**102.9**	72.0	125.0
Toluene-D8		**98.3**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221104C9.LCSDW04B, Parent Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:23, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**100.6**	80.0	124.0
1,2-Dichloroethane-D4		**97.6**	72.0	125.0
Toluene-D8		**98.3**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS221111W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221111B9.BLKW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 20:26, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:04, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111B9.LCSDW11A, Parent Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:25, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS221111W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221111C9.BLKW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 05:37, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:34, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111C9.LCSDW11B, Parent Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:54, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221111C9.4226609M, Parent Sample ID: S42266.08

Run in Batch: 221111C9, Run Date: 11/12/2022 04:15, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221111C9.4226610N, Parent Sample ID: 221111C9.4226609M

Run in Batch: 221111C9, Run Date: 11/12/2022 04:36, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS221114W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.01

Sample Tag: MW-20-129_110122

Collected Date/Time: 11/01/2022 13:30

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/12/2022 01:29, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**117.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.02

Sample Tag: MW-19-122_110122

Collected Date/Time: 11/01/2022 15:15

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/11/2022 23:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**111.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.03

Sample Tag: MW-19-124_110122

Collected Date/Time: 11/01/2022 16:20

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/12/2022 01:51, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**117.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.04

Sample Tag: MW-20-126_110122

Collected Date/Time: 11/01/2022 17:30

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/12/2022 02:12, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**118.1**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.05

Sample Tag: MW-16-77_110222

Collected Date/Time: 11/02/2022 09:40

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/11/2022 21:10, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.06

Sample Tag: MW-21-139_110222

Collected Date/Time: 11/02/2022 09:55

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/11/2022 21:31, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.07

Sample Tag: MW-21-142_110222

Collected Date/Time: 11/02/2022 12:00

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/12/2022 01:07, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**110.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.08

Sample Tag: MW-16-78_110222

Collected Date/Time: 11/02/2022 13:35

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/11/2022 21:53, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.9**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.09

Sample Tag: MW-19-115_110222

Collected Date/Time: 11/02/2022 14:55

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/11/2022 23:42, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**105.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.10

Sample Tag: MW-19-116_110222

Collected Date/Time: 11/02/2022 16:15

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/12/2022 00:46, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.11

Sample Tag: MW-22-153_110222

Collected Date/Time: 11/02/2022 17:05

Matrix: Groundwater

COC Reference: 155478

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221104C9, Run Date: 11/05/2022 05:13, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**96.0**	50.0	200.0
1,4-Difluorobenzene		**99.7**	50.0	200.0
Chlorobenzene-D5		**101.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**105.9**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.12

Sample Tag: Trip Blank

Collected Date/Time: 11/02/2022 00:01

Matrix: Water

COC Reference: 155478

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221104C9, Run Date: 11/05/2022 02:21, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**103.1**	50.0	200.0
1,4-Difluorobenzene		**103.2**	50.0	200.0
Chlorobenzene-D5		**102.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**103.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.13

Sample Tag: MW-13-45_110122

Collected Date/Time: 11/01/2022 13:15

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/12/2022 00:25, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**110.2**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.14

Sample Tag: MW-13-43_110122

Collected Date/Time: 11/01/2022 14:15

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/11/2022 22:15, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.2**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.15

Sample Tag: MW-16-75_110122

Collected Date/Time: 11/01/2022 15:45

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/11/2022 22:37, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**107.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.16

Sample Tag: MW-16-74_110122

Collected Date/Time: 11/01/2022 17:05

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/11/2022 22:58, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**110.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.17

Sample Tag: TW-15-12_110222

Collected Date/Time: 11/02/2022 09:50

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/12/2022 00:04, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**111.3**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.18

Sample Tag: MW-20-127_110222

Collected Date/Time: 11/02/2022 11:05

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111B9, Run Date: 11/12/2022 02:34, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**118.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.19

Sample Tag: MW-20-128_110222

Collected Date/Time: 11/02/2022 12:45

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 14:21, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**109.9**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.20

Sample Tag: MW-19-123_110222

Collected Date/Time: 11/02/2022 14:10

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 10:19, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.21

Sample Tag: MW-19-121_110222

Collected Date/Time: 11/02/2022 15:45

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 06:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**101.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.22

Sample Tag: MW-14-61_110222

Collected Date/Time: 11/02/2022 16:50

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 09:57, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**104.2**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221104C9, Run Date: 11/05/2022 05:33, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**99.1**	50.0	200.0
1,4-Difluorobenzene		**101.3**	50.0	200.0
Chlorobenzene-D5		**105.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**105.9**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42115.23

Sample Tag: DUP-05_110222

Collected Date/Time: 11/02/2022 00:01

Matrix: Groundwater

COC Reference: 155477

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 06:42, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**101.9**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF221104W4

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221104C9.BLKW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 01:22, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**102.6**	50.0	200.0
1,4-Difluorobenzene		**105.0**	50.0	200.0
Chlorobenzene-D5		**105.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**104.8**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:04, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.9**	50.0	200.0
1,4-Difluorobenzene		**102.7**	50.0	200.0
Chlorobenzene-D5		**102.3**	50.0	200.0
1,4-Dichlorobenzene-D4		**104.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221104C9.LCSDW04B, Parent Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:23, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**101.4**	50.0	200.0
1,4-Difluorobenzene		**101.6**	50.0	200.0
Chlorobenzene-D5		**100.5**	50.0	200.0
1,4-Dichlorobenzene-D4		**98.3**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221111W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221111B9.BLKW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 20:26, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**106.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:04, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**108.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111B9.LCSDW11A, Parent Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:25, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**96.8**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221111W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221111C9.BLKW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 05:37, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**90.9**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:34, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**90.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111C9.LCSDW11B, Parent Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:54, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**92.3**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221111C9.4226609M, Parent Sample ID: S42266.08

Run in Batch: 221111C9, Run Date: 11/12/2022 04:15, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**107.7**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221111C9.4226610N, Parent Sample ID: 221111C9.4226609M

Run in Batch: 221111C9, Run Date: 11/12/2022 04:36, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221114W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**92.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**103.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**98.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.2**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**109.7**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.8**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.7**	50.0	200.0

Inorganics, Prep Batch ID: NTRA221103-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: NTRA221103-W1-A.LRB1

Run in Batch: NTRA221103-W1-A, Run Date: 11/03/2022 08:20, Prep Date: 11/03/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Nitrate-N		ND	0.1	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: NTRA221103-W1-A.LCS1

Run in Batch: NTRA221103-W1-A, Run Date: 11/03/2022 08:43, Prep Date: 11/03/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Nitrate-N		97	90	110

Matrix Spike (MS)

Lab Sample ID: NTRA221103-W1-A.MS1, Parent Sample ID: S42091.01

Run in Batch: NTRA221103-W1-A, Run Date: 11/03/2022 10:43, Prep Date: 11/03/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Nitrate-N		111	80	120

Matrix Spike Duplicate (MSD)

Lab Sample ID: NTRA221103-W1-A.MSD1, Parent Sample ID: NTRA221103-W1-A.MS1

Run in Batch: NTRA221103-W1-A, Run Date: 11/03/2022 10:54, Prep Date: 11/03/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Nitrate-N		111	80	120	0	15

Duplicate (DUP)

Lab Sample ID: NTRA221103-W1-A.DP1, Parent Sample ID: S42091.01

Run in Batch: NTRA221103-W1-A, Run Date: 11/03/2022 10:33, Prep Date: 11/03/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	RPD	RPD CL
Nitrate-N		<1	15

Inorganics, Prep Batch ID: NTRA221103-W1-B

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: NTRA221103-W1-B.LRB1

Run in Batch: NTRA221103-W1-B, Run Date: 11/03/2022 07:41, Prep Date: 11/03/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Nitrate-N		ND	0.1	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: NTRA221103-W1-B.LCS1

Run in Batch: NTRA221103-W1-B, Run Date: 11/03/2022 08:06, Prep Date: 11/03/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Nitrate-N		95	90	110

Matrix Spike (MS)

Lab Sample ID: NTRA221103-W1-B.MS1, Parent Sample ID: S42099.02

Run in Batch: NTRA221103-W1-B, Run Date: 11/03/2022 10:54, Prep Date: 11/03/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Nitrate-N		102	80	120

Matrix Spike Duplicate (MSD)

Lab Sample ID: NTRA221103-W1-B.MSD1, Parent Sample ID: NTRA221103-W1-B.MS1

Run in Batch: NTRA221103-W1-B, Run Date: 11/03/2022 11:06, Prep Date: 11/03/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Nitrate-N		103	80	120	1	15

Duplicate (DUP)

Lab Sample ID: NTRA221103-W1-B.DP1, Parent Sample ID: S42099.02

Run in Batch: NTRA221103-W1-B, Run Date: 11/03/2022 10:41, Prep Date: 11/03/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	RPD	RPD CL
Nitrate-N		<1	15

Inorganics, Prep Batch ID: PHS221104QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Blank (BLK)

Lab Sample ID: PHS221104QC.LRB1

Run in Batch: PHS221104QC, Run Date: 11/04/2022 15:55, Prep Date: 11/04/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

Blank (BLK)

Lab Sample ID: PHS221104QC.LRB2

Run in Batch: PHS221104QC, Run Date: 11/04/2022 16:02, Prep Date: 11/04/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: PHS221104QC.LCS1

Run in Batch: PHS221104QC, Run Date: 11/04/2022 16:09, Prep Date: 11/04/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		93	90	110

Matrix Spike (MS)

Lab Sample ID: PHS221104QC.MS1, Parent Sample ID: S42115.18

Run in Batch: PHS221104QC, Run Date: 11/04/2022 20:50, Prep Date: 11/04/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		99	80	120

Duplicate (DUP)

Lab Sample ID: PHS221104QC.DP1, Parent Sample ID: S42085.01

Run in Batch: PHS221104QC, Run Date: 11/04/2022 20:46, Prep Date: 11/04/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Phosphorus		4.0	20

Inorganics, Prep Batch ID: TKN221106QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Blank (BLK)

Lab Sample ID: TKN221106QC.LRB1

Run in Batch: TKN221106QC, Run Date: 11/06/2022 13:20, Prep Date: 11/06/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Kjeldahl Nitrogen		ND	0.02	mg/L

Blank (BLK)

Lab Sample ID: TKN221106QC.LRB2

Run in Batch: TKN221106QC, Run Date: 11/06/2022 16:57, Prep Date: 11/06/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Kjeldahl Nitrogen		ND	0.1	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: TKN221106QC.LCS1

Run in Batch: TKN221106QC, Run Date: 11/06/2022 17:20, Prep Date: 11/06/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Kjeldahl Nitrogen		96	90	110

Matrix Spike (MS)

Lab Sample ID: TKN221106QC.MS1, Parent Sample ID: S42107.02

Run in Batch: TKN221106QC, Run Date: 11/06/2022 18:11, Prep Date: 11/06/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Kjeldahl Nitrogen		97	80	120

Duplicate (DUP)

Lab Sample ID: TKN221106QC.DP1, Parent Sample ID: S42107.01

Run in Batch: TKN221106QC, Run Date: 11/06/2022 17:45, Prep Date: 11/06/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Kjeldahl Nitrogen		3.9	20

Organics - Volatiles, Prep Batch ID: VF221104W4

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221104C9.BLKW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 01:22, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF221104W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 221104C9.BLKW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 01:22, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:04, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		97.5	67.4	121.2
Acetone		81.0	29.9	161.5
Methyl iodide		97.6	68.8	116.4
Carbon disulfide		90.4	63.8	137.4
tert-Methyl butyl ether (MTBE)		90.8	73.2	122.4
Acrylonitrile		98.5	69.9	128.9
2-Butanone (MEK)		88.2	44.0	134.4
Dichlorodifluoromethane		105.4	10.0	222.8
Chloromethane		109.2	23.8	166.5
Vinyl chloride		105.9	43.5	149.1
Bromomethane		103.6	56.8	151.3
Chloroethane		96.1	53.4	149.4
Trichlorofluoromethane		97.4	59.7	151.8
1,1-Dichloroethene		91.3	69.6	139.4
Methylene chloride		98.7	73.3	121.1
trans-1,2-Dichloroethene		94.7	73.6	129.3
1,1-Dichloroethane		96.6	71.5	126.2
cis-1,2-Dichloroethene		98.1	76.6	122.1
Tetrahydrofuran		88.1	59.0	117.9
Chloroform		98.2	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF221104W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:04, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		101.3	78.2	120.8
1,1,1-Trichloroethane		92.4	79.4	130.9
4-Methyl-2-pentanone (MIBK)		90.0	71.6	125.2
2-Hexanone		89.2	55.4	136.9
Carbon tetrachloride		88.4	72.6	133.0
Benzene		95.3	79.9	124.9
1,2-Dichloroethane		96.2	76.0	126.3
Trichloroethene		92.3	79.7	124.2
1,2-Dichloropropane		97.6	78.6	126.4
Bromodichloromethane		95.8	80.4	128.2
Dibromomethane		99.5	76.9	122.1
cis-1,3-Dichloropropene		96.7	79.8	129.9
Toluene		92.8	79.8	124.5
trans-1,3-Dichloropropene		95.8	74.0	131.3
1,1,2-Trichloroethane		97.4	78.7	123.1
Tetrachloroethene		94.2	74.5	124.5
trans-1,4-Dichloro-2-butene		95.9	68.6	135.4
Dibromochloromethane		100.3	74.6	127.2
1,2-Dibromoethane		100.8	70.3	133.7
Chlorobenzene		100.1	79.2	122.7
1,1,1,2-Tetrachloroethane		98.8	80.3	128.2
Ethylbenzene		97.8	79.5	129.1
p,m-Xylene		97.6	79.4	132.2
o-Xylene		95.3	80.2	131.0
Styrene		100.1	69.5	126.7
Isopropylbenzene		95.2	74.4	121.5
Bromoform		98.1	69.4	128.0
1,1,2,2-Tetrachloroethane		100.4	79.8	126.3
1,2,3-Trichloropropane		102.4	78.3	138.8
n-Propylbenzene		96.0	82.0	130.7
Bromobenzene		101.9	78.7	124.6
1,3,5-Trimethylbenzene		95.7	81.3	128.9
tert-Butylbenzene		90.6	80.7	128.9
1,2,4-Trimethylbenzene		98.2	81.4	130.8
sec-Butylbenzene		88.6	77.4	129.8
p-Isopropyltoluene		90.4	79.8	137.5
1,3-Dichlorobenzene		95.8	77.0	131.3
1,4-Dichlorobenzene		96.5	20.7	137.7
1,2-Dichlorobenzene		97.8	10.0	166.2
1,2,3-Trimethylbenzene		91.5	76.3	124.2
n-Butylbenzene		89.2	80.0	133.3
Hexachloroethane		82.5	23.8	138.1
1,2-Dibromo-3-chloropropane		84.8	21.2	189.4
1,2,4-Trichlorobenzene		92.9	27.4	143.4
1,2,3-Trichlorobenzene		90.9	75.4	131.4
Naphthalene		86.1	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF221104W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:04, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		70.6	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221104C9.LCSDW04B, Parent Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:23, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		92.2	67.4	121.2	5.5	30.0
Acetone		79.0	29.9	161.5	2.4	30.0
Methyl iodide		93.6	68.8	116.4	4.2	30.0
Carbon disulfide		86.8	63.8	137.4	4.1	30.0
tert-Methyl butyl ether (MTBE)		87.1	73.2	122.4	4.2	30.0
Acrylonitrile		94.7	69.9	128.9	3.9	30.0
2-Butanone (MEK)		86.2	44.0	134.4	2.3	30.0
Dichlorodifluoromethane		101.9	10.0	222.8	3.4	30.0
Chloromethane		100.4	23.8	166.5	8.4	30.0
Vinyl chloride		101.5	43.5	149.1	4.3	30.0
Bromomethane		97.9	56.8	151.3	5.7	30.0
Chloroethane		92.4	53.4	149.4	3.9	30.0
Trichlorofluoromethane		92.9	59.7	151.8	4.8	30.0
1,1-Dichloroethene		87.1	69.6	139.4	4.7	30.0
Methylene chloride		93.7	73.3	121.1	5.2	30.0
trans-1,2-Dichloroethene		89.4	73.6	129.3	5.8	30.0
1,1-Dichloroethane		91.7	71.5	126.2	5.2	30.0
cis-1,2-Dichloroethene		93.8	76.6	122.1	4.5	30.0
Tetrahydrofuran		85.3	59.0	117.9	3.2	30.0
Chloroform		93.5	78.4	124.0	4.8	30.0
Bromochloromethane		98.4	78.2	120.8	2.9	30.0
1,1,1-Trichloroethane		87.5	79.4	130.9	5.4	30.0
4-Methyl-2-pentanone (MIBK)		84.8	71.6	125.2	5.9	30.0
2-Hexanone		85.0	55.4	136.9	4.9	30.0
Carbon tetrachloride		87.2	72.6	133.0	1.4	30.0
Benzene		91.7	79.9	124.9	3.8	30.0
1,2-Dichloroethane		92.7	76.0	126.3	3.7	30.0
Trichloroethene		90.3	79.7	124.2	2.2	30.0
1,2-Dichloropropane		94.3	78.6	126.4	3.5	30.0
Bromodichloromethane		94.0	80.4	128.2	2.0	30.0
Dibromomethane		98.3	76.9	122.1	1.2	30.0
cis-1,3-Dichloropropene		95.3	79.8	129.9	1.5	30.0
Toluene		91.1	79.8	124.5	1.8	30.0
trans-1,3-Dichloropropene		91.5	74.0	131.3	4.5	30.0
1,1,2-Trichloroethane		95.2	78.7	123.1	2.3	30.0
Tetrachloroethene		91.1	74.5	124.5	3.3	30.0
trans-1,4-Dichloro-2-butene		91.9	68.6	135.4	4.2	30.0
Dibromochloromethane		99.2	74.6	127.2	1.1	30.0
1,2-Dibromoethane		100.4	70.3	133.7	0.4	30.0
Chlorobenzene		98.1	79.2	122.7	2.0	30.0

Organics - Volatiles, Prep Batch ID: VF221104W4 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 221104C9.LCSDW04B, Parent Sample ID: 221104C9.LCSW04B

Run in Batch: 221104C9, Run Date: 11/05/2022 00:23, Prep Date: 11/04/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		96.3	80.3	128.2	2.5	30.0
Ethylbenzene		93.9	79.5	129.1	4.0	30.0
p,m-Xylene		96.4	79.4	132.2	1.3	30.0
o-Xylene		93.9	80.2	131.0	1.5	30.0
Styrene		96.6	69.5	126.7	3.6	30.0
Isopropylbenzene		93.4	74.4	121.5	1.9	30.0
Bromoform		95.6	69.4	128.0	2.6	30.0
1,1,2,2-Tetrachloroethane		98.2	79.8	126.3	2.2	30.0
1,2,3-Trichloropropane		98.0	78.3	138.8	4.5	30.0
n-Propylbenzene		93.8	82.0	130.7	2.3	30.0
Bromobenzene		97.9	78.7	124.6	3.9	30.0
1,3,5-Trimethylbenzene		95.0	81.3	128.9	0.7	30.0
tert-Butylbenzene		88.6	80.7	128.9	2.1	30.0
1,2,4-Trimethylbenzene		94.7	81.4	130.8	3.7	30.0
sec-Butylbenzene		90.3	77.4	129.8	2.0	30.0
p-Isopropyltoluene		91.5	79.8	137.5	1.2	30.0
1,3-Dichlorobenzene		96.4	77.0	131.3	0.6	30.0
1,4-Dichlorobenzene		97.5	20.7	137.7	1.1	30.0
1,2-Dichlorobenzene		99.0	10.0	166.2	1.3	30.0
1,2,3-Trimethylbenzene		92.1	76.3	124.2	0.6	30.0
n-Butylbenzene		90.6	80.0	133.3	1.5	30.0
Hexachloroethane		85.0	23.8	138.1	3.0	30.0
1,2-Dibromo-3-chloropropane		88.8	21.2	189.4	4.7	30.0
1,2,4-Trichlorobenzene		93.9	27.4	143.4	1.1	30.0
1,2,3-Trichlorobenzene		89.9	75.4	131.4	1.2	30.0
Naphthalene		86.9	32.9	135.8	0.9	30.0
2-Methylnaphthalene		68.6	25.5	165.5	3.0	30.0

Organics - Volatiles, Prep Batch ID: VS221111W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221111B9.BLKW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 20:26, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.47	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:04, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		83.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111B9.LCSDW11A, Parent Sample ID: 221111B9.LCSW11A

Run in Batch: 221111B9, Run Date: 11/11/2022 19:25, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		85.9	70.0	130.0	3.4	30.0

Organics - Volatiles, Prep Batch ID: VS221111W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221111C9.BLKW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 05:37, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.32	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:34, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		83.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111C9.LCSDW11B, Parent Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:54, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		84.1	70.0	130.0	0.6	30.0

Matrix Spike (MS)

Lab Sample ID: 221111C9.4226609M, Parent Sample ID: S42266.08

Run in Batch: 221111C9, Run Date: 11/12/2022 04:15, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		83.3	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221111C9.4226610N, Parent Sample ID: 221111C9.4226609M

Run in Batch: 221111C9, Run Date: 11/12/2022 04:36, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		87.9	70.0	130.0	4.7	30.0

Organics - Volatiles, Prep Batch ID: VS221114W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.37	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		82.5	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		84.0	70.0	130.0	1.8	30.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		92.0	70.0	130.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		105.5	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		86.7	70.0	130.0	5.9	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		111.8	70.0	130.0	2.3	30.0

Merit Laboratories Login Checklist

Lab Set ID: S42115
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470B / Racer Lansing
Submitted: 11/03/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.6
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[X] Yes	[ ] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[X] Yes	[ ] No	[ ] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S42115 Submitted: 11/03/2022 08:15

Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30112892.0470B / Racer Lansing

Initial Preservation Check: 11/03/2022 09:28 MMC

Preservation Recheck (E200.8): N/A

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S42115.17	250ml Plastic H2SO4	<2			
S42115.18	250ml Plastic H2SO4	<2			
S42115.19	250ml Plastic H2SO4	<2			
S42115.20	250ml Plastic H2SO4	<2			
S42115.21	250ml Plastic H2SO4	<2			
S42115.22	250ml Plastic H2SO4	<2			
S42115.23	250ml Plastic H2SO4	<2			

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 2 — 155478

CHAIN OF CUSTODY RECORD — Plant 2

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 947-777-5215 | CELL NO. | P.O. NO.
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com | QUOTE NO.

INVOICE TO

CONTACT NAME | ☒ SAME
COMPANY
ADDRESS
CITY | STATE | ZIP CODE
PHONE NO. | E-MAIL ADDRESS

PROJECT NO./NAME: 30112892.0470B / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☐ Other
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane 8260B SIMS	VOCs 8260B - SIMS
42115.01	11/1/22	1330	MW-20-129_110122	GW	3		3						X	
.02	11/1/22	1515	MW-19-122_110122	GW	3		3						X	
.03	11/1/22	1620	MW-19-124_110122	GW	3		3						X	
.04	11/1/22	1730	MW-20-126_110122	GW	3		3						X	
.05	11/2/22	0940	MW-16-77_110222	GW	3		3						X	
.06	11/2/22	0955	MW-21-139_110222	GW	3		3						X	
.07	11/2/22	1200	MW-21-142_110222	GW	3		3						X	
.08	11/2/22	1335	MW-16-78_110222	GW	3		3						X	
.09	11/2/22	1455	MW-19-115_110222	GW	3		3						X	
.10	11/2/22	1615	MW-19-116_110222	GW	3		3						X	
.11	11/2/22	1705	MW-22-153_110222	GW	3		3							X
.12	11/1/22	—	Trip Blank	GW	1		1							X

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis ☒ Sampler	11/2/22	1810	RELINQUISHED BY: SIGNATURE/ORGANIZATION Merit Drop Box	11/3/22 0815
RECEIVED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis	11/2/22	1810	RECEIVED BY: SIGNATURE/ORGANIZATION [signature]	11/3/22 0815
RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis	11/2/22	1832	SEAL NO.	SEAL INTACT YES ☐ NO ☐ INITIALS
RECEIVED BY: SIGNATURE/ORGANIZATION Merit Drop Box	11/2/22		SEAL NO.	SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 2.6

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev 1.26.22

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 2 OF 2 — 155477

CHAIN OF CUSTODY RECORD — PLANT-2

REPORT TO

CONTACT NAME: KAITLYN HUNT
COMPANY: ARCADIS
ADDRESS: 28550 CABOT DR SUITE 500
CITY: NOVI | STATE: MI | ZIP CODE: 48377
PHONE NO.: 947-777-5215 | CELL NO. | P.O. NO.
E-MAIL ADDRESS: KAITLYN.HUNT@ARCADIS-US.COM | QUOTE NO.

INVOICE TO

CONTACT NAME | X SAME
COMPANY
ADDRESS
CITY | STATE | ZIP CODE
PHONE NO. | E-MAIL ADDRESS

PROJECT NO./NAME: 30112892
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Billy J. Cobean

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☐ Other
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4 DIOXANE 8260B SIMS	NITRATE	TOTAL PHOSPHORUS	TKN	1,4 DIOXANE/UCCS 8260B SIMS
42115.13	11/1/22	13:15	MW-13-45_110122	GW	3		3						3				
.14	11/1/22	14:15	MW-13-43_110122	GW	3		3						3				
.15	11/1/22	15:45	MW-16-75_110122	GW	3		3						3				
.16	11/1/22	17:05	MW-16-74_110122	GW	3		3						3				
.17	11/2/22	9:50	TW-15-12_110222	GW	5	1	3		1				3	1	1		
.18	11/2/22	11:05	MW-20-127_110222	GW	5	1	3		1				3	1	1		
.19	11/2/22	12:45	MW-20-128_110222	GW	5	1	3		1				3	1	1		
.20	11/2/22	14:10	MW-19-123_110222	GW	5	1	3		1				3	1	1		
.21	11/2/22	15:45	MW-19-121_110222	GW	5	1	3		1				3	1	1		
.22	11/2/22	16:50	MW-14-61_110222	GW	5	1	3		1					1	1	3	
.23	11/2/22	—	DUP-05_110222	GW	5	1	3		1				3	1	1		

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Sampler / Arcadis	DATE: 11/2/22	TIME: 1810	
RECEIVED BY: SIGNATURE/ORGANIZATION: Arcadis	DATE: 11/2/22	TIME: 1810	
RELINQUISHED BY: SIGNATURE/ORGANIZATION: Arcadis	DATE: 11/2/22	TIME: 1832	
RECEIVED BY: SIGNATURE/ORGANIZATION: Merit Drop Box	DATE: 11/2/22	TIME	

RELINQUISHED BY: SIGNATURE/ORGANIZATION: Merit Drop Box	DATE: 11/3/22	TIME: 0815	
RECEIVED BY: SIGNATURE/ORGANIZATION: M Chilcote	DATE: 11/3/22	TIME: 0815	
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL: 2.6
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Analytical Laboratory Report

Report ID: S42266.01(01)+QC01
Generated on 11/15/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S42266.01-S42266.19
Project: 30112892.0470B / Racer Lansing
Collected Date(s): 11/03/2022 - 11/04/2022
Submitted Date/Time: 11/08/2022 08:15
Sampled by: Austin Westhuis / Bill Cobern
P.O. #: 30112892.0470B

Table of Contents

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (19 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S42266.01	TW-14-02_110322	Groundwater	11/03/22 10:10
S42266.02	PW-14-02_110322	Groundwater	11/03/22 11:50
S42266.03	MW-16-82_110322	Groundwater	11/03/22 13:00
S42266.04	MW-19-117_110322	Groundwater	11/03/22 14:30
S42266.05	MW-19-120_110322	Groundwater	11/03/22 15:30
S42266.06	PW-14-01_110322	Groundwater	11/03/22 16:35
S42266.07	MW-21-140_110422	Groundwater	11/04/22 09:35
S42266.08	MW-16-85_110422	Groundwater	11/04/22 11:25
S42266.09	MW-16-85_110422 MS	Groundwater	11/04/22 11:25
S42266.10	MW-16-85_110422 MSD	Groundwater	11/04/22 11:25
S42266.11	MW-16-80_110422	Groundwater	11/04/22 12:40
S42266.12	Trip Blank	Water	11/04/22 00:01
S42266.13	MW-15-72_110322	Groundwater	11/03/22 11:10
S42266.14	MW-16-81_110322	Groundwater	11/03/22 12:20
S42266.15	MW-20-130_110322	Groundwater	11/03/22 13:45
S42266.16	MW-17-86_110322	Groundwater	11/03/22 15:10
S42266.17	MW-16-84_110322	Groundwater	11/03/22 16:20
S42266.18	DUP-02_110322	Groundwater	11/03/22 00:01
S42266.19	DUP-04_110322	Groundwater	11/03/22 00:01

Lab Sample ID: S42266.01
Sample Tag: TW-14-02_110322
Collected Date/Time: 11/03/2022 10:10
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/09/22 09:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 13:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 03:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S42266.01 (continued)
Sample Tag: TW-14-02_110322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 03:41, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S42266.02
Sample Tag: PW-14-02_110322
Collected Date/Time: 11/03/2022 11:50
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/09/22 09:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 10:40, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	9	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 04:05, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S42266.02 (continued)
Sample Tag: PW-14-02_110322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 04:05, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S42266.03
Sample Tag: MW-16-82_110322
Collected Date/Time: 11/03/2022 13:00
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 07:46, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42266.04
Sample Tag: MW-19-117_110322
Collected Date/Time: 11/03/2022 14:30
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 08:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S42266.05
Sample Tag: MW-19-120_110322
Collected Date/Time: 11/03/2022 15:30
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/09/22 09:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 09:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	13	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 04:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S42266.05 (continued)
Sample Tag: MW-19-120_110322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 04:28, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S42266.06
Sample Tag: PW-14-01_110322
Collected Date/Time: 11/03/2022 16:35
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 08:30, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S42266.07
Sample Tag: MW-21-140_110422
Collected Date/Time: 11/04/2022 09:35
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 08:51, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S42266.08
Sample Tag: MW-16-85_110422
Collected Date/Time: 11/04/2022 11:25
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 05:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	6	1		ug/L	1	123-91-1	

Lab Sample ID: S42266.09
Sample Tag: MW-16-85_110422 MS
Collected Date/Time: 11/04/2022 11:25
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 04:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	48	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S42266.10
Sample Tag: MW-16-85_110422 MSD
Collected Date/Time: 11/04/2022 11:25
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 04:36, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	50	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S42266.11
Sample Tag: MW-16-80_110422
Collected Date/Time: 11/04/2022 12:40
Matrix: Groundwater
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 11:02, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	19	1		ug/L	1	123-91-1	

Lab Sample ID: S42266.12
Sample Tag: Trip Blank
Collected Date/Time: 11/04/2022 00:01
Matrix: Water
COC Reference: 155481

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/09/22 09:00	BML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 02:55, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	

Lab Sample ID: S42266.12 (continued)
Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 02:55, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Analytical Laboratory Report

Lab Sample ID: S42266.13
Sample Tag: MW-15-72_110322
Collected Date/Time: 11/03/2022 11:10
Matrix: Groundwater
COC Reference: 155476

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 20:28, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	11	1		ug/L	1	123-91-1	

Lab Sample ID: S42266.14
Sample Tag: MW-16-81_110322
Collected Date/Time: 11/03/2022 12:20
Matrix: Groundwater
COC Reference: 155476

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/09/22 09:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 20:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	70	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 04:52, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S42266.14 (continued)
Sample Tag: MW-16-81_110322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 04:52, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S42266.15
Sample Tag: MW-20-130_110322
Collected Date/Time: 11/03/2022 13:45
Matrix: Groundwater
COC Reference: 155476

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 09:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	10	1		ug/L	1	123-91-1	

Lab Sample ID: S42266.16
Sample Tag: MW-17-86_110322
Collected Date/Time: 11/03/2022 15:10
Matrix: Groundwater
COC Reference: 155476

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/09/22 09:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 11:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	19	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 05:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S42266.16 (continued)
Sample Tag: MW-17-86_110322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 05:15, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S42266.17
Sample Tag: MW-16-84_110322
Collected Date/Time: 11/03/2022 16:20
Matrix: Groundwater
COC Reference: 155476

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/09/22 09:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/12/22 11:45, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	29	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 05:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S42266.17 (continued)
Sample Tag: MW-16-84_110322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 05:38, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Lab Sample ID: S42266.18
Sample Tag: DUP-02_110322
Collected Date/Time: 11/03/2022 00:01
Matrix: Groundwater
COC Reference: 155476

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/13/22 11:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 19:44, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	11	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42266.19
Sample Tag: DUP-04_110322
Collected Date/Time: 11/03/2022 00:01
Matrix: Groundwater
COC Reference: 155476

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/09/22 09:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 20:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	30	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 06:01, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	

Lab Sample ID: S42266.19 (continued)
Sample Tag: DUP-04_110322

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 11/09/22 06:01, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Quality Control Report

Report ID: S42266.01(01)+QC01
Generated on 11/15/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S42266.01-S42266.19
Project: 30112892.0470B / Racer Lansing
Submitted Date/Time: 11/08/2022 08:15
Sampled by: Austin Westhuis / Bill Cobern
P.O. #: 30112892.0470B

QC Report Sections

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Analysis Summary (Pages 34-52)
Prep Batch Summary (Page 53)
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Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S42266.01
Sample Tag: TW-14-02_110322
Collected Date/Time: 11/03/2022 10:10
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 13:59	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 03:41	221108B7	VF221108W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S42266.02
Sample Tag: PW-14-02_110322
Collected Date/Time: 11/03/2022 11:50
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 10:40	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 04:05	221108B7	VF221108W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S42266.03
Sample Tag: MW-16-82_110322
Collected Date/Time: 11/03/2022 13:00
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 07:46	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.04
Sample Tag: MW-19-117_110322
Collected Date/Time: 11/03/2022 14:30
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 08:08	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.05
Sample Tag: MW-19-120_110322
Collected Date/Time: 11/03/2022 15:30
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 09:13	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 04:28	221108B7	VF221108W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S42266.06
Sample Tag: PW-14-01_110322
Collected Date/Time: 11/03/2022 16:35
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 08:30	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.07
Sample Tag: MW-21-140_110422
Collected Date/Time: 11/04/2022 09:35
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 08:51	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.08
Sample Tag: MW-16-85_110422
Collected Date/Time: 11/04/2022 11:25
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 05:59	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.09
Sample Tag: MW-16-85_110422 MS
Collected Date/Time: 11/04/2022 11:25
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 04:15	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.10
Sample Tag: MW-16-85_110422 MSD
Collected Date/Time: 11/04/2022 11:25
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 04:36	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.11
Sample Tag: MW-16-80_110422
Collected Date/Time: 11/04/2022 12:40
Matrix: Groundwater
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 11:02	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.12
Sample Tag: Trip Blank
Collected Date/Time: 11/04/2022 00:01
Matrix: Water
COC Reference: 155481

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 02:55	221108B7	VF221108W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S42266.13
Sample Tag: MW-15-72_110322
Collected Date/Time: 11/03/2022 11:10
Matrix: Groundwater
COC Reference: 155476

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 20:28	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.14
Sample Tag: MW-16-81_110322
Collected Date/Time: 11/03/2022 12:20
Matrix: Groundwater
COC Reference: 155476

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 20:50	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 04:52	221108B7	VF221108W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S42266.15
Sample Tag: MW-20-130_110322
Collected Date/Time: 11/03/2022 13:45
Matrix: Groundwater
COC Reference: 155476

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 09:35	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.16
Sample Tag: MW-17-86_110322
Collected Date/Time: 11/03/2022 15:10
Matrix: Groundwater
COC Reference: 155476

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 11:23	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 05:15	221108B7	VF221108W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S42266.17
Sample Tag: MW-16-84_110322
Collected Date/Time: 11/03/2022 16:20
Matrix: Groundwater
COC Reference: 155476

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/12/22 11:45	221111C9	VS221111W2	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 05:38	221108B7	VF221108W3	Yes	BLK/LCS/LCSD

Lab Sample ID: S42266.18
Sample Tag: DUP-02_110322
Collected Date/Time: 11/03/2022 00:01
Matrix: Groundwater
COC Reference: 155476

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 19:44	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42266.19

Sample Tag: DUP-04_110322

Collected Date/Time: 11/03/2022 00:01

Matrix: Groundwater

COC Reference: 155476

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 20:06	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 06:01	221108B7	VF221108W3	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF221108W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42266.01	Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 03:41	221108B7
S42266.02	Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 04:05	221108B7
S42266.05	Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 04:28	221108B7
S42266.12	Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 02:55	221108B7
S42266.14	Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 04:52	221108B7
S42266.16	Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 05:15	221108B7
S42266.17	Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 05:38	221108B7
S42266.19	Volatile Organics - DEQ List	SW5030C/8260C	11/09/22 06:01	221108B7

Organics - Volatiles, Prep Batch ID: VS221111W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42266.02	1,4-Dioxane	SW8260B - SIM	11/12/22 10:40	221111C9
S42266.03	1,4-Dioxane	SW8260B - SIM	11/12/22 07:46	221111C9
S42266.04	1,4-Dioxane	SW8260B - SIM	11/12/22 08:08	221111C9
S42266.05	1,4-Dioxane	SW8260B - SIM	11/12/22 09:13	221111C9
S42266.06	1,4-Dioxane	SW8260B - SIM	11/12/22 08:30	221111C9
S42266.07	1,4-Dioxane	SW8260B - SIM	11/12/22 08:51	221111C9
S42266.08	1,4-Dioxane	SW8260B - SIM	11/12/22 05:59	221111C9
S42266.09	1,4-Dioxane	SW8260B - SIM	11/12/22 04:15	221111C9
S42266.10	1,4-Dioxane	SW8260B - SIM	11/12/22 04:36	221111C9
S42266.11	1,4-Dioxane	SW8260B - SIM	11/12/22 11:02	221111C9
S42266.15	1,4-Dioxane	SW8260B - SIM	11/12/22 09:35	221111C9
S42266.16	1,4-Dioxane	SW8260B - SIM	11/12/22 11:23	221111C9
S42266.17	1,4-Dioxane	SW8260B - SIM	11/12/22 11:45	221111C9

Organics - Volatiles, Prep Batch ID: VS221114W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42266.01	1,4-Dioxane	SW8260B - SIM	11/14/22 13:59	221114A9
S42266.13	1,4-Dioxane	SW8260B - SIM	11/14/22 20:28	221114A9
S42266.14	1,4-Dioxane	SW8260B - SIM	11/14/22 20:50	221114A9
S42266.18	1,4-Dioxane	SW8260B - SIM	11/14/22 19:44	221114A9
S42266.19	1,4-Dioxane	SW8260B - SIM	11/14/22 20:06	221114A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42266.01

Sample Tag: TW-14-02_110322

Collected Date/Time: 11/03/2022 10:10

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 03:41, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**102.5**	80.0	124.0
1,2-Dichloroethane-D4		**117.1**	72.0	125.0
Toluene-D8		**104.4**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42266.02

Sample Tag: PW-14-02_110322

Collected Date/Time: 11/03/2022 11:50

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 04:05, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**102.9**	80.0	124.0
1,2-Dichloroethane-D4		**116.9**	72.0	125.0
Toluene-D8		**104.0**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42266.05

Sample Tag: MW-19-120_110322

Collected Date/Time: 11/03/2022 15:30

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 04:28, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.3**	80.0	124.0
1,2-Dichloroethane-D4		**124.1**	72.0	125.0
Toluene-D8		**104.0**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42266.12

Sample Tag: Trip Blank

Collected Date/Time: 11/04/2022 00:01

Matrix: Water

COC Reference: 155481

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 02:55, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**104.5**	80.0	124.0
1,2-Dichloroethane-D4		**118.3**	72.0	125.0
Toluene-D8		**104.3**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42266.14

Sample Tag: MW-16-81_110322

Collected Date/Time: 11/03/2022 12:20

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 04:52, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.2**	80.0	124.0
1,2-Dichloroethane-D4		**118.4**	72.0	125.0
Toluene-D8		**103.8**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42266.16

Sample Tag: MW-17-86_110322

Collected Date/Time: 11/03/2022 15:10

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 05:15, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**103.8**	80.0	124.0
1,2-Dichloroethane-D4		**120.6**	72.0	125.0
Toluene-D8		**103.9**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42266.17

Sample Tag: MW-16-84_110322

Collected Date/Time: 11/03/2022 16:20

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 05:38, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**103.0**	80.0	124.0
1,2-Dichloroethane-D4		**111.9**	72.0	125.0
Toluene-D8		**103.9**	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S42266.19

Sample Tag: DUP-04_110322

Collected Date/Time: 11/03/2022 00:01

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 06:01, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**105.8**	80.0	124.0
1,2-Dichloroethane-D4		**120.4**	72.0	125.0
Toluene-D8		**103.9**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VF221108W3

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221108B7.BLKW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 02:31, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.3**	80.0	124.0
1,2-Dichloroethane-D4		**117.5**	72.0	125.0
Toluene-D8		**103.6**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221108B7.LCSW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 00:58, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**104.7**	80.0	124.0
1,2-Dichloroethane-D4		**123.2**	72.0	125.0
Toluene-D8		**105.2**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221108B7.LCSDW08B, Parent Sample ID: 221108B7.LCSW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 01:21, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**103.7**	80.0	124.0
1,2-Dichloroethane-D4	*	**126.2**	72.0	125.0
Toluene-D8		**103.7**	89.0	112.0

Organics - Volatiles, Prep Batch ID: VS221111W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221111C9.BLKW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 05:37, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:34, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111C9.LCSDW11B, Parent Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:54, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221111C9.4226609M, Parent Sample ID: S42266.08

Run in Batch: 221111C9, Run Date: 11/12/2022 04:15, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221111C9.4226610N, Parent Sample ID: 221111C9.4226609M

Run in Batch: 221111C9, Run Date: 11/12/2022 04:36, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS221114W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.01

Sample Tag: TW-14-02_110322

Collected Date/Time: 11/03/2022 10:10

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 13:59, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**99.2**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 03:41, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**105.2**	50.0	200.0
1,4-Difluorobenzene		**104.6**	50.0	200.0
Chlorobenzene-D5		**104.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**101.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.02

Sample Tag: PW-14-02_110322

Collected Date/Time: 11/03/2022 11:50

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 10:40, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**97.9**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 04:05, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**98.8**	50.0	200.0
1,4-Difluorobenzene		**98.9**	50.0	200.0
Chlorobenzene-D5		**98.0**	50.0	200.0
1,4-Dichlorobenzene-D4		**96.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.03

Sample Tag: MW-16-82_110322

Collected Date/Time: 11/03/2022 13:00

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 07:46, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**91.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.04

Sample Tag: MW-19-117_110322

Collected Date/Time: 11/03/2022 14:30

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 08:08, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**98.7**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.05

Sample Tag: MW-19-120_110322

Collected Date/Time: 11/03/2022 15:30

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 09:13, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.2**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 04:28, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**104.6**	50.0	200.0
1,4-Difluorobenzene		**105.9**	50.0	200.0
Chlorobenzene-D5		**106.9**	50.0	200.0
1,4-Dichlorobenzene-D4		**107.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.06

Sample Tag: PW-14-01_110322

Collected Date/Time: 11/03/2022 16:35

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 08:30, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.3**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.07

Sample Tag: MW-21-140_110422

Collected Date/Time: 11/04/2022 09:35

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 08:51, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**97.8**	50.0	200.0

Lab Sample ID: S42266.08

Sample Tag: MW-16-85_110422

Collected Date/Time: 11/04/2022 11:25

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 05:59, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**103.3**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.11

Sample Tag: MW-16-80_110422

Collected Date/Time: 11/04/2022 12:40

Matrix: Groundwater

COC Reference: 155481

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 11:02, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.8**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.12

Sample Tag: Trip Blank

Collected Date/Time: 11/04/2022 00:01

Matrix: Water

COC Reference: 155481

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 02:55, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**102.9**	50.0	200.0
1,4-Difluorobenzene		**103.1**	50.0	200.0
Chlorobenzene-D5		**101.6**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.9**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.13

Sample Tag: MW-15-72_110322

Collected Date/Time: 11/03/2022 11:10

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 20:28, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**93.4**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.14

Sample Tag: MW-16-81_110322

Collected Date/Time: 11/03/2022 12:20

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 20:50, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**103.4**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 04:52, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**101.1**	50.0	200.0
1,4-Difluorobenzene		**101.9**	50.0	200.0
Chlorobenzene-D5		**100.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**100.3**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.15

Sample Tag: MW-20-130_110322

Collected Date/Time: 11/03/2022 13:45

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 09:35, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**98.4**	50.0	200.0

Lab Sample ID: S42266.16

Sample Tag: MW-17-86_110322

Collected Date/Time: 11/03/2022 15:10

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 11:23, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**100.5**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 05:15, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**101.5**	50.0	200.0
1,4-Difluorobenzene		**102.7**	50.0	200.0
Chlorobenzene-D5		**101.7**	50.0	200.0
1,4-Dichlorobenzene-D4		**99.8**	50.0	200.0

Lab Sample ID: S42266.17

Sample Tag: MW-16-84_110322

Collected Date/Time: 11/03/2022 16:20

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221111C9, Run Date: 11/12/2022 11:45, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**97.0**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 05:38, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**101.3**	50.0	200.0
1,4-Difluorobenzene		**100.5**	50.0	200.0
Chlorobenzene-D5		**98.1**	50.0	200.0
1,4-Dichlorobenzene-D4		**96.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42266.18

Sample Tag: DUP-02_110322

Collected Date/Time: 11/03/2022 00:01

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 19:44, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**93.2**	50.0	200.0

Lab Sample ID: S42266.19

Sample Tag: DUP-04_110322

Collected Date/Time: 11/03/2022 00:01

Matrix: Groundwater

COC Reference: 155476

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 20:06, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**102.6**	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 221108B7, Run Date: 11/09/2022 06:01, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
Pentafluorobenzene		**104.3**	50.0	200.0
1,4-Difluorobenzene		**105.1**	50.0	200.0
Chlorobenzene-D5		**103.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**113.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF221108W3

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221108B7.BLKW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 02:31, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**100.6**	50.0	200.0
1,4-Difluorobenzene		**101.2**	50.0	200.0
Chlorobenzene-D5		**99.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**98.9**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221108B7.LCSW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 00:58, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**104.0**	50.0	200.0
1,4-Difluorobenzene		**104.6**	50.0	200.0
Chlorobenzene-D5		**105.2**	50.0	200.0
1,4-Dichlorobenzene-D4		**105.8**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221108B7.LCSDW08B, Parent Sample ID: 221108B7.LCSW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 01:21, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		**105.6**	50.0	200.0
1,4-Difluorobenzene		**106.7**	50.0	200.0
Chlorobenzene-D5		**107.8**	50.0	200.0
1,4-Dichlorobenzene-D4		**107.1**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221111W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221111C9.BLKW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 05:37, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**90.9**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:34, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**90.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111C9.LCSDW11B, Parent Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:54, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**92.3**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221111C9.4226609M, Parent Sample ID: S42266.08

Run in Batch: 221111C9, Run Date: 11/12/2022 04:15, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**107.7**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221111C9.4226610N, Parent Sample ID: 221111C9.4226609M

Run in Batch: 221111C9, Run Date: 11/12/2022 04:36, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.2**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221114W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**92.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**103.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**98.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.2**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**109.7**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.8**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VF221108W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221108B7.BLKW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 02:31, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF221108W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 221108B7.BLKW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 02:31, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221108B7.LCSW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 00:58, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		95.6	67.4	121.2
Acetone		93.7	29.9	161.5
Methyl iodide		96.7	68.8	116.4
Carbon disulfide		87.0	63.8	137.4
tert-Methyl butyl ether (MTBE)		97.8	73.2	122.4
Acrylonitrile		95.2	69.9	128.9
2-Butanone (MEK)		98.2	44.0	134.4
Dichlorodifluoromethane		109.8	10.0	222.8
Chloromethane		100.6	23.8	166.5
Vinyl chloride		99.1	43.5	149.1
Bromomethane		104.7	56.8	151.3
Chloroethane		96.4	53.4	149.4
Trichlorofluoromethane		109.2	59.7	151.8
1,1-Dichloroethene		97.9	69.6	139.4
Methylene chloride		96.5	73.3	121.1
trans-1,2-Dichloroethene		97.0	73.6	129.3
1,1-Dichloroethane		98.3	71.5	126.2
cis-1,2-Dichloroethene		100.0	76.6	122.1
Tetrahydrofuran		89.8	59.0	117.9
Chloroform		107.0	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF221108W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 221108B7.LCSW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 00:58, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		103.5	78.2	120.8
1,1,1-Trichloroethane		107.1	79.4	130.9
4-Methyl-2-pentanone (MIBK)		93.1	71.6	125.2
2-Hexanone		90.1	55.4	136.9
Carbon tetrachloride		106.0	72.6	133.0
Benzene		95.5	79.9	124.9
1,2-Dichloroethane		113.7	76.0	126.3
Trichloroethene		99.3	79.7	124.2
1,2-Dichloropropane		97.2	78.6	126.4
Bromodichloromethane		107.8	80.4	128.2
Dibromomethane		103.3	76.9	122.1
cis-1,3-Dichloropropene		97.7	79.8	129.9
Toluene		100.8	79.8	124.5
trans-1,3-Dichloropropene		102.1	74.0	131.3
1,1,2-Trichloroethane		103.5	78.7	123.1
Tetrachloroethene		100.0	74.5	124.5
trans-1,4-Dichloro-2-butene		95.9	68.6	135.4
Dibromochloromethane		100.6	74.6	127.2
1,2-Dibromoethane		100.8	70.3	133.7
Chlorobenzene		98.6	79.2	122.7
1,1,1,2-Tetrachloroethane		103.0	80.3	128.2
Ethylbenzene		99.1	79.5	129.1
p,m-Xylene		100.6	79.4	132.2
o-Xylene		103.1	80.2	131.0
Styrene		102.0	69.5	126.7
Isopropylbenzene		98.7	74.4	121.5
Bromoform		100.6	69.4	128.0
1,1,2,2-Tetrachloroethane		100.0	79.8	126.3
1,2,3-Trichloropropane		105.9	78.3	138.8
n-Propylbenzene		100.6	82.0	130.7
Bromobenzene		101.9	78.7	124.6
1,3,5-Trimethylbenzene		99.7	81.3	128.9
tert-Butylbenzene		102.6	80.7	128.9
1,2,4-Trimethylbenzene		100.7	81.4	130.8
sec-Butylbenzene		93.6	77.4	129.8
p-Isopropyltoluene		95.4	79.8	137.5
1,3-Dichlorobenzene		100.1	77.0	131.3
1,4-Dichlorobenzene		99.5	20.7	137.7
1,2-Dichlorobenzene		99.8	10.0	166.2
1,2,3-Trimethylbenzene		97.7	76.3	124.2
n-Butylbenzene		94.3	80.0	133.3
Hexachloroethane		90.1	23.8	138.1
1,2-Dibromo-3-chloropropane		92.1	21.2	189.4
1,2,4-Trichlorobenzene		95.2	27.4	143.4
1,2,3-Trichlorobenzene		94.4	75.4	131.4
Naphthalene		95.4	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF221108W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 221108B7.LCSW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 00:58, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		92.5	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221108B7.LCSDW08B, Parent Sample ID: 221108B7.LCSW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 01:21, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		96.5	67.4	121.2	1.0	30.0
Acetone		107.5	29.9	161.5	13.7	30.0
Methyl iodide		94.4	68.8	116.4	2.4	30.0
Carbon disulfide		83.1	63.8	137.4	4.6	30.0
tert-Methyl butyl ether (MTBE)		102.3	73.2	122.4	4.5	30.0
Acrylonitrile		107.8	69.9	128.9	12.4	30.0
2-Butanone (MEK)		107.4	44.0	134.4	8.9	30.0
Dichlorodifluoromethane		107.6	10.0	222.8	2.0	30.0
Chloromethane		97.5	23.8	166.5	3.1	30.0
Vinyl chloride		95.1	43.5	149.1	4.1	30.0
Bromomethane		101.0	56.8	151.3	3.6	30.0
Chloroethane		92.6	53.4	149.4	4.0	30.0
Trichlorofluoromethane		104.7	59.7	151.8	4.2	30.0
1,1-Dichloroethene		90.6	69.6	139.4	7.7	30.0
Methylene chloride		93.0	73.3	121.1	3.7	30.0
trans-1,2-Dichloroethene		93.9	73.6	129.3	3.2	30.0
1,1-Dichloroethane		95.4	71.5	126.2	3.0	30.0
cis-1,2-Dichloroethene		97.3	76.6	122.1	2.7	30.0
Tetrahydrofuran		104.7	59.0	117.9	15.3	30.0
Chloroform		103.7	78.4	124.0	3.1	30.0
Bromochloromethane		101.5	78.2	120.8	2.0	30.0
1,1,1-Trichloroethane		101.5	79.4	130.9	5.4	30.0
4-Methyl-2-pentanone (MIBK)		106.1	71.6	125.2	13.0	30.0
2-Hexanone		105.5	55.4	136.9	15.7	30.0
Carbon tetrachloride		101.0	72.6	133.0	4.8	30.0
Benzene		92.5	79.9	124.9	3.1	30.0
1,2-Dichloroethane		114.6	76.0	126.3	0.8	30.0
Trichloroethene		95.2	79.7	124.2	4.2	30.0
1,2-Dichloropropane		95.8	78.6	126.4	1.4	30.0
Bromodichloromethane		106.7	80.4	128.2	1.0	30.0
Dibromomethane		106.4	76.9	122.1	2.9	30.0
cis-1,3-Dichloropropene		99.5	79.8	129.9	1.8	30.0
Toluene		98.0	79.8	124.5	2.9	30.0
trans-1,3-Dichloropropene		105.7	74.0	131.3	3.5	30.0
1,1,2-Trichloroethane		107.2	78.7	123.1	3.6	30.0
Tetrachloroethene		96.4	74.5	124.5	3.6	30.0
trans-1,4-Dichloro-2-butene		106.5	68.6	135.4	10.5	30.0
Dibromochloromethane		103.2	74.6	127.2	2.6	30.0
1,2-Dibromoethane		105.6	70.3	133.7	4.6	30.0
Chlorobenzene		97.1	79.2	122.7	1.6	30.0

Organics - Volatiles, Prep Batch ID: VF221108W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 221108B7.LCSDW08B, Parent Sample ID: 221108B7.LCSW08B

Run in Batch: 221108B7, Run Date: 11/09/2022 01:21, Prep Date: 11/08/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		99.5	80.3	128.2	3.5	30.0
Ethylbenzene		94.6	79.5	129.1	4.6	30.0
p,m-Xylene		96.1	79.4	132.2	4.6	30.0
o-Xylene		97.5	80.2	131.0	5.6	30.0
Styrene		99.3	69.5	126.7	2.8	30.0
Isopropylbenzene		93.2	74.4	121.5	5.8	30.0
Bromoform		105.6	69.4	128.0	4.9	30.0
1,1,2,2-Tetrachloroethane		106.8	79.8	126.3	6.6	30.0
1,2,3-Trichloropropane		112.7	78.3	138.8	6.3	30.0
n-Propylbenzene		94.6	82.0	130.7	6.1	30.0
Bromobenzene		99.1	78.7	124.6	2.8	30.0
1,3,5-Trimethylbenzene		94.5	81.3	128.9	5.3	30.0
tert-Butylbenzene		98.3	80.7	128.9	4.3	30.0
1,2,4-Trimethylbenzene		96.8	81.4	130.8	3.9	30.0
sec-Butylbenzene		89.6	77.4	129.8	4.4	30.0
p-Isopropyltoluene		91.8	79.8	137.5	3.8	30.0
1,3-Dichlorobenzene		97.9	77.0	131.3	2.2	30.0
1,4-Dichlorobenzene		97.8	20.7	137.7	1.8	30.0
1,2-Dichlorobenzene		98.4	10.0	166.2	1.4	30.0
1,2,3-Trimethylbenzene		94.2	76.3	124.2	3.7	30.0
n-Butylbenzene		91.1	80.0	133.3	3.5	30.0
Hexachloroethane		88.2	23.8	138.1	2.1	30.0
1,2-Dibromo-3-chloropropane		108.0	21.2	189.4	15.9	30.0
1,2,4-Trichlorobenzene		93.7	27.4	143.4	1.6	30.0
1,2,3-Trichlorobenzene		97.7	75.4	131.4	3.5	30.0
Naphthalene		103.9	32.9	135.8	8.5	30.0
2-Methylnaphthalene		104.3	25.5	165.5	12.0	30.0

Organics - Volatiles, Prep Batch ID: VS221111W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221111C9.BLKW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 05:37, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.32	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:34, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		83.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221111C9.LCSDW11B, Parent Sample ID: 221111C9.LCSW11B

Run in Batch: 221111C9, Run Date: 11/12/2022 03:54, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		84.1	70.0	130.0	0.6	30.0

Matrix Spike (MS)

Lab Sample ID: 221111C9.4226609M, Parent Sample ID: S42266.08

Run in Batch: 221111C9, Run Date: 11/12/2022 04:15, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		83.3	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221111C9.4226610N, Parent Sample ID: 221111C9.4226609M

Run in Batch: 221111C9, Run Date: 11/12/2022 04:36, Prep Date: 11/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		87.9	70.0	130.0	4.7	30.0

Organics - Volatiles, Prep Batch ID: VS221114W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.37	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		82.5	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		84.0	70.0	130.0	1.8	30.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		92.0	70.0	130.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		105.5	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		86.7	70.0	130.0	5.9	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		111.8	70.0	130.0	2.3	30.0

Merit Laboratories Login Checklist

Lab Set ID: S42266
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470B / Racer Lansing
Submitted: 11/08/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.4
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[X] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 2

155481

CHAIN OF CUSTODY RECORD

Plant 2

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 947-777-5215 | CELL NO. | P.O. NO.
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com | QUOTE NO.

INVOICE TO

CONTACT NAME | ☒ SAME
COMPANY
ADDRESS
CITY | STATE | ZIP CODE
PHONE NO. | E-MAIL ADDRESS

PROJECT NO./NAME: 30112892.0470B / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☐ Other
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane 8260B-SIMS	VOCs 8260B-SIMS	Special Instructions
42266.01	11/3/22	1010	TW-14-02_110322	GW	3		3						X	X	
.02	11/3/22	1150	PW-14-02_110322	GW	3		3						X	X	
.03	11/3/22	1300	MW-16-82_110322	GW	3		3						X		
.04	11/3/22	1430	MW-19-117_110322	GW	3		3						X		
.05	11/3/22	1530	MW-19-120_110322	GW	3		3						X	X	
.06	11/3/22	1635	PW-14-01_110322	GW	3		3						X		
.07	11/4/22	0935	MW-21-140_110422	GW	3		3						X		
.08/09/.10	11/4/22	1125	MW-16-85_110422	GW	9		9						X		ms/msD
.11	11/4/22	1240	MW-16-80_110422	GW	3		3						X		
.12	11/3/22	—	Trip Blank	GW	1		1							X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
[signature] / Arcadis	☒ Sampler	11/7/22	1640
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
[signature] / Arcadis		11/7/22	1640
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
[signature] / Arcadis		11/7/22	1703
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
Merit Drop Box		11/7/22	1703

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
Merit Drop Box	11/8/22	0815
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
M Clinton	11/8/22	0815

SEAL NO. | SEAL INTACT YES☐ NO☐ | INITIALS
SEAL NO. | SEAL INTACT YES☐ NO☐ | INITIALS

NOTES: TEMP. ON ARRIVAL 2.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.25.22

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____ 155476

CHAIN OF CUSTODY RECORD

PLANT . 2

REPORT TO

CONTACT NAME: KAITLYN HUNT
COMPANY: ARCADIS
ADDRESS: 28550 CABOT DR SUITE 500
CITY: NOVI STATE: MI ZIP CODE: 48377
PHONE NO.: 947-777-2515 CELL NO.: P.O. NO.: 30112892
E-MAIL ADDRESS: KAITLYN.HUNT@ARCADIS.COM QUOTE NO.:

INVOICE TO

CONTACT NAME: ☐ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: RACER LANSING
SAMPLER(S) - PLEASE PRINT/SIGN NAME: BILL CUBERA

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES
Project Locations
☐ Detroit ☐ New York
☐ Other _____
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4 Dioxane 8260B SIM's	1,4 Dioxane/VOC's 8260B SIM's
42266.13	11/3/22	11:10	MW-15-72-110322	GW	3		3						3	
.14	11/3/22	12:20	MW-16-81-110322	GW	3		3							3
.15	11/3/22	13:45	MW-20-130-110322	GW	3		3						3	
.16	11/3/22	15:10	MW-17-86-110322	GW	3		3							3
.17	11/3/22	16:20	MW-16-34-110322	GW	3		3							3
.18	11/3/22	—	DUP-02-110322	GW	3		3						3	
.19	11/3/22	—	DUP-04-110322	GW	3		3							3

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Austin Westerhuis/Arcadis ☐ Sampler	DATE 11/7/22	TIME 1640	
RECEIVED BY: SIGNATURE/ORGANIZATION	[illegible] / Arcadis	DATE 11/7/22	TIME 1640	
RELINQUISHED BY: SIGNATURE/ORGANIZATION	[illegible] / Arcadis	DATE 11/8/22	TIME 1708	
RECEIVED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 11/7/22	TIME 1708	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	Merit Drop Box	DATE 11/8/22	TIME 0815	
RECEIVED BY: SIGNATURE/ORGANIZATION	M Arcadis	DATE 11/8/22	TIME 0815	

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 2.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1 26 22

Analytical Laboratory Report

Report ID: S42267.01(01)+QC01
Generated on 11/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S42267.01-S42267.11
Project: 30112892.0470B / Racer Lansing
Collected Date(s): 11/04/2022 - 11/07/2022
Submitted Date/Time: 11/08/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470B

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
E300.0	EPA Method 300.0 Revision 2.1 (1993)
N/A	Not Applicable
SM4500-N(org)/NH	Standard Method 4500 N(org)B / NH3D 2011
SM4500-PE	Standard Method 4500 P E 2011 / 4500 P B(5) 2011
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (11 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S42267.01	MW-12-21_110422	Groundwater	11/04/22 16:15
S42267.02	MW-13-22_110522	Groundwater	11/05/22 11:20
S42267.03	TW-15-11_110522	Groundwater	11/05/22 13:30
S42267.04	PW-14-03_110522	Groundwater	11/05/22 14:35
S42267.05	Dup-12_110522	Groundwater	11/05/22 00:01
S42267.06	MW-13-29_110722	Groundwater	11/07/22 09:55
S42267.07	TW-14-06_110722	Groundwater	11/07/22 11:35
S42267.08	MW-13-25_110722	Groundwater	11/07/22 13:05
S42267.09	AS-19-A06_110722	Groundwater	11/07/22 14:15
S42267.10	MW-13-46_110722	Groundwater	11/07/22 16:00
S42267.11	Dup-06_110722	Groundwater	11/07/22 00:01

Analytical Laboratory Report

Lab Sample ID: S42267.01
Sample Tag: MW-12-21_110422
Collected Date/Time: 11/04/2022 16:15
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 19:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	150	1		ug/L	1	123-91-1	

Lab Sample ID: S42267.02
Sample Tag: MW-13-22_110522
Collected Date/Time: 11/05/2022 11:20
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 19:01, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	84	1		ug/L	1	123-91-1	

Lab Sample ID: S42267.03
Sample Tag: TW-15-11_110522
Collected Date/Time: 11/05/2022 13:30
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 15:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	22	1		ug/L	1	123-91-1	

Lab Sample ID: S42267.04
Sample Tag: PW-14-03_110522
Collected Date/Time: 11/05/2022 14:35
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 15:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	8	1		ug/L	1	123-91-1	

Lab Sample ID: S42267.05
Sample Tag: Dup-12_110522
Collected Date/Time: 11/05/2022 00:01
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 15:47, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	8	1		ug/L	1	123-91-1	

Lab Sample ID: S42267.06
Sample Tag: MW-13-29_110722
Collected Date/Time: 11/07/2022 09:55
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR
1	125ml Plastic	None	Yes	2.4	IR
1	250ml Plastic	H2SO4	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Inorganics

Method: E300.0, Run Date: 11/09/22 08:45, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	Not detected	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 11/20/22 21:26, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	0.8	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 11/11/22 21:20, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.02	0.01	0.009	mg/L	1	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/18/22 18:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	12	1		ug/L	1	123-91-1	

Lab Sample ID: S42267.07
Sample Tag: TW-14-06_110722
Collected Date/Time: 11/07/2022 11:35
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR
1	125ml Plastic	None	Yes	2.4	IR
1	250ml Plastic	H2SO4	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Inorganics

Method: E300.0, Run Date: 11/09/22 08:55, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Nitrate-N	2.5	0.5	0.06	mg/L	5	14797-55-8	

Method: SM4500-N(org)/NH, Run Date: 11/20/22 21:48, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Kjeldahl Nitrogen	2.6	0.1		mg/L	1		

Method: SM4500-PE, Run Date: 11/11/22 21:28, Analyst: MJC

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Phosphorus	0.6	0.3	0.2	mg/L	25	7723-14-0	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/18/22 18:21, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	10	1		ug/L	1	123-91-1	

Lab Sample ID: S42267.08
Sample Tag: MW-13-25_110722
Collected Date/Time: 11/07/2022 13:05
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/18/22 17:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S42267.09
Sample Tag: AS-19-A06_110722
Collected Date/Time: 11/07/2022 14:15
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 16:51, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S42267.10
Sample Tag: MW-13-46_110722
Collected Date/Time: 11/07/2022 16:00
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 17:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Lab Sample ID: S42267.11
Sample Tag: Dup-06_110722
Collected Date/Time: 11/07/2022 00:01
Matrix: Groundwater
COC Reference: 140689

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 17:35, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Quality Control Report

Report ID: S42267.01(01)+QC01
Generated on 11/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S42267.01-S42267.11
Project: 30112892.0470B / Racer Lansing
Submitted Date/Time: 11/08/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470B

QC Report Sections

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Analysis Summary (Pages 18-28)
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Internal Standards per Lab Sample (Pages 32-42)
Internal Standards per QC Sample (Pages 43-44)
Batch QC Results (Pages 45-49)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S42267.01
Sample Tag: MW-12-21_110422
Collected Date/Time: 11/04/2022 16:15
Matrix: Groundwater
COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 19:23	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42267.02
Sample Tag: MW-13-22_110522
Collected Date/Time: 11/05/2022 11:20
Matrix: Groundwater
COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 19:01	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42267.03
Sample Tag: TW-15-11_110522
Collected Date/Time: 11/05/2022 13:30
Matrix: Groundwater
COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 15:04	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42267.04
Sample Tag: PW-14-03_110522
Collected Date/Time: 11/05/2022 14:35
Matrix: Groundwater
COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 15:25	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42267.05
Sample Tag: Dup-12_110522
Collected Date/Time: 11/05/2022 00:01
Matrix: Groundwater
COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 15:47	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42267.06
Sample Tag: MW-13-29_110722
Collected Date/Time: 11/07/2022 09:55
Matrix: Groundwater
COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	11/09/22 08:45	NTRA221109-W1-A	NTRA221109-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/20/22 21:26	TKN221120QC	TKN221120QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	11/11/22 21:20	PHS221111QC	PHS221111QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/18/22 18:42	221118A9	VS221118W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42267.07

Sample Tag: TW-14-06_110722

Collected Date/Time: 11/07/2022 11:35

Matrix: Groundwater

COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Nitrate-N	E300.0	11/09/22 08:55	NTRA221109-W1-A	NTRA221109-W1-A	No	BLK/LCS/MS/MSD/DU
Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/20/22 21:48	TKN221120QC	TKN221120QC	No	BLK/LCS/MS/DUP
Total Phosphorus	SM4500-PE	11/11/22 21:28	PHS221111QC	PHS221111QC	No	BLK/LCS/MS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/18/22 18:21	221118A9	VS221118W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42267.08
Sample Tag: MW-13-25_110722
Collected Date/Time: 11/07/2022 13:05
Matrix: Groundwater
COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/18/22 17:59	221118A9	VS221118W1	Yes	BLK/LCS/LCSD

Lab Sample ID: S42267.09
Sample Tag: AS-19-A06_110722
Collected Date/Time: 11/07/2022 14:15
Matrix: Groundwater
COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 16:51	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42267.10
Sample Tag: MW-13-46_110722
Collected Date/Time: 11/07/2022 16:00
Matrix: Groundwater
COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 17:13	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42267.11
Sample Tag: Dup-06_110722
Collected Date/Time: 11/07/2022 00:01
Matrix: Groundwater
COC Reference: 140689

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 17:35	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: NTRA221109-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42267.06	Nitrate-N	E300.0	11/09/22 08:45	NTRA221109-W1-A
S42267.07	Nitrate-N	E300.0	11/09/22 08:55	NTRA221109-W1-A

Inorganics, Prep Batch ID: PHS221111QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42267.06	Total Phosphorus	SM4500-PE	11/11/22 21:20	PHS221111QC
S42267.07	Total Phosphorus	SM4500-PE	11/11/22 21:28	PHS221111QC

Inorganics, Prep Batch ID: TKN221120QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42267.06	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/20/22 21:26	TKN221120QC
S42267.07	Total Kjeldahl Nitrogen	SM4500-N(org)/NH	11/20/22 21:48	TKN221120QC

Organics - Volatiles, Prep Batch ID: VS221114W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42267.01	1,4-Dioxane	SW8260B - SIM	11/14/22 19:23	221114A9
S42267.02	1,4-Dioxane	SW8260B - SIM	11/14/22 19:01	221114A9
S42267.03	1,4-Dioxane	SW8260B - SIM	11/14/22 15:04	221114A9
S42267.04	1,4-Dioxane	SW8260B - SIM	11/14/22 15:25	221114A9
S42267.05	1,4-Dioxane	SW8260B - SIM	11/14/22 15:47	221114A9
S42267.09	1,4-Dioxane	SW8260B - SIM	11/14/22 16:51	221114A9
S42267.10	1,4-Dioxane	SW8260B - SIM	11/14/22 17:13	221114A9
S42267.11	1,4-Dioxane	SW8260B - SIM	11/14/22 17:35	221114A9

Organics - Volatiles, Prep Batch ID: VS221118W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42267.06	1,4-Dioxane	SW8260B - SIM	11/18/22 18:42	221118A9
S42267.07	1,4-Dioxane	SW8260B - SIM	11/18/22 18:21	221118A9
S42267.08	1,4-Dioxane	SW8260B - SIM	11/18/22 17:59	221118A9

Organics - Volatiles, Prep Batch ID: VS221114W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Organics - Volatiles, Prep Batch ID: VS221118W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221118A9.BLKS18A

Run in Batch: 221118A9, Run Date: 11/18/2022 17:16, Prep Date: 11/18/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample (LCS)

Lab Sample ID: 221118A9.LCSS18A

Run in Batch: 221118A9, Run Date: 11/18/2022 15:53, Prep Date: 11/18/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221118A9.LCSDS18A, Parent Sample ID: 221118A9.LCSS18A

Run in Batch: 221118A9, Run Date: 11/18/2022 16:15, Prep Date: 11/18/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42267.01

Sample Tag: MW-12-21_110422

Collected Date/Time: 11/04/2022 16:15

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 19:23, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**116.3**	50.0	200.0

Lab Sample ID: S42267.02

Sample Tag: MW-13-22_110522

Collected Date/Time: 11/05/2022 11:20

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 19:01, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**109.2**	50.0	200.0

Lab Sample ID: S42267.03

Sample Tag: TW-15-11_110522

Collected Date/Time: 11/05/2022 13:30

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 15:04, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.5**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42267.04

Sample Tag: PW-14-03_110522

Collected Date/Time: 11/05/2022 14:35

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 15:25, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**98.3**	50.0	200.0

Lab Sample ID: S42267.05

Sample Tag: Dup-12_110522

Collected Date/Time: 11/05/2022 00:01

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 15:47, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**99.6**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42267.06

Sample Tag: MW-13-29_110722

Collected Date/Time: 11/07/2022 09:55

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221118A9, Run Date: 11/18/2022 18:42, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**101.9**	50.0	200.0

Lab Sample ID: S42267.07

Sample Tag: TW-14-06_110722

Collected Date/Time: 11/07/2022 11:35

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221118A9, Run Date: 11/18/2022 18:21, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**105.2**	50.0	200.0

Lab Sample ID: S42267.08

Sample Tag: MW-13-25_110722

Collected Date/Time: 11/07/2022 13:05

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221118A9, Run Date: 11/18/2022 17:59, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**112.0**	50.0	200.0

Lab Sample ID: S42267.09

Sample Tag: AS-19-A06_110722

Collected Date/Time: 11/07/2022 14:15

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 16:51, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**98.7**	50.0	200.0

Lab Sample ID: S42267.10

Sample Tag: MW-13-46_110722

Collected Date/Time: 11/07/2022 16:00

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 17:13, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**106.5**	50.0	200.0

Lab Sample ID: S42267.11

Sample Tag: Dup-06_110722

Collected Date/Time: 11/07/2022 00:01

Matrix: Groundwater

COC Reference: 140689

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 17:35, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**94.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221114W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**92.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**103.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**98.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.2**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**109.7**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.8**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221118W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221118A9.BLKS18A

Run in Batch: 221118A9, Run Date: 11/18/2022 17:16, Prep Date: 11/18/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**81.6**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221118A9.LCSS18A

Run in Batch: 221118A9, Run Date: 11/18/2022 15:53, Prep Date: 11/18/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**105.7**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221118A9.LCSDS18A, Parent Sample ID: 221118A9.LCSS18A

Run in Batch: 221118A9, Run Date: 11/18/2022 16:15, Prep Date: 11/18/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**93.7**	50.0	200.0

Inorganics, Prep Batch ID: NTRA221109-W1-A

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: NTRA221109-W1-A.LRB1

Run in Batch: NTRA221109-W1-A, Run Date: 11/09/2022 07:53, Prep Date: 11/09/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Nitrate-N		ND	0.1	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: NTRA221109-W1-A.LCS1

Run in Batch: NTRA221109-W1-A, Run Date: 11/09/2022 08:15, Prep Date: 11/09/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Nitrate-N		98	90	110

Matrix Spike (MS)

Lab Sample ID: NTRA221109-W1-A.MS1, Parent Sample ID: S42315.01

Run in Batch: NTRA221109-W1-A, Run Date: 11/09/2022 09:56, Prep Date: 11/09/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Nitrate-N		110	80	120

Matrix Spike Duplicate (MSD)

Lab Sample ID: NTRA221109-W1-A.MSD1, Parent Sample ID: NTRA221109-W1-A.MS1

Run in Batch: NTRA221109-W1-A, Run Date: 11/09/2022 10:06, Prep Date: 11/09/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Nitrate-N		111	80	120	1	15

Duplicate (DUP)

Lab Sample ID: NTRA221109-W1-A.DP1, Parent Sample ID: S42315.01

Run in Batch: NTRA221109-W1-A, Run Date: 11/09/2022 09:46, Prep Date: 11/09/2022, Matrix: Liquid, Dilution: 10

Analyte	Flags	RPD	RPD CL
Nitrate-N		<1	15

Inorganics, Prep Batch ID: PHS221111QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Blank (BLK)

Lab Sample ID: PHS221111QC.LRB1

Run in Batch: PHS221111QC, Run Date: 11/11/2022 15:35, Prep Date: 11/11/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

Blank (BLK)

Lab Sample ID: PHS221111QC.LRB2

Run in Batch: PHS221111QC, Run Date: 11/11/2022 15:42, Prep Date: 11/11/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Phosphorus		ND	0.01	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: PHS221111QC.LCS1

Run in Batch: PHS221111QC, Run Date: 11/11/2022 15:49, Prep Date: 11/11/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		97	90	110

Matrix Spike (MS)

Lab Sample ID: PHS221111QC.MS1, Parent Sample ID: S42154.03

Run in Batch: PHS221111QC, Run Date: 11/11/2022 21:59, Prep Date: 11/11/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Phosphorus		90	80	120

Duplicate (DUP)

Lab Sample ID: PHS221111QC.DP1, Parent Sample ID: S42217.02

Run in Batch: PHS221111QC, Run Date: 11/11/2022 21:56, Prep Date: 11/11/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Phosphorus		4.9	20

Inorganics, Prep Batch ID: TKN221120QC

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Blank (BLK)

Lab Sample ID: TKN221120QC.LRB1

Run in Batch: TKN221120QC, Run Date: 11/20/2022 13:34, Prep Date: 11/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Kjeldahl Nitrogen		ND	0.02	mg/L

Blank (BLK)

Lab Sample ID: TKN221120QC.LRB2

Run in Batch: TKN221120QC, Run Date: 11/20/2022 16:03, Prep Date: 11/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Kjeldahl Nitrogen		ND	0.1	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: TKN221120QC.LCS1

Run in Batch: TKN221120QC, Run Date: 11/20/2022 16:27, Prep Date: 11/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Kjeldahl Nitrogen		91	90	110

Matrix Spike (MS)

Lab Sample ID: TKN221120QC.MS1, Parent Sample ID: S42587.02

Run in Batch: TKN221120QC, Run Date: 11/20/2022 17:41, Prep Date: 11/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Kjeldahl Nitrogen		97	80	120

Duplicate (DUP)

Lab Sample ID: TKN221120QC.DP1, Parent Sample ID: S42587.01

Run in Batch: TKN221120QC, Run Date: 11/20/2022 17:08, Prep Date: 11/20/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Kjeldahl Nitrogen		2.9	20

Organics - Volatiles, Prep Batch ID: VS221114W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.37	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		82.5	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		84.0	70.0	130.0	1.8	30.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		92.0	70.0	130.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		105.5	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		86.7	70.0	130.0	5.9	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		111.8	70.0	130.0	2.3	30.0

Organics - Volatiles, Prep Batch ID: VS221118W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221118A9.BLKS18A

Run in Batch: 221118A9, Run Date: 11/18/2022 17:16, Prep Date: 11/18/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.34	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221118A9.LCSS18A

Run in Batch: 221118A9, Run Date: 11/18/2022 15:53, Prep Date: 11/18/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		93.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221118A9.LCSDS18A, Parent Sample ID: 221118A9.LCSS18A

Run in Batch: 221118A9, Run Date: 11/18/2022 16:15, Prep Date: 11/18/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		94.6	70.0	130.0	0.9	30.0

Merit Laboratories Login Checklist

Lab Set ID: S42267
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470B / Racer Lansing
Submitted: 11/08/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.4
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[X] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S42267 Submitted: 11/08/2022 08:15

Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30112892.0470B / Racer Lansing

Initial Preservation Check: 11/08/2022 09:11 MMC

Preservation Recheck (E200.8): N/A

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S42267.06	250ml Plastic H2SO4	<2			
S42267.07	250ml Plastic H2SO4	<2			

Merit Laboratories, Inc.

2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

140689

CHAIN OF CUSTODY RECORD

Plant 3

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 947-777-5215 FAX NO.: P.O. NO.:
E-MAIL ADDRESS: Kaitlyn.Hunt@arcadis.com QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒ SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.0470A / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES
Project Locations: ☐ Detroit ☐ New York ☐ Other
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-Dioxane 8260B-SIMS	NITRATE E300	TOTAL CHROMIUM TRN
42267.01	11/4/22	1615	MW-12-21_110422	GW	3		3						X		
.02	11/5/22	1120	MW-13-22_110522	GW	3		3						X		
.03	11/5/22	1330	TW-15-11_110522	GW	3		3						X		
.04	11/5/22	1435	PW-14-03_110522	GW	3		3						X		
.05	11/5/22	—	Dup-12_110522	GW	3		3						X		
.06	11/7/22	9:55	MW-13-29_110722	GW	5	1	3		1				X	X	X
.07	11/7/22	11:35	TW-14-06_110722	GW	5	1	3		1				X	X	X
.08	11/7/22	13:05	MW-13-25_110722	GW	3		3						X		
.09	11/7/22	14:15	AS-19-A06_110722	GW	3		3						X		
.10	11/7/22	16:00	MW-13-46_110722	GW	3		3						X		
.11	11/7/22	—	Dup-06_110722	GW	3		3						X		

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis ☒ Sampler	DATE 11/7/22	TIME 1640	
RECEIVED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis	DATE 11/7/22	TIME 1640	
RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis	DATE 11/7/22	TIME 1708	
RECEIVED BY: SIGNATURE/ORGANIZATION Merit Drop Box	DATE 11/7/22	TIME 1708	

RELINQUISHED BY: SIGNATURE/ORGANIZATION Merit Drop Box	DATE 11/8/22	TIME 0815	
RECEIVED BY: SIGNATURE/ORGANIZATION M Abbott	DATE 11/8/22	TIME 0815	

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES. TEMP. ON ARRIVAL 2.4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S42268.01(01)+QC01
Generated on 11/15/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S42268.01-S42268.03
Project: 30112892.0470A / Racer Lansing
Collected Date(s): 11/04/2022
Submitted Date/Time: 11/08/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

Table of Contents

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S42268.01	MW-21-141_110422	Groundwater	11/04/22 14:10
S42268.02	MW-21-141_110422 MS	Groundwater	11/04/22 14:10
S42268.03	MW-21-141_110422 MSD	Groundwater	11/04/22 14:10

Analytical Laboratory Report

Lab Sample ID: S42268.01
Sample Tag: MW-21-141_110422
Collected Date/Time: 11/04/2022 14:10
Matrix: Groundwater
COC Reference: 137978

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 14:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42268.02
Sample Tag: MW-21-141_110422 MS
Collected Date/Time: 11/04/2022 14:10
Matrix: Groundwater
COC Reference: 137978

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 11:34, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	46	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S42268.03
Sample Tag: MW-21-141_110422 MSD
Collected Date/Time: 11/04/2022 14:10
Matrix: Groundwater
COC Reference: 137978

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	2.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 11:54, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	44	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Quality Control Report

Report ID: S42268.01(01)+QC01
Generated on 11/15/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S42268.01-S42268.03
Project: 30112892.0470A / Racer Lansing
Submitted Date/Time: 11/08/2022 08:15
Sampled by: Austin Westhuis
P.O. #: 30112892.0470A

QC Report Sections

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Analysis Summary (Pages 10-12)
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Surrogates per QC Sample (Page 14)
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Internal Standards per QC Sample (Page 16)
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Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S42268.01
Sample Tag: MW-21-141_110422
Collected Date/Time: 11/04/2022 14:10
Matrix: Groundwater
COC Reference: 137978

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 14:42	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42268.02
Sample Tag: MW-21-141_110422 MS
Collected Date/Time: 11/04/2022 14:10
Matrix: Groundwater
COC Reference: 137978

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 11:34	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42268.03

Sample Tag: MW-21-141_110422 MSD

Collected Date/Time: 11/04/2022 14:10

Matrix: Groundwater

COC Reference: 137978

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 11:54	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS221114W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42268.01	1,4-Dioxane	SW8260B - SIM	11/14/22 14:42	221114A9
S42268.02	1,4-Dioxane	SW8260B - SIM	11/14/22 11:34	221114A9
S42268.03	1,4-Dioxane	SW8260B - SIM	11/14/22 11:54	221114A9

Organics - Volatiles, Prep Batch ID: VS221114W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42268.01

Sample Tag: MW-21-141_110422

Collected Date/Time: 11/04/2022 14:10

Matrix: Groundwater

COC Reference: 137978

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 14:42, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**98.7**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS221114W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**92.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**103.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**98.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.2**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**109.7**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.8**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221114W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.37	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		82.5	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		84.0	70.0	130.0	1.8	30.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		92.0	70.0	130.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		105.5	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		86.7	70.0	130.0	5.9	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		111.8	70.0	130.0	2.3	30.0

Merit Laboratories Login Checklist

Lab Set ID: S42268
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470A / Racer Lansing
Submitted: 11/08/2022 08:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.4
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[X] Yes	[ ] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[X] No	[ ] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

137978

CHAIN OF CUSTODY RECORD

Plant 6

REPORT TO

CONTACT NAME: Kaitlyn Hunt
COMPANY: Arcadis
ADDRESS: 28550 Cabot Drive, Suite 500
CITY: Novi STATE: MI ZIP CODE: 48377
PHONE NO.: 947-777-5215 FAX NO.:
E-MAIL ADDRESS: Kaithyn.Hunt@arcadis.com
P.O. NO.:
QUOTE NO.:

INVOICE TO

CONTACT NAME: ☒SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO.: E-MAIL ADDRESS:

PROJECT NO./NAME: 30112892.0470A / RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / [signature]

TURNAROUND TIME REQUIRED ☐1 DAY ☐2 DAYS ☐3 DAYS ☒STANDARD ☐OTHER

DELIVERABLES REQUIRED ☐STD ☐LEVEL II ☐LEVEL III ☐LEVEL IV ☐EDD ☐OTHER

MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐OHIO VAP ☐Drinking Water
☐DoD ☐NPDES
Project Locations
☐Detroit ☐New York
☐Other
Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG, IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4-dioxane 8260B-SIMS									Special Instructions
01/02/03	11/4/22	1410	MW-21-141_110422	GW	6		6						X									ms/msD
42268																						

RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis ☒Sampler DATE 11/7/22 TIME 1640
RECEIVED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis DATE 11/7/22 TIME 1640
RELINQUISHED BY: SIGNATURE/ORGANIZATION [signature] / Arcadis DATE 11/7/22 TIME 1708
RECEIVED BY: SIGNATURE/ORGANIZATION Merit Drop Box DATE 11/7/22 TIME 1708

RELINQUISHED BY: SIGNATURE/ORGANIZATION Merit Drop Box DATE 11/8/22 TIME 0815
RECEIVED BY: SIGNATURE/ORGANIZATION [signature] DATE 11/8/22 TIME 0815

SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS
SEAL NO. SEAL INTACT YES☐ NO☐ INITIALS

NOTES: TEMP. ON ARRIVAL 2-4

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12

Analytical Laboratory Report

Report ID: S42294.01(01)+QC01
Generated on 11/15/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Addtional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S42294.01-S42294.04
Project: 30112892.0470B Racer Lansing
Collected Date(s): 11/08/2022
Submitted Date/Time: 11/08/2022 13:15
Sampled by: Bill Cobern
P.O. #: 30112892.0470B

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Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.
Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.
Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)
PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."
Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.
Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S42294.01	MW-13-48_110822	Groundwater	11/08/22 10:45
S42294.02	MW-13-34_110822	Groundwater	11/08/22 11:55
S42294.03	MW-13-34_110822 MS	Groundwater	11/08/22 11:55
S42294.04	MW-13-34_110822 MSD	Groundwater	11/08/22 11:55

Analytical Laboratory Report

Lab Sample ID: S42294.01
Sample Tag: MW-13-48_110822
Collected Date/Time: 11/08/2022 10:45
Matrix: Groundwater
COC Reference: 155290

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 18:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	24	1		ug/L	1	123-91-1	

Analytical Laboratory Report

Lab Sample ID: S42294.02
Sample Tag: MW-13-34_110822
Collected Date/Time: 11/08/2022 11:55
Matrix: Groundwater
COC Reference: 155290

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 18:39, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	81	1		ug/L	1	123-91-1	

Lab Sample ID: S42294.03
Sample Tag: MW-13-34_110822 MS
Collected Date/Time: 11/08/2022 11:55
Matrix: Groundwater
COC Reference: 155290

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 12:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	134	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Lab Sample ID: S42294.04
Sample Tag: MW-13-34_110822 MSD
Collected Date/Time: 11/08/2022 11:55
Matrix: Groundwater
COC Reference: 155290

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	11/15/22 12:00	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 11/14/22 12:36, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	137	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L

Quality Control Report

Report ID: S42294.01(01)+QC01
Generated on 11/15/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S42294.01-S42294.04
Project: 30112892.0470B Racer Lansing
Submitted Date/Time: 11/08/2022 13:15
Sampled by: Bill Cobern
P.O. #: 30112892.0470B

QC Report Sections

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Prep Batch Summary (Page 15)
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Internal Standards per Lab Sample (Pages 17-18)
Internal Standards per QC Sample (Page 19)
Batch QC Results (Page 20)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S42294.01
Sample Tag: MW-13-48_110822
Collected Date/Time: 11/08/2022 10:45
Matrix: Groundwater
COC Reference: 155290

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 18:18	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42294.02
Sample Tag: MW-13-34_110822
Collected Date/Time: 11/08/2022 11:55
Matrix: Groundwater
COC Reference: 155290

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 18:39	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42294.03
Sample Tag: MW-13-34_110822 MS
Collected Date/Time: 11/08/2022 11:55
Matrix: Groundwater
COC Reference: 155290

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 12:15	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Lab Sample ID: S42294.04

Sample Tag: MW-13-34_110822 MSD

Collected Date/Time: 11/08/2022 11:55

Matrix: Groundwater

COC Reference: 155290

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	11/14/22 12:36	221114A9	VS221114W1	Yes	BLK/LCS/LCSD/MS/MS

Organics - Volatiles, Prep Batch ID: VS221114W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S42294.01	1,4-Dioxane	SW8260B - SIM	11/14/22 18:18	221114A9
S42294.02	1,4-Dioxane	SW8260B - SIM	11/14/22 18:39	221114A9
S42294.03	1,4-Dioxane	SW8260B - SIM	11/14/22 12:15	221114A9
S42294.04	1,4-Dioxane	SW8260B - SIM	11/14/22 12:36	221114A9

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS221114W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42294.01

Sample Tag: MW-13-48_110822

Collected Date/Time: 11/08/2022 10:45

Matrix: Groundwater

COC Reference: 155290

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 18:18, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**105.0**	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S42294.02

Sample Tag: MW-13-34_110822

Collected Date/Time: 11/08/2022 11:55

Matrix: Groundwater

COC Reference: 155290

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221114A9, Run Date: 11/14/2022 18:39, Matrix: WW, Dilution: 1

Internal Standard	Flags	**%Rec**	LCL	UCL
1,4-Dioxane-D8		**105.8**	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS221114W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**92.0**	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**103.3**	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**98.7**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.2**	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**109.7**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**97.8**	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		**95.7**	50.0	200.0

Organics - Volatiles, Prep Batch ID: VS221114W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 221114A9.BLKW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 13:37, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.37	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 10:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		82.5	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221114A9.LCSDW14A, Parent Sample ID: 221114A9.LCSW14A

Run in Batch: 221114A9, Run Date: 11/14/2022 11:14, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		84.0	70.0	130.0	1.8	30.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4226802M, Parent Sample ID: S42268.01

Run in Batch: 221114A9, Run Date: 11/14/2022 11:34, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		92.0	70.0	130.0

Matrix Spike (MS)

Lab Sample ID: 221114A9.4229403M, Parent Sample ID: S42294.02

Run in Batch: 221114A9, Run Date: 11/14/2022 12:15, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		105.5	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4226803N, Parent Sample ID: 221114A9.4226802M

Run in Batch: 221114A9, Run Date: 11/14/2022 11:54, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		86.7	70.0	130.0	5.9	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 221114A9.4229404N, Parent Sample ID: 221114A9.4229403M

Run in Batch: 221114A9, Run Date: 11/14/2022 12:36, Prep Date: 11/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		111.8	70.0	130.0	2.3	30.0

Merit Laboratories Login Checklist

Lab Set ID: S42294
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: 30112892.0470B Racer Lansing
Submitted: 11/08/2022 13:15 Login User: MMC

Attention: Kaitlyn Hunt
Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Selection				Description	Note
Sample Receiving					
01.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 2.2
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

Merit Laboratories, Inc.
2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # _____ OF _____ 155290

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: KAITLYN HUNT
COMPANY: ARCADIS
ADDRESS: 28550 CABOT DR SUITE 500
CITY: NOVI STATE: MI ZIP CODE: 48377
PHONE NO.: 947-777-5215 CELL NO.: P.O. NO.: 30112892
E-MAIL ADDRESS: KAITLYN-HUNT@ARCADIS.COM QUOTE NO.:

INVOICE TO

CONTACT NAME: X SAME
COMPANY:
ADDRESS:
CITY: STATE: ZIP CODE:
PHONE NO: E-MAIL ADDRESS:

PROJECT NO./NAME: RACER LANSING
SAMPLER(S) - PLEASE PRINT/SIGN NAME: BILL COBOW

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☐ OTHER _____

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____

MATRIX CODE: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications
☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations
☐ Detroit ☐ New York
☐ Other _____

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION DATE	COLLECTION TIME	SAMPLE TAG, IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	1,4 Dioxane 8260D Sims	Special Instructions
42294.01	11/8/22	10:45	MW-13-48_110822	GW	3		3						X	
42294.02	11/8/22	11:55	MW-13-34_110822	GW	9		9						X	MS/MSD

RELINQUISHED BY: SIGNATURE/ORGANIZATION	X Sampler	DATE 11.8.22	TIME 13:15
RECEIVED BY: SIGNATURE/ORGANIZATION	ARCADIS	DATE 11/8/22	TIME 1315
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO SEAL INTACT YES ☐ NO ☐ INITIALS

NOTES: TEMP. ON ARRIVAL 2.2

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 1.26.22

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER Lansing

Project Number: 30112892

Lot Number:**XK04083**

Date Completed:11/30/2022

11/30/2022 1:51 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XK04083

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

The method blank associated with batch 59813 had 6:2 FTS, PFBA, PFHpA, PFHxA, PFNA, PFOA, PFPeA detected at a concentration that was above the MDL. All samples associated with this method blank that have detections for 6:2 FTS, PFBA, PFHpA, PFHxA, PFNA, PFOA, PFPeA have been flagged with a "B".

The LCS associated with batch 59813 had PFPeA recovered above the acceptance limits. This demonstrates a high bias on analytical results. There were no detections for this compound in the samples associated with this batch; therefore, data quality is not impacted.

The method blank associated with batch 60071 had 6:2 FTS detected at a concentration that was above the MDL. All samples associated with this method blank that have detections for 6:2 FTS have been flagged with a "B".

Surrogate recovery for the following samples was outside the upper control limit: XK04083-002, XK04083-003, XK04083-006, XK04083-007, XK04083-010, XK04083-013, XK04083-014, XK04083-015, XK04083-016. These samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Surrogate recovery for the following samples was outside control limits: XK04083-001, XK04083-005. Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XK04083

Project Name: RACER Lansing

Project Number: 30112892

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-14-62_110122	Aqueous	11/01/2022 1325	11/04/2022
002	MW-14-60_110122	Aqueous	11/01/2022 1540	11/04/2022
003	MW-12-09_110122	Aqueous	11/01/2022 1715	11/04/2022
004	EB-01_110122	Aqueous	11/01/2022 1730	11/04/2022
005	MW-21-139_110222	Aqueous	11/02/2022 0955	11/04/2022
006	MW-14-58R_110222	Aqueous	11/02/2022 1125	11/04/2022
007	MW-12-18_110222	Aqueous	11/02/2022 1315	11/04/2022
008	MW-14-59_110222	Aqueous	11/02/2022 1515	11/04/2022
009	DUP-01_110222	Aqueous	11/02/2022	11/04/2022
010	MW-16-81_110322	Aqueous	11/03/2022 1220	11/04/2022
011	MW-14-61_110222	Aqueous	11/02/2022 1650	11/04/2022
012	EB-02_110222	Aqueous	11/02/2022 1800	11/04/2022
013	MW-14-56_110322	Aqueous	11/03/2022 0945	11/04/2022
014	MW-15-72_110322	Aqueous	11/03/2022 1110	11/04/2022
015	MW-20-130_110322	Aqueous	11/03/2022 1345	11/04/2022
016	DUP-02_110322	Aqueous	11/03/2022	11/04/2022

(16 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XK04083

Project Name: RACER Lansing

Project Number: 30112892

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-14-62_110122	Aqueous	8:2 FTS	PFAS by ID	4.2	JQ	ng/L	7
001	MW-14-62_110122	Aqueous	6:2 FTS	PFAS by ID	16	Q	ng/L	7
001	MW-14-62_110122	Aqueous	EtFOSAA	PFAS by ID	1.2	JQ	ng/L	7
001	MW-14-62_110122	Aqueous	PFBS	PFAS by ID	1.7	J	ng/L	7
001	MW-14-62_110122	Aqueous	PFHpS	PFAS by ID	1.3	J	ng/L	7
001	MW-14-62_110122	Aqueous	PFOSA	PFAS by ID	3.3	J	ng/L	7
001	MW-14-62_110122	Aqueous	PFPeS	PFAS by ID	0.94	J	ng/L	7
001	MW-14-62_110122	Aqueous	PFHxS	PFAS by ID	6.1		ng/L	7
001	MW-14-62_110122	Aqueous	PFBA	PFAS by ID	16		ng/L	7
001	MW-14-62_110122	Aqueous	PFDA	PFAS by ID	2.2	JQ	ng/L	7
001	MW-14-62_110122	Aqueous	PFHpA	PFAS by ID	16		ng/L	7
001	MW-14-62_110122	Aqueous	PFHxA	PFAS by ID	21		ng/L	7
001	MW-14-62_110122	Aqueous	PFNA	PFAS by ID	7.7		ng/L	7
001	MW-14-62_110122	Aqueous	PFOA	PFAS by ID	53		ng/L	7
001	MW-14-62_110122	Aqueous	PFPeA	PFAS by ID	15		ng/L	7
001	MW-14-62_110122	Aqueous	PFOS	PFAS by ID	47		ng/L	7
002	MW-14-60_110122	Aqueous	PFBS	PFAS by ID	2.3	J	ng/L	9
002	MW-14-60_110122	Aqueous	PFPeS	PFAS by ID	1.0	J	ng/L	9
002	MW-14-60_110122	Aqueous	PFHxS	PFAS by ID	6.3		ng/L	9
002	MW-14-60_110122	Aqueous	PFBA	PFAS by ID	22		ng/L	9
002	MW-14-60_110122	Aqueous	PFDA	PFAS by ID	2.4	J	ng/L	9
002	MW-14-60_110122	Aqueous	PFHpA	PFAS by ID	16		ng/L	9
002	MW-14-60_110122	Aqueous	PFHxA	PFAS by ID	24		ng/L	9
002	MW-14-60_110122	Aqueous	PFNA	PFAS by ID	4.4		ng/L	9
002	MW-14-60_110122	Aqueous	PFOA	PFAS by ID	41		ng/L	9
002	MW-14-60_110122	Aqueous	PFPeA	PFAS by ID	17		ng/L	9
002	MW-14-60_110122	Aqueous	PFOS	PFAS by ID	32		ng/L	9
003	MW-12-09_110122	Aqueous	PFBS	PFAS by ID	1.7	J	ng/L	11
003	MW-12-09_110122	Aqueous	PFPeS	PFAS by ID	0.74	J	ng/L	11
003	MW-12-09_110122	Aqueous	PFHxS	PFAS by ID	3.4	J	ng/L	11
003	MW-12-09_110122	Aqueous	PFBA	PFAS by ID	11		ng/L	11
003	MW-12-09_110122	Aqueous	PFHpA	PFAS by ID	6.9		ng/L	11
003	MW-12-09_110122	Aqueous	PFHxA	PFAS by ID	9.2		ng/L	11
003	MW-12-09_110122	Aqueous	PFNA	PFAS by ID	0.61	J	ng/L	11
003	MW-12-09_110122	Aqueous	PFOA	PFAS by ID	15		ng/L	11
003	MW-12-09_110122	Aqueous	PFPeA	PFAS by ID	7.3		ng/L	11
003	MW-12-09_110122	Aqueous	PFOS	PFAS by ID	2.5	J	ng/L	11
005	MW-21-139_110222	Aqueous	8:2 FTS	PFAS by ID	66		ng/L	15
005	MW-21-139_110222	Aqueous	6:2 FTS	PFAS by ID	45	Q	ng/L	15
005	MW-21-139_110222	Aqueous	PFBS	PFAS by ID	20		ng/L	15
005	MW-21-139_110222	Aqueous	PFHpS	PFAS by ID	33		ng/L	15
005	MW-21-139_110222	Aqueous	PFNS	PFAS by ID	0.66	J	ng/L	15
005	MW-21-139_110222	Aqueous	PFPeS	PFAS by ID	25		ng/L	15

Detection Summary (Continued)

Lot Number: XK04083

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
005	MW-21-139_110222	Aqueous	PFHxS	PFAS by ID	280		ng/L	15
005	MW-21-139_110222	Aqueous	PFBA	PFAS by ID	43		ng/L	15
005	MW-21-139_110222	Aqueous	PFDA	PFAS by ID	6.5		ng/L	15
005	MW-21-139_110222	Aqueous	PFHpA	PFAS by ID	62	B	ng/L	15
005	MW-21-139_110222	Aqueous	PFHxA	PFAS by ID	100	B	ng/L	15
005	MW-21-139_110222	Aqueous	PFNA	PFAS by ID	22	B	ng/L	15
005	MW-21-139_110222	Aqueous	PFOA	PFAS by ID	84	B	ng/L	15
005	MW-21-139_110222	Aqueous	PFPeA	PFAS by ID	110		ng/L	15
005	MW-21-139_110222	Aqueous	PFOS	PFAS by ID	1400		ng/L	15
006	MW-14-58R_110222	Aqueous	PFBS	PFAS by ID	6.2		ng/L	17
006	MW-14-58R_110222	Aqueous	PFHxS	PFAS by ID	2.4	J	ng/L	17
006	MW-14-58R_110222	Aqueous	PFBA	PFAS by ID	8.2		ng/L	17
006	MW-14-58R_110222	Aqueous	PFHpA	PFAS by ID	5.0		ng/L	17
006	MW-14-58R_110222	Aqueous	PFHxA	PFAS by ID	7.1		ng/L	17
006	MW-14-58R_110222	Aqueous	PFNA	PFAS by ID	0.77	BJ	ng/L	17
006	MW-14-58R_110222	Aqueous	PFOA	PFAS by ID	12	B	ng/L	17
006	MW-14-58R_110222	Aqueous	PFOS	PFAS by ID	4.0		ng/L	17
007	MW-12-18_110222	Aqueous	PFBS	PFAS by ID	0.83	J	ng/L	19
007	MW-12-18_110222	Aqueous	PFBA	PFAS by ID	5.6		ng/L	19
007	MW-12-18_110222	Aqueous	PFHpA	PFAS by ID	0.65	J	ng/L	19
007	MW-12-18_110222	Aqueous	PFHxA	PFAS by ID	2.8	J	ng/L	19
007	MW-12-18_110222	Aqueous	PFOA	PFAS by ID	1.0	BJ	ng/L	19
007	MW-12-18_110222	Aqueous	PFPeA	PFAS by ID	3.3	J	ng/L	19
008	MW-14-59_110222	Aqueous	PFPeA	PFAS by ID	0.88	BJL	ng/L	21
009	DUP-01_110222	Aqueous	6:2 FTS	PFAS by ID	2.6	BJ	ng/L	23
009	DUP-01_110222	Aqueous	PFPeA	PFAS by ID	1.3	BJL	ng/L	23
010	MW-16-81_110322	Aqueous	PFBS	PFAS by ID	1.2	J	ng/L	25
010	MW-16-81_110322	Aqueous	PFBA	PFAS by ID	5.6		ng/L	25
010	MW-16-81_110322	Aqueous	PFHpA	PFAS by ID	2.6	J	ng/L	25
010	MW-16-81_110322	Aqueous	PFHxA	PFAS by ID	7.3		ng/L	25
010	MW-16-81_110322	Aqueous	PFOA	PFAS by ID	1.2	BJ	ng/L	25
010	MW-16-81_110322	Aqueous	PFPeA	PFAS by ID	7.9		ng/L	25
011	MW-14-61_110222	Aqueous	PFBA	PFAS by ID	3.0	J	ng/L	27
012	EB-02_110222	Aqueous	6:2 FTS	PFAS by ID	1.8	BJ	ng/L	29
013	MW-14-56_110322	Aqueous	PFBA	PFAS by ID	7.2		ng/L	31
013	MW-14-56_110322	Aqueous	PFHxA	PFAS by ID	1.8	J	ng/L	31
013	MW-14-56_110322	Aqueous	PFPeA	PFAS by ID	7.9		ng/L	31
014	MW-15-72_110322	Aqueous	6:2 FTS	PFAS by ID	2.1	BJ	ng/L	33
014	MW-15-72_110322	Aqueous	PFBA	PFAS by ID	6.3		ng/L	33
014	MW-15-72_110322	Aqueous	PFHxA	PFAS by ID	2.1	J	ng/L	33
014	MW-15-72_110322	Aqueous	PFPeA	PFAS by ID	4.1		ng/L	33
015	MW-20-130_110322	Aqueous	PFBS	PFAS by ID	24		ng/L	35
015	MW-20-130_110322	Aqueous	PFPeS	PFAS by ID	7.2		ng/L	35
015	MW-20-130_110322	Aqueous	PFHxS	PFAS by ID	4.2		ng/L	35
015	MW-20-130_110322	Aqueous	PFBA	PFAS by ID	26		ng/L	35
015	MW-20-130_110322	Aqueous	PFHpA	PFAS by ID	9.7		ng/L	35
015	MW-20-130_110322	Aqueous	PFHxA	PFAS by ID	60		ng/L	35
015	MW-20-130_110322	Aqueous	PFOA	PFAS by ID	3.2	J	ng/L	35

Detection Summary (Continued)

Lot Number: XK04083

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
015	MW-20-130_110322	Aqueous	PFPeA	PFAS by ID	32		ng/L	35
016	DUP-02_110322	Aqueous	PFBS	PFAS by ID	27		ng/L	37
016	DUP-02_110322	Aqueous	PFPeS	PFAS by ID	6.6		ng/L	37
016	DUP-02_110322	Aqueous	PFHxS	PFAS by ID	5.1		ng/L	37
016	DUP-02_110322	Aqueous	PFBA	PFAS by ID	22		ng/L	37
016	DUP-02_110322	Aqueous	PFHpA	PFAS by ID	11		ng/L	37
016	DUP-02_110322	Aqueous	PFHxA	PFAS by ID	55		ng/L	37
016	DUP-02_110322	Aqueous	PFOA	PFAS by ID	3.6		ng/L	37
016	DUP-02_110322	Aqueous	PFPeA	PFAS by ID	30		ng/L	37

(100 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-001**

Description: **MW-14-62_110122** Matrix: **Aqueous**

Date Sampled: **11/01/2022 1325** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/14/2022 2251	BWS	11/10/2022 1146	59703

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	**39108-34-4**	**PFAS by ID SOP**	**4.2**	**JQ**	**7.4**	**1.5**	**ng/L**	**1**
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**16**	**Q**	**7.4**	**1.9**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.4	0.81	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	**2991-50-6**	**PFAS by ID SOP**	**1.2**	**JQ**	**7.4**	**0.69**	**ng/L**	**1**
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	Q	7.4	0.86	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.7**	**J**	**3.7**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.72	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**1.3**	**J**	**3.7**	**0.46**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.66	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**3.3**	**J**	**3.7**	**0.57**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.94**	**J**	**3.7**	**0.55**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**6.1**		**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**16**		**3.7**	**0.56**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**2.2**	**JQ**	**3.7**	**0.49**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**16**		**3.7**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**21**		**3.7**	**0.64**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**7.7**		**3.7**	**0.43**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**53**		**3.7**	**0.77**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**15**		**3.7**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**47**		**3.7**	**1.9**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	282	25-150
13C2_6:2FTS	N	355	25-150
13C2_8:2FTS	N	337	25-150
13C2_PFDoA		146	25-150
13C2_PFTeDA		129	25-150
13C3_PFBS		115	25-150
13C3_PFHxS		131	25-150
13C3-HFPO-DA		77	25-150
13C4_PFBA		39	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		94	25-150
13C6_PFDA	N	164	25-150
13C7_PFUdA		148	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-001**

Description: **MW-14-62_110122** Matrix: **Aqueous**

Date Sampled: **11/01/2022 1325** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		116	25-150
13C8_PFOS		133	25-150
13C8_PFOSA		114	10-150
13C9_PFNA		126	25-150
d5-EtFOSAA	N	168	25-150
d3-MeFOSAA	N	162	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-002**

Description: **MW-14-60_110122** Matrix: **Aqueous**

Date Sampled: **11/01/2022 1540** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/14/2022 1534	ALM	11/10/2022 1236	59713

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.4	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.4	0.81	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	Q	7.4	0.69	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.86	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.3**	**J**	**3.7**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.72	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.66	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**1.0**	**J**	**3.7**	**0.55**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**6.3**		**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**22**		**3.7**	**0.56**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**2.4**	**J**	**3.7**	**0.49**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**16**		**3.7**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**24**		**3.7**	**0.64**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**4.4**		**3.7**	**0.43**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**41**		**3.7**	**0.77**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**17**		**3.7**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**32**		**3.7**	**1.9**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	266	25-150
13C2_6:2FTS	N	262	25-150
13C2_8:2FTS	N	304	25-150
13C2_PFDoA		116	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		91	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		84	25-150
13C4_PFBA		56	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		86	25-150
13C5_PFPeA		73	25-150
13C6_PFDA		124	25-150
13C7_PFUdA		123	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-002**

Description: **MW-14-60_110122** Matrix: **Aqueous**

Date Sampled: **11/01/2022 1540** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		99	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		113	10-150
13C9_PFNA		95	25-150
d5-EtFOSAA	N	152	25-150
d3-MeFOSAA		137	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-003**

Description: **MW-12-09_110122** Matrix: **Aqueous**

Date Sampled: **11/01/2022 1715** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/14/2022 1545	ALM	11/10/2022 1236	59713

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.3	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.69	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.7**	**J**	**3.7**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.74**	**J**	**3.7**	**0.54**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.4**	**J**	**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.7**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.9**		**3.7**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**9.2**		**3.7**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.61**	**J**	**3.7**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**15**		**3.7**	**0.76**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**7.3**		**3.7**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.5**	**J**	**3.7**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	175	25-150
13C2_6:2FTS		138	25-150
13C2_8:2FTS		117	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		106	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		85	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		101	25-150
13C6_PFDA		99	25-150
13C7_PFUdA		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-003**

Description: **MW-12-09_110122** Matrix: **Aqueous**

Date Sampled: **11/01/2022 1715** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		91	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-004**

Description: **EB-01_110122** Matrix: **Aqueous**

Date Sampled: **11/01/2022 1730** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/14/2022 1556	ALM	11/10/2022 1236	59713

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	0.64	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.8	0.85	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	0.73	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	0.91	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.9	0.40	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.76	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.69	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.60	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.9	0.54	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.9	0.44	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.9	0.67	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	0.45	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.9	0.81	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.9	0.53	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.61	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.9	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		106	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		96	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		97	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		93	25-150
13C5_PFPeA		95	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
W = Reported on wet weight basis
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-004**

Description: **EB-01_110122** Matrix: **Aqueous**

Date Sampled: **11/01/2022 1730** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		96	25-150
13C8_PFOS		89	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		89	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		101	25-150

LOQ = Limit of Quantitation
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E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-005**

Description: **MW-21-139_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022 0955** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1443	BWS	11/11/2022 0917	59813
2	SOP SPE	PFAS by ID SOP	10	11/17/2022 2034	BWS	11/11/2022 0917	59813
3	SOP SPE	PFAS by ID SOP	1	11/29/2022 0021	ALM	11/22/2022 1206	60793

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	**39108-34-4**	**PFAS by ID SOP**	**66**		**7.2**	**1.4**	**ng/L**	**1**
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**45**	**Q**	**7.3**	**1.8**	**ng/L**	**3**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**20**		**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**33**		**3.6**	**0.45**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	**68259-12-1**	**PFAS by ID SOP**	**0.66**	**J**	**3.6**	**0.64**	**ng/L**	**1**
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**25**		**3.6**	**0.53**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**280**		**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**43**		**3.6**	**0.55**	**ng/L**	**3**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**6.5**		**3.6**	**0.47**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**62**	**B**	**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**100**	**B**	**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**22**	**B**	**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**84**	**B**	**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**110**		**3.6**	**0.50**	**ng/L**	**3**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1400**		**36**	**18**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits	Run 3 Q	Run 3 % Recovery	Run 3 Acceptance Limits
13C2_4:2FTS	N	270	25-150	N	176	25-150	N	269	25-150
13C2_6:2FTS	N	177	25-150		117	25-150	N	196	25-150
13C2_8:2FTS		97	25-150		113	25-150		142	25-150
13C2_PFDoA		96	25-150		117	25-150		112	25-150
13C2_PFTeDA		92	25-150		118	25-150		105	25-150
13C3_PFBS		99	25-150		134	25-150		102	25-150
13C3_PFHxS		89	25-150		121	25-150		110	25-150
13C3-HFPO-DA		73	25-150		123	25-150		94	25-150
13C4_PFBA		56	25-150		129	25-150		77	25-150
13C4_PFHpA		92	25-150		122	25-150		110	25-150
13C5_PFHxA		109	25-150		122	25-150		111	25-150
13C5_PFPeA		90	25-150		127	25-150		93	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
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DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-005**

Description: **MW-21-139_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022 0955** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits	Q	Run 3 % Recovery	Acceptance Limits
13C6_PFDA		108	25-150		122	25-150		107	25-150
13C7_PFUdA		99	25-150		119	25-150		118	25-150
13C8_PFOA		109	25-150		121	25-150		115	25-150
13C8_PFOS		95	25-150		137	25-150		116	25-150
13C8_PFOSA		107	10-150		124	10-150		119	10-150
13C9_PFNA		99	25-150		129	25-150		112	25-150
d5-EtFOSAA		96	25-150		119	25-150		109	25-150
d3-MeFOSAA		97	25-150		124	25-150		122	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
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Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-006**

Description: **MW-14-58R_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022 1125** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1453	BWS	11/11/2022 0917	59813
2	SOP SPE	PFAS by ID SOP	1	11/29/2022 0054	ALM	11/22/2022 1206	60793

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.4	1.9	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**6.2**		**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.4**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.2**		**3.7**	**0.56**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**5.0**		**3.7**	**0.42**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**7.1**		**3.7**	**0.64**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.77**	**BJ**	**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**12**	**B**	**3.6**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	0.51	ng/L	2
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.0**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	230	25-150	N	256	25-150
13C2_6:2FTS	N	265	25-150	N	250	25-150
13C2_8:2FTS		123	25-150		144	25-150
13C2_PFDoA		99	25-150		91	25-150
13C2_PFTeDA		74	25-150		80	25-150
13C3_PFBS		90	25-150		84	25-150
13C3_PFHxS		88	25-150		103	25-150
13C3-HFPO-DA		73	25-150		78	25-150
13C4_PFBA		32	25-150		44	25-150
13C4_PFHpA		79	25-150		102	25-150
13C5_PFHxA		78	25-150		90	25-150
13C5_PFPeA		56	25-150		64	25-150
13C6_PFDA		115	25-150		104	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-006**

Description: **MW-14-58R_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022 1125** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		107	25-150		97	25-150
13C8_PFOA		112	25-150		111	25-150
13C8_PFOS		106	25-150		123	25-150
13C8_PFOSA		106	10-150		111	10-150
13C9_PFNA		114	25-150		123	25-150
d5-EtFOSAA		101	25-150		91	25-150
d3-MeFOSAA		103	25-150		113	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-007**

Description: **MW-12-18_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022 1315** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1504	BWS	11/11/2022 0917	59813
2	SOP SPE	PFAS by ID SOP	1	11/29/2022 0105	ALM	11/22/2022 1206	60793

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.5	0.62	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.5	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.7	1.7	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.5	0.82	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.5	0.70	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.5	0.87	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.83**	**J**	**3.7**	**0.39**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.73	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.47	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.67	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.7	0.52	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.6**		**3.4**	**0.51**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.65**	**J**	**3.4**	**0.38**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.8**	**J**	**3.4**	**0.58**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.0**	**BJ**	**3.7**	**0.78**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.3**	**J**	**3.4**	**0.46**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.59	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	1.9	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		141	25-150	N	179	25-150
13C2_6:2FTS		97	25-150	N	157	25-150
13C2_8:2FTS		76	25-150		100	25-150
13C2_PFDoA		98	25-150		79	25-150
13C2_PFTeDA		92	25-150		68	25-150
13C3_PFBS		111	25-150		112	25-150
13C3_PFHxS		91	25-150		117	25-150
13C3-HFPO-DA		83	25-150		109	25-150
13C4_PFBA		79	25-150		97	25-150
13C4_PFHpA		87	25-150		107	25-150
13C5_PFHxA		111	25-150		123	25-150
13C5_PFPeA		109	25-150		111	25-150
13C6_PFDA		102	25-150		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK04083-007**
Description: **MW-12-18_110222**
Matrix: **Aqueous**
Date Sampled: **11/02/2022 1315**
Project Name: **RACER Lansing**
Date Received: **11/04/2022**
Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		102	25-150		91	25-150
13C8_PFOA		106	25-150		121	25-150
13C8_PFOS		107	25-150		107	25-150
13C8_PFOSA		101	10-150		105	10-150
13C9_PFNA		110	25-150		110	25-150
d5-EtFOSAA		94	25-150		76	25-150
d3-MeFOSAA		97	25-150		94	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
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DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-008**

Description: **MW-14-59_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022 1515** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1514	BWS	11/11/2022 0917	59813

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.7	0.46	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.7	0.64	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.7	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.7	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.7	0.84	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.7	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.7	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.7	0.72	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.7	0.90	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.8	0.40	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.75	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.48	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.68	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.59	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.57	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.8	0.53	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.45	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.8	0.43	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.8	0.66	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.8	0.44	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.8	0.80	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.88**	**BJL**	**3.8**	**0.52**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.51	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.60	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.8	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		109	25-150
13C2_6:2FTS		90	25-150
13C2_8:2FTS		81	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		86	25-150
13C3_PFBS		113	25-150
13C3_PFHxS		89	25-150
13C3-HFPO-DA		106	25-150
13C4_PFBA		94	25-150
13C4_PFHpA		99	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK04083-008**
Description: **MW-14-59_110222**
Matrix: **Aqueous**
Date Sampled: **11/02/2022 1515**
Project Name: **RACER Lansing**
Date Received: **11/04/2022**
Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		80	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		108	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		94	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-009**

Description: **DUP-01_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1525	BWS	11/11/2022 0917	59813

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.3	0.50	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.3	0.69	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.3	1.7	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**2.6**	**BJ**	**8.3**	**2.1**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.3	0.91	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.3	2.2	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.3	0.50	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.3	0.78	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.3	0.97	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.1	0.43	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	0.81	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	0.52	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	0.74	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	0.64	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	0.62	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.1	0.57	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.1	0.62	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.1	0.54	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	0.49	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.1	0.46	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.1	0.71	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.1	0.48	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.1	0.86	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.3**	**BJL**	**4.1**	**0.56**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	0.62	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	0.55	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	0.65	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.1	2.1	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		109	25-150
13C2_6:2FTS		105	25-150
13C2_8:2FTS		83	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		84	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		95	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		108	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		112	25-150
13C5_PFPeA		112	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-009**

Description: **DUP-01_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-010**

Description: **MW-16-81_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1220** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1536	BWS	11/11/2022 0917	59813
2	SOP SPE	PFAS by ID SOP	1	11/29/2022 0116	ALM	11/22/2022 1206	60793

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.6**		**3.4**	**0.52**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.6**	**J**	**3.4**	**0.39**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**7.3**		**3.4**	**0.59**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.2**	**BJ**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**7.9**		**3.4**	**0.47**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	229	25-150	N	245	25-150
13C2_6:2FTS		110	25-150		148	25-150
13C2_8:2FTS		84	25-150		115	25-150
13C2_PFDoA		100	25-150		110	25-150
13C2_PFTeDA		97	25-150		106	25-150
13C3_PFBS		101	25-150		107	25-150
13C3_PFHxS		92	25-150		119	25-150
13C3-HFPO-DA		80	25-150		98	25-150
13C4_PFBA		46	25-150		64	25-150
13C4_PFHpA		89	25-150		114	25-150
13C5_PFHxA		102	25-150		111	25-150
13C5_PFPeA		85	25-150		91	25-150
13C6_PFDA		104	25-150		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-010**

Description: **MW-16-81_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1220** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		102	25-150		109	25-150
13C8_PFOA		103	25-150		120	25-150
13C8_PFOS		106	25-150		120	25-150
13C8_PFOSA		85	10-150		115	10-150
13C9_PFNA		98	25-150		119	25-150
d5-EtFOSAA		93	25-150		100	25-150
d3-MeFOSAA		90	25-150		118	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-011**

Description: **MW-14-61_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022 1650** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2022	BWS	11/14/2022 0951	60071

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.0**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		139	25-150
13C2_6:2FTS		109	25-150
13C2_8:2FTS		82	25-150
13C2_PFDoA		111	25-150
13C2_PFTeDA		98	25-150
13C3_PFBS		112	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		75	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		104	25-150
13C6_PFDA		96	25-150
13C7_PFUdA		102	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-011**

Description: **MW-14-61_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022 1650** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		107	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-012**

Description: **EB-02_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022 1800** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2033	BWS	11/14/2022 0951	60071

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**1.8**	**BJ**	**6.9**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		104	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		74	25-150
13C2_PFDoA		95	25-150
13C2_PFTeDA		67	25-150
13C3_PFBS		112	25-150
13C3_PFHxS		90	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		96	25-150
13C4_PFHpA		86	25-150
13C5_PFHxA		114	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-012**

Description: **EB-02_110222** Matrix: **Aqueous**

Date Sampled: **11/02/2022 1800** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		100	25-150
d5-EtFOSAA		94	25-150
d3-MeFOSAA		88	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-013**

Description: **MW-14-56_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 0945** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2044	BWS	11/14/2022 0951	60071

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.2**		**3.6**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.6**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**7.9**		**3.6**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	158	25-150
13C2_6:2FTS		114	25-150
13C2_8:2FTS		92	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		76	25-150
13C3_PFBS		107	25-150
13C3_PFHxS		92	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		74	25-150
13C4_PFHpA		86	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		105	25-150
13C6_PFDA		95	25-150
13C7_PFUdA		111	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK04083-013**
Description: **MW-14-56_110322**
Matrix: **Aqueous**
Date Sampled: **11/03/2022 0945**
Project Name: **RACER Lansing**
Date Received: **11/04/2022**
Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		94	25-150
d3-MeFOSAA		91	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-014**

Description: **MW-15-72_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1110** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2054	BWS	11/14/2022 0951	60071

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**2.1**	**BJ**	**7.0**	**1.8**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**6.3**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.1**	**J**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**4.1**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	189	25-150
13C2_6:2FTS		102	25-150
13C2_8:2FTS		81	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		107	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		72	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		96	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		104	25-150

LOQ = Limit of Quantitation
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E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK04083-014**
Description: **MW-15-72_110322**
Matrix: **Aqueous**
Date Sampled: **11/03/2022 1110**
Project Name: **RACER Lansing**
Date Received: **11/04/2022**
Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		112	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-015**

Description: **MW-20-130_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1345** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2105	BWS	11/14/2022 0951	60071

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**24**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**7.2**		**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**4.2**		**3.5**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**26**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**9.7**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**60**		**3.5**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**3.2**	**J**	**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**32**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	238	25-150
13C2_6:2FTS		147	25-150
13C2_8:2FTS		82	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		97	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		80	25-150
13C4_PFBA		35	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		94	25-150
13C5_PFPeA		69	25-150
13C6_PFDA		95	25-150
13C7_PFUdA		91	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK04083-015**
Description: **MW-20-130_110322**
Matrix: **Aqueous**
Date Sampled: **11/03/2022 1345**
Project Name: **RACER Lansing**
Date Received: **11/04/2022**
Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		126	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		112	25-150
d3-MeFOSAA		93	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-016**

Description: **DUP-02_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2116	BWS	11/14/2022 0951	60071

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**27**		**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**6.6**		**3.6**	**0.53**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**5.1**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**22**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**11**		**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**55**		**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**3.6**		**3.6**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**30**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	261	25-150
13C2_6:2FTS	N	152	25-150
13C2_8:2FTS		81	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		92	25-150
13C3_PFBS		98	25-150
13C3_PFHxS		85	25-150
13C3-HFPO-DA		79	25-150
13C4_PFBA		37	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		71	25-150
13C6_PFDA		94	25-150
13C7_PFUdA		89	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04083-016**

Description: **DUP-02_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022** Project Name: **RACER Lansing**

Date Received: **11/04/2022** Project Number: **30112892**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		107	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		113	25-150
d5-EtFOSAA		92	25-150
d3-MeFOSAA		91	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ59703-001
Batch: 59703
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/10/2022 1146

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/14/2022 2230
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/14/2022 2230
8:2 FTS	ND		1	8.0	1.6	ng/L	11/14/2022 2230
6:2 FTS	ND		1	8.0	2.0	ng/L	11/14/2022 2230
4:2 FTS	ND		1	8.0	0.87	ng/L	11/14/2022 2230
GenX	ND		1	8.0	2.1	ng/L	11/14/2022 2230
ADONA	ND		1	8.0	0.48	ng/L	11/14/2022 2230
EtFOSAA	ND		1	8.0	0.75	ng/L	11/14/2022 2230
MeFOSAA	ND		1	8.0	0.93	ng/L	11/14/2022 2230
PFBS	ND		1	4.0	0.41	ng/L	11/14/2022 2230
PFDS	ND		1	4.0	0.78	ng/L	11/14/2022 2230
PFHpS	ND		1	4.0	0.50	ng/L	11/14/2022 2230
PFNS	ND		1	4.0	0.71	ng/L	11/14/2022 2230
PFOSA	ND		1	4.0	0.61	ng/L	11/14/2022 2230
PFPeS	ND		1	4.0	0.59	ng/L	11/14/2022 2230
PFHxS	ND		1	4.0	0.55	ng/L	11/14/2022 2230
PFBA	ND		1	4.0	0.60	ng/L	11/14/2022 2230
PFDA	ND		1	4.0	0.52	ng/L	11/14/2022 2230
PFDoA	ND		1	4.0	0.47	ng/L	11/14/2022 2230
PFHpA	ND		1	4.0	0.45	ng/L	11/14/2022 2230
PFHxA	ND		1	4.0	0.69	ng/L	11/14/2022 2230
PFNA	ND		1	4.0	0.46	ng/L	11/14/2022 2230
PFOA	ND		1	4.0	0.83	ng/L	11/14/2022 2230
PFPeA	ND		1	4.0	0.54	ng/L	11/14/2022 2230
PFTeDA	ND		1	4.0	0.60	ng/L	11/14/2022 2230
PFTrDA	ND		1	4.0	0.53	ng/L	11/14/2022 2230
PFUdA	ND		1	4.0	0.63	ng/L	11/14/2022 2230
PFOS	ND		1	4.0	2.0	ng/L	11/14/2022 2230

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		99	25-150
13C2_6:2FTS		113	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		110	25-150
13C2_PFTeDA		121	25-150
13C3_PFBS		115	25-150
13C3_PFHxS		129	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		118	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		118	25-150
13C5_PFPeA		125	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ59703-001
Batch: 59703
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/10/2022 1146

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		128	25-150
13C7_PFUdA		128	25-150
13C8_PFOA		102	25-150
13C8_PFOS		117	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		116	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59703-002
Batch: 59703
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/10/2022 1146

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	19		1	126	50-150	11/14/2022 2241
11Cl-PF3OUdS	15	17		1	113	50-150	11/14/2022 2241
8:2 FTS	15	20		1	129	50-150	11/14/2022 2241
6:2 FTS	15	18		1	119	50-150	11/14/2022 2241
4:2 FTS	15	19		1	130	50-150	11/14/2022 2241
GenX	32	42		1	131	50-150	11/14/2022 2241
ADONA	15	20		1	135	50-150	11/14/2022 2241
EtFOSAA	16	19		1	120	50-150	11/14/2022 2241
MeFOSAA	16	17		1	105	50-150	11/14/2022 2241
PFBS	14	17		1	118	50-150	11/14/2022 2241
PFDS	15	18		1	117	50-150	11/14/2022 2241
PFHpS	15	21		1	139	50-150	11/14/2022 2241
PFNS	15	18		1	117	50-150	11/14/2022 2241
PFOSA	16	21		1	130	50-150	11/14/2022 2241
PFPeS	15	16		1	104	50-150	11/14/2022 2241
PFHxS	15	19		1	133	50-150	11/14/2022 2241
PFBA	16	20		1	124	50-150	11/14/2022 2241
PFDA	16	18		1	110	50-150	11/14/2022 2241
PFDoA	16	18		1	115	50-150	11/14/2022 2241
PFHpA	16	20		1	123	50-150	11/14/2022 2241
PFHxA	16	18		1	110	50-150	11/14/2022 2241
PFNA	16	20		1	125	50-150	11/14/2022 2241
PFOA	16	18		1	113	50-150	11/14/2022 2241
PFPeA	16	19		1	117	50-150	11/14/2022 2241
PFTeDA	16	20		1	124	50-150	11/14/2022 2241
PFTrDA	16	19		1	117	50-150	11/14/2022 2241
PFUdA	16	18		1	111	50-150	11/14/2022 2241
PFOS	15	17		1	117	50-150	11/14/2022 2241

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		87	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		91	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		88	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		84	25-150
13C4_PFBA		97	25-150
13C4_PFHpA		94	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59703-002
Batch: 59703
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/10/2022 1146

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		110	25-150
13C7_PFUdA		98	25-150
13C8_PFOA		90	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		82	10-150
13C9_PFNA		91	25-150
d5-EtFOSAA		88	25-150
d3-MeFOSAA		87	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK04083-001MS
Batch: 59703
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/10/2022 1146

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	14	11		1	79	50-150	11/14/2022 2302
11Cl-PF3OUdS	ND	14	8.2		1	59	50-150	11/14/2022 2302
8:2 FTS	4.2	14	15		1	78	50-150	11/14/2022 2302
6:2 FTS	16	14	24		1	58	50-150	11/14/2022 2302
4:2 FTS	ND	14	12		1	86	50-150	11/14/2022 2302
GenX	ND	29	36		1	124	50-150	11/14/2022 2302
ADONA	ND	14	11		1	82	50-150	11/14/2022 2302
EtFOSAA	1.2	15	14		1	89	50-150	11/14/2022 2302
MeFOSAA	ND	15	12		1	83	50-150	11/14/2022 2302
PFBS	1.7	13	12		1	81	50-150	11/14/2022 2302
PFDS	ND	14	11		1	78	50-150	11/14/2022 2302
PFHpS	1.3	14	13		1	85	50-150	11/14/2022 2302
PFNS	ND	14	11		1	80	50-150	11/14/2022 2302
PFOSA	3.3	15	18		1	100	50-150	11/14/2022 2302
PFPeS	0.94	14	11		1	77	50-150	11/14/2022 2302
PFHxS	6.1	13	17		1	83	50-150	11/14/2022 2302
PFBA	16	15	32		1	103	50-150	11/14/2022 2302
PFDA	2.2	15	14		1	79	50-150	11/14/2022 2302
PFDoA	ND	15	12		1	85	50-150	11/14/2022 2302
PFHpA	16	15	27		1	76	50-150	11/14/2022 2302
PFHxA	21	15	33		1	78	50-150	11/14/2022 2302
PFNA	7.7	15	20		1	83	50-150	11/14/2022 2302
PFOA	53	15	65		1	83	50-150	11/14/2022 2302
PFPeA	15	15	28		1	86	50-150	11/14/2022 2302
PFTeDA	ND	15	13		1	87	50-150	11/14/2022 2302
PFTrDA	ND	15	12		1	80	50-150	11/14/2022 2302
PFUdA	ND	15	12		1	81	50-150	11/14/2022 2302
PFOS	47	14	55		1	62	50-150	11/14/2022 2302

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	255	25-150
13C2_6:2FTS	N	368	25-150
13C2_8:2FTS	N	321	25-150
13C2_PFDoA		145	25-150
13C2_PFTeDA		131	25-150
13C3_PFBS		109	25-150
13C3_PFHxS		133	25-150
13C3-HFPO-DA		73	25-150
13C4_PFBA		36	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		90	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK04083-001MS
Batch: 59703
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/10/2022 1146

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA	N	155	25-150
13C7_PFUdA	N	152	25-150
13C8_PFOA		113	25-150
13C8_PFOS		128	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		120	25-150
d5-EtFOSAA		149	25-150
d3-MeFOSAA		144	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ59713-001
Batch: 59713
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/10/2022 1236

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/14/2022 1428
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/14/2022 1428
8:2 FTS	ND		1	8.0	1.6	ng/L	11/14/2022 1428
6:2 FTS	ND		1	8.0	2.0	ng/L	11/14/2022 1428
4:2 FTS	ND		1	8.0	0.87	ng/L	11/14/2022 1428
GenX	ND		1	8.0	2.1	ng/L	11/14/2022 1428
ADONA	ND		1	8.0	0.48	ng/L	11/14/2022 1428
EtFOSAA	ND		1	8.0	0.75	ng/L	11/14/2022 1428
MeFOSAA	ND		1	8.0	0.93	ng/L	11/14/2022 1428
PFBS	ND		1	4.0	0.41	ng/L	11/14/2022 1428
PFDS	ND		1	4.0	0.78	ng/L	11/14/2022 1428
PFHpS	ND		1	4.0	0.50	ng/L	11/14/2022 1428
PFNS	ND		1	4.0	0.71	ng/L	11/14/2022 1428
PFOSA	ND		1	4.0	0.61	ng/L	11/14/2022 1428
PFPeS	ND		1	4.0	0.59	ng/L	11/14/2022 1428
PFHxS	ND		1	4.0	0.55	ng/L	11/14/2022 1428
PFBA	ND		1	4.0	0.60	ng/L	11/14/2022 1428
PFDA	ND		1	4.0	0.52	ng/L	11/14/2022 1428
PFDoA	ND		1	4.0	0.47	ng/L	11/14/2022 1428
PFHpA	ND		1	4.0	0.45	ng/L	11/14/2022 1428
PFHxA	ND		1	4.0	0.69	ng/L	11/14/2022 1428
PFNA	ND		1	4.0	0.46	ng/L	11/14/2022 1428
PFOA	ND		1	4.0	0.83	ng/L	11/14/2022 1428
PFPeA	ND		1	4.0	0.54	ng/L	11/14/2022 1428
PFTeDA	ND		1	4.0	0.60	ng/L	11/14/2022 1428
PFTrDA	ND		1	4.0	0.53	ng/L	11/14/2022 1428
PFUdA	ND		1	4.0	0.63	ng/L	11/14/2022 1428
PFOS	ND		1	4.0	2.0	ng/L	11/14/2022 1428

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		97	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		89	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		94	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		94	25-150
13C4_PFHpA		99	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ59713-001
Batch: 59713
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/10/2022 1236

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		95	25-150
13C7_PFUdA		94	25-150
13C8_PFOA		97	25-150
13C8_PFOS		90	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		88	25-150
d5-EtFOSAA		98	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59713-002
Batch: 59713
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/10/2022 1236

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	16		1	104	50-150	11/14/2022 1439
11Cl-PF3OUdS	15	15		1	97	50-150	11/14/2022 1439
8:2 FTS	15	15		1	97	50-150	11/14/2022 1439
6:2 FTS	15	14		1	94	50-150	11/14/2022 1439
4:2 FTS	15	16		1	110	50-150	11/14/2022 1439
GenX	32	30		1	94	50-150	11/14/2022 1439
ADONA	15	16		1	108	50-150	11/14/2022 1439
EtFOSAA	16	15		1	96	50-150	11/14/2022 1439
MeFOSAA	16	14		1	90	50-150	11/14/2022 1439
PFBS	14	14		1	96	50-150	11/14/2022 1439
PFDS	15	14		1	90	50-150	11/14/2022 1439
PFHpS	15	15		1	98	50-150	11/14/2022 1439
PFNS	15	13		1	87	50-150	11/14/2022 1439
PFOSA	16	15		1	92	50-150	11/14/2022 1439
PFPeS	15	13		1	90	50-150	11/14/2022 1439
PFHxS	15	14		1	94	50-150	11/14/2022 1439
PFBA	16	15		1	96	50-150	11/14/2022 1439
PFDA	16	14		1	89	50-150	11/14/2022 1439
PFDoA	16	15		1	96	50-150	11/14/2022 1439
PFHpA	16	15		1	95	50-150	11/14/2022 1439
PFHxA	16	15		1	97	50-150	11/14/2022 1439
PFNA	16	14		1	90	50-150	11/14/2022 1439
PFOA	16	15		1	92	50-150	11/14/2022 1439
PFPeA	16	15		1	94	50-150	11/14/2022 1439
PFTeDA	16	15		1	96	50-150	11/14/2022 1439
PFTrDA	16	14		1	88	50-150	11/14/2022 1439
PFUdA	16	16		1	98	50-150	11/14/2022 1439
PFOS	15	15		1	99	50-150	11/14/2022 1439

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		95	25-150
13C2_6:2FTS		105	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		91	25-150
13C2_PFTeDA		91	25-150
13C3_PFBS		98	25-150
13C3_PFHxS		93	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		95	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		88	25-150
13C5_PFPeA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59713-002
Batch: 59713
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/10/2022 1236

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		102	25-150
13C7_PFUdA		92	25-150
13C8_PFOA		98	25-150
13C8_PFOS		89	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		91	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ59813-001
Batch: 59813
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0917

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/16/2022 1422
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/16/2022 1422
8:2 FTS	ND		1	8.0	1.6	ng/L	11/16/2022 1422
6:2 FTS	**4.4**	**J**	**1**	**8.0**	**2.0**	**ng/L**	**11/16/2022 1422**
4:2 FTS	ND		1	8.0	0.87	ng/L	11/16/2022 1422
GenX	ND		1	8.0	2.1	ng/L	11/16/2022 1422
ADONA	ND		1	8.0	0.48	ng/L	11/16/2022 1422
EtFOSAA	ND		1	8.0	0.75	ng/L	11/16/2022 1422
MeFOSAA	ND		1	8.0	0.93	ng/L	11/16/2022 1422
PFBS	ND		1	4.0	0.41	ng/L	11/16/2022 1422
PFDS	ND		1	4.0	0.78	ng/L	11/16/2022 1422
PFHpS	ND		1	4.0	0.50	ng/L	11/16/2022 1422
PFNS	ND		1	4.0	0.71	ng/L	11/16/2022 1422
PFOSA	ND		1	4.0	0.61	ng/L	11/16/2022 1422
PFPeS	ND		1	4.0	0.59	ng/L	11/16/2022 1422
PFHxS	ND		1	4.0	0.55	ng/L	11/16/2022 1422
PFBA	**11**		**1**	**4.0**	**0.60**	**ng/L**	**11/16/2022 1422**
PFDA	ND		1	4.0	0.52	ng/L	11/16/2022 1422
PFDoA	ND		1	4.0	0.47	ng/L	11/16/2022 1422
PFHpA	**5.0**		**1**	**4.0**	**0.45**	**ng/L**	**11/16/2022 1422**
PFHxA	**3.5**	**J**	**1**	**4.0**	**0.69**	**ng/L**	**11/16/2022 1422**
PFNA	**0.67**	**J**	**1**	**4.0**	**0.46**	**ng/L**	**11/16/2022 1422**
PFOA	**1.2**	**J**	**1**	**4.0**	**0.83**	**ng/L**	**11/16/2022 1422**
PFPeA	**27**		**1**	**4.0**	**0.54**	**ng/L**	**11/16/2022 1422**
PFTeDA	ND		1	4.0	0.60	ng/L	11/16/2022 1422
PFTrDA	ND		1	4.0	0.53	ng/L	11/16/2022 1422
PFUdA	ND		1	4.0	0.63	ng/L	11/16/2022 1422
PFOS	ND		1	4.0	2.0	ng/L	11/16/2022 1422

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		103	25-150
13C2_6:2FTS		106	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		103	25-150
13C3_PFBS		110	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		102	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		106	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ59813-001
Batch: 59813
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0917

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		109	25-150
13C7_PFUdA		117	25-150
13C8_PFOA		107	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		115	25-150
d5-EtFOSAA		94	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59813-002
Batch: 59813
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0917

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	16		1	106	50-150	11/16/2022 1432
11Cl-PF3OUdS	15	14		1	94	50-150	11/16/2022 1432
8:2 FTS	15	17		1	108	50-150	11/16/2022 1432
6:2 FTS	15	19		1	126	50-150	11/16/2022 1432
4:2 FTS	15	14		1	96	50-150	11/16/2022 1432
GenX	32	42		1	130	50-150	11/16/2022 1432
ADONA	15	19		1	124	50-150	11/16/2022 1432
EtFOSAA	16	16		1	103	50-150	11/16/2022 1432
MeFOSAA	16	16		1	99	50-150	11/16/2022 1432
PFBS	14	14		1	101	50-150	11/16/2022 1432
PFDS	15	12		1	79	50-150	11/16/2022 1432
PFHpS	15	15		1	96	50-150	11/16/2022 1432
PFNS	15	16		1	101	50-150	11/16/2022 1432
PFOSA	16	16		1	101	50-150	11/16/2022 1432
PFPeS	15	14		1	93	50-150	11/16/2022 1432
PFHxS	15	14		1	97	50-150	11/16/2022 1432
PFBA	16	23		1	145	50-150	11/16/2022 1432
PFDA	16	14		1	85	50-150	11/16/2022 1432
PFDoA	16	16		1	103	50-150	11/16/2022 1432
PFHpA	16	18		1	111	50-150	11/16/2022 1432
PFHxA	16	18		1	112	50-150	11/16/2022 1432
PFNA	16	16		1	102	50-150	11/16/2022 1432
PFOA	16	16		1	100	50-150	11/16/2022 1432
PFPeA	16	38	N	1	236	50-150	11/16/2022 1432
PFTeDA	16	16		1	100	50-150	11/16/2022 1432
PFTrDA	16	15		1	96	50-150	11/16/2022 1432
PFUdA	16	14		1	89	50-150	11/16/2022 1432
PFOS	15	15		1	102	50-150	11/16/2022 1432

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS		105	25-150
13C2_8:2FTS		87	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		96	25-150
13C3_PFBS		117	25-150
13C3_PFHxS		98	25-150
13C3-HFPO-DA		90	25-150
13C4_PFBA		105	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		122	25-150
13C5_PFPeA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59813-002
Batch: 59813
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0917

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		126	25-150
13C7_PFUdA		129	25-150
13C8_PFOA		110	25-150
13C8_PFOS		112	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		123	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60071-001
Batch: 60071
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/16/2022 2001
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/16/2022 2001
8:2 FTS	ND		1	8.0	1.6	ng/L	11/16/2022 2001
6:2 FTS	**3.5**	**J**	**1**	**8.0**	**2.0**	**ng/L**	**11/16/2022 2001**
4:2 FTS	ND		1	8.0	0.87	ng/L	11/16/2022 2001
GenX	ND		1	8.0	2.1	ng/L	11/16/2022 2001
ADONA	ND		1	8.0	0.48	ng/L	11/16/2022 2001
EtFOSAA	ND		1	8.0	0.75	ng/L	11/16/2022 2001
MeFOSAA	ND		1	8.0	0.93	ng/L	11/16/2022 2001
PFBS	ND		1	4.0	0.41	ng/L	11/16/2022 2001
PFDS	ND		1	4.0	0.78	ng/L	11/16/2022 2001
PFHpS	ND		1	4.0	0.50	ng/L	11/16/2022 2001
PFNS	ND		1	4.0	0.71	ng/L	11/16/2022 2001
PFOSA	ND		1	4.0	0.61	ng/L	11/16/2022 2001
PFPeS	ND		1	4.0	0.59	ng/L	11/16/2022 2001
PFHxS	ND		1	4.0	0.55	ng/L	11/16/2022 2001
PFBA	ND		1	4.0	0.60	ng/L	11/16/2022 2001
PFDA	ND		1	4.0	0.52	ng/L	11/16/2022 2001
PFDoA	ND		1	4.0	0.47	ng/L	11/16/2022 2001
PFHpA	ND		1	4.0	0.45	ng/L	11/16/2022 2001
PFHxA	ND		1	4.0	0.69	ng/L	11/16/2022 2001
PFNA	ND		1	4.0	0.46	ng/L	11/16/2022 2001
PFOA	ND		1	4.0	0.83	ng/L	11/16/2022 2001
PFPeA	ND		1	4.0	0.54	ng/L	11/16/2022 2001
PFTeDA	ND		1	4.0	0.60	ng/L	11/16/2022 2001
PFTrDA	ND		1	4.0	0.53	ng/L	11/16/2022 2001
PFUdA	ND		1	4.0	0.63	ng/L	11/16/2022 2001
PFOS	ND		1	4.0	2.0	ng/L	11/16/2022 2001

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		101	25-150
13C2_6:2FTS		98	25-150
13C2_8:2FTS		83	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		82	25-150
13C3_PFBS		119	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60071-001
Batch: 60071
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		99	25-150
13C7_PFUdA		101	25-150
13C8_PFOA		105	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit

ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60071-002
Batch: 60071
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	99	50-150	11/16/2022 2012
11Cl-PF3OUdS	15	16		1	109	50-150	11/16/2022 2012
8:2 FTS	15	13		1	83	50-150	11/16/2022 2012
6:2 FTS	15	17		1	109	50-150	11/16/2022 2012
4:2 FTS	15	16		1	108	50-150	11/16/2022 2012
GenX	32	31		1	96	50-150	11/16/2022 2012
ADONA	15	16		1	105	50-150	11/16/2022 2012
EtFOSAA	16	15		1	96	50-150	11/16/2022 2012
MeFOSAA	16	16		1	100	50-150	11/16/2022 2012
PFBS	14	14		1	96	50-150	11/16/2022 2012
PFDS	15	15		1	100	50-150	11/16/2022 2012
PFHpS	15	15		1	101	50-150	11/16/2022 2012
PFNS	15	18		1	119	50-150	11/16/2022 2012
PFOSA	16	16		1	97	50-150	11/16/2022 2012
PFPeS	15	15		1	102	50-150	11/16/2022 2012
PFHxS	15	15		1	100	50-150	11/16/2022 2012
PFBA	16	16		1	98	50-150	11/16/2022 2012
PFDA	16	16		1	99	50-150	11/16/2022 2012
PFDoA	16	15		1	94	50-150	11/16/2022 2012
PFHpA	16	15		1	96	50-150	11/16/2022 2012
PFHxA	16	16		1	99	50-150	11/16/2022 2012
PFNA	16	17		1	103	50-150	11/16/2022 2012
PFOA	16	17		1	108	50-150	11/16/2022 2012
PFPeA	16	15		1	91	50-150	11/16/2022 2012
PFTeDA	16	16		1	99	50-150	11/16/2022 2012
PFTrDA	16	15		1	95	50-150	11/16/2022 2012
PFUdA	16	18		1	110	50-150	11/16/2022 2012
PFOS	15	17		1	115	50-150	11/16/2022 2012

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		101	25-150
13C2_6:2FTS		103	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		114	25-150
13C3_PFHxS		88	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		101	25-150
13C4_PFHpA		85	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		111	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60071-002
Batch: 60071
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		99	25-150
13C7_PFUdA		90	25-150
13C8_PFOA		96	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		101	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60793-001
Batch: 60793
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/22/2022 1206

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
6:2 FTS	ND		1	8.0	2.0	ng/L	11/28/2022 2359
PFBA	ND		1	4.0	0.60	ng/L	11/28/2022 2359
PFHpA	ND		1	4.0	0.45	ng/L	11/28/2022 2359
PFHxA	ND		1	4.0	0.69	ng/L	11/28/2022 2359
PFPeA	ND		1	4.0	0.54	ng/L	11/28/2022 2359

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		122	25-150
13C2_6:2FTS		130	25-150
13C2_8:2FTS		117	25-150
13C2_PFDoA		113	25-150
13C2_PFTeDA		108	25-150
13C3_PFBS		109	25-150
13C3_PFHxS		118	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		118	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		114	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		110	25-150
13C8_PFOA		118	25-150
13C8_PFOS		118	25-150
13C8_PFOSA		113	10-150
13C9_PFNA		115	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		117	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60793-002
Batch: 60793
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/22/2022 1206

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
6:2 FTS	15	14		1	93	50-150	11/29/2022 0010
PFBA	16	16		1	102	50-150	11/29/2022 0010
PFHpA	16	17		1	108	50-150	11/29/2022 0010
PFHxA	16	17		1	106	50-150	11/29/2022 0010
PFPeA	16	17		1	106	50-150	11/29/2022 0010

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		113	25-150
13C2_6:2FTS		130	25-150
13C2_8:2FTS		124	25-150
13C2_PFDoA		112	25-150
13C2_PFTeDA		102	25-150
13C3_PFBS		119	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		116	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		107	25-150
13C6_PFDA		112	25-150
13C7_PFUdA		113	25-150
13C8_PFOA		121	25-150
13C8_PFOS		123	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		116	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		119	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

Plant 2

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 140217

Client: Arcadis	Report to Contact: Kaelyn Hunt, Tiffany Lauer	Telephone No. / E-mail: 248-809-4813 / kaelyn.hunt@arcadis.com, 313-225-1928 / tiffany.lauer@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Novi; State: MI; Zip Code: 48377	Printed Name: Connor Osgood		Lot # Bar Code: XK04083
Project Name: RACER Housing			
Project No.: 30112892.0370A	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Sample Temperature	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres	HNO3	H2SO4	HCl	NaOH	Na2S2O3	Other Preserved	PFAS via Draft 537.1 (mod) Modified for Multiple Reporting Limits
MW-14-62_110122	11/01/22	1325	6	X			2							X
MW-14-60_110122	11/01/22	1540	6	X			2							X
MW-12-69_110122	11/01/22	1715	6	X			2							X
EB-01_110122	11/01/22	1730	6	X			2							X
MW-21-130_110222	11/02/22	9:55	6	X			2							X
MW-14-58R_110222	11/02/22	1125	6	X			2							X
MW-12-18_110222	11/02/22	1315	6	X			2							X
MW-14-59_110222	11/02/22	1515	6	X			2							X
FBP-01-110222	11/02/22	—	6	X			2							X
MW-10-81_110322	11/3/22	12:20	6	X			2							X

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☒ Standard ☐ Rush (Specify)

Sample Disposal
☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Arcadis	11/3/22	1900	1. Received by: FedEx	11/3/22	1900
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FEDEX	11/04/22	1403	4. Laboratory received by: [illegible]	11/04/22	1403

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle): (Yes) No Ice Pack
Receipt Temp. 2.4 °C
Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: MF003N2-01

PACE ANALYTICAL SERVICES, LLC

Pace Analytical®

PLANT-2

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 140218

Client: ARCADIS	Report to Contact: KAITLYN HUNT	Telephone No. / E-mail: 947-777-5215 KAITLYN.HUNT@ARCADIS.COM	Quote No.
Address: 28550 CABOT DR. SUITE 500	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 2 of 2
City: NOVI / State: MI / Zip Code: 48377	Printed Name: BRAD CUBERA		XK04083 KF52
Project Name: RACER LANSING			
Project No.: 30112892	P.O. No.:		Remarks / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab/Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Other	No of Containers by Preservative Type: Unpres.	HCl	HNO3	NaOH	H2SO4	NaOH/ZnAc	Field Filtered	METHANE, ETHANE, ETHENE (RSK-175)	Remarks / Cooler I.D.
~~MW-14-61-110322~~	~~11/2/22~~ 11/3/22	16:50	G	X			X							2	
~~EB-02-110322~~ EB-02-110222	~~11/2/22~~ 11/3/22	18:00	G	X			X							2	
MW-14-86_110322	11/3/22	9:45	G	X			X							2	
MW-15-72_110322	11/3/22	11:10	G	X			X							2	
MW-20-130_110322	11/3/22	13:45	G	X			X							2	
DUP-02_110322	11/3/22	—	G	X			X							2	

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☒ Standard ☐ Rush (Specify)	Sample Disposal ☐ Return to Client ☒ Disposal by Lab	Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown	QC Requirements (Specify)				
1. Relinquished by: Arcadis	Date: 11/3/22	Time: 1900	1. Received by: FedEx	Date: 11/3/22	Time: 1900		
2. Relinquished by	Date	Time	2. Received by	Date	Time		
3. Relinquished by	Date	Time	3. Received by	Date	Time		
4. Relinquished by: FedEx	Date: 11/04/22	Time: 1003	4. Laboratory received by: [illegible]	Date: 11/4/22	Time: 1003		

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on ice (Circle): (Yes) No Ice Pack — Receipt Temp: 2-4 °C — Temp. Blank: ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME603N2-01

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: ARCADIS Cooler Inspected by/date: BRB / 11/4/22 Lot #: XK04083

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:			
☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA
Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA
2.4 / 2.4 °C NA / NA °C NA / NA °C NA / NA °C
Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 3 IR Gun Correction Factor: 0 °C
Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		11. Was adequate sample volume available?
☑ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☑ Yes	☐ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Qualtrax ID: 56360 Pace® Analytical Services, LLC Page 1 of 1

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER Lansing

Lot Number:**XK09063**

Date Completed:11/22/2022

Kathy Smith

11/22/2022 4:45 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Case Narrative
Arcadis U.S., Inc.
Lot Number: XK09063

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Samples XK09063-001, XK09063-002, XK09063-003, XK09063-004, XK09063-005, XK09063-008, XK09063-009, XK09063-010, XK09063-012, XK09063-014 required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of MeOH. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <5mL and reconstituted to 5mL using MeOH by transfer pipet.

For sample XK09063-011 sample matrix prevented full volume from being extracted, precluding method mandated bottle rinse. Elution solvent was aliquoted directly into the reservoir, rinsing the inside. Surrogate recovery may be adversely affected.

Surrogate recovery for the following samples was outside the upper control limit: XK09063-007, XK09063-009, XK09063-013, XK09063-015, XK09063-018. This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Surrogate recovery for the following samples was outside control limits: XK09063-002, XK09063-009, XK09063-014. Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

The method blank associated with batch 60071 had 6:2 FTS detected at a concentration that was above the MDL but below ½ the PQL. All samples associated with this method blank that have detections for 6:2 FTS have been flagged with a "B".

The MS/MSD associated with sample XK09063-004 had compounds recovered outside of the acceptance limits. The LCS was recovered within the required acceptance limits; therefore, this demonstrates a matrix effect and data quality is not impacted.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XK09063

Project Name: RACER Lansing

Project Number:

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-18-97_110722	Aqueous	11/07/2022 1105	11/09/2022
002	Dup-07_110722	Aqueous	11/07/2022	11/09/2022
003	MW-18-101_110722	Aqueous	11/07/2022 1250	11/09/2022
004	MW-02-04(3)_110722	Aqueous	11/07/2022 1435	11/09/2022
005	MW-18-93_110722	Aqueous	11/07/2022 1600	11/09/2022
006	EB-03_110722	Aqueous	11/07/2022 1630	11/09/2022
007	MW-18-99_110722	Aqueous	11/07/2022 1415	11/09/2022
008	MW-18-100_110722	Aqueous	11/07/2022 1225	11/09/2022
009	MW-19-112_110722	Aqueous	11/07/2022 1555	11/09/2022
010	MW-18-94_110822	Aqueous	11/08/2022 0905	11/09/2022
011	MW-23_110822	Aqueous	11/08/2022 1055	11/09/2022
012	MW-91-2R_110822	Aqueous	11/08/2022 1225	11/09/2022
013	MW-18-88_110822	Aqueous	11/08/2022 1400	11/09/2022
014	MW-18-91_110822	Aqueous	11/08/2022 1445	11/09/2022
015	MW-18-89_110822	Aqueous	11/08/2022 1525	11/09/2022
016	MW-18-92_110822	Aqueous	11/08/2022 1420	11/09/2022
017	MW-19-111_110822	Aqueous	11/08/2022 1015	11/09/2022
018	MW-18-98_110822	Aqueous	11/08/2022 1210	11/09/2022
019	MW-19-107_110822	Aqueous	11/08/2022 1545	11/09/2022
020	EB-04_110822	Aqueous	11/08/2022 1615	11/09/2022

(20 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XK09063

Project Name: RACER Lansing

Project Number:

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-18-97_110722	Aqueous	PFBS	PFAS by ID	0.39	J	ng/L	6
001	MW-18-97_110722	Aqueous	PFBA	PFAS by ID	1.7	J	ng/L	6
002	Dup-07_110722	Aqueous	PFBA	PFAS by ID	1.5	J	ng/L	8
003	MW-18-101_110722	Aqueous	PFBA	PFAS by ID	4.4		ng/L	10
004	MW-02-04(3)_110722	Aqueous	PFBS	PFAS by ID	0.75	J	ng/L	12
004	MW-02-04(3)_110722	Aqueous	PFBA	PFAS by ID	11		ng/L	12
004	MW-02-04(3)_110722	Aqueous	PFPeA	PFAS by ID	6.2		ng/L	12
007	MW-18-99_110722	Aqueous	PFBS	PFAS by ID	0.87	J	ng/L	18
007	MW-18-99_110722	Aqueous	PFHpS	PFAS by ID	0.91	J	ng/L	18
007	MW-18-99_110722	Aqueous	PFHxS	PFAS by ID	1.6	J	ng/L	18
007	MW-18-99_110722	Aqueous	PFBA	PFAS by ID	7.8		ng/L	18
007	MW-18-99_110722	Aqueous	PFDA	PFAS by ID	0.98	J	ng/L	18
007	MW-18-99_110722	Aqueous	PFHpA	PFAS by ID	2.4	J	ng/L	18
007	MW-18-99_110722	Aqueous	PFHxA	PFAS by ID	4.0		ng/L	18
007	MW-18-99_110722	Aqueous	PFNA	PFAS by ID	1.1	J	ng/L	18
007	MW-18-99_110722	Aqueous	PFOA	PFAS by ID	4.6		ng/L	18
007	MW-18-99_110722	Aqueous	PFPeA	PFAS by ID	2.4	J	ng/L	18
007	MW-18-99_110722	Aqueous	PFOS	PFAS by ID	70		ng/L	18
008	MW-18-100_110722	Aqueous	PFBA	PFAS by ID	9.5		ng/L	20
010	MW-18-94_110822	Aqueous	PFBA	PFAS by ID	4.2		ng/L	24
010	MW-18-94_110822	Aqueous	PFPeA	PFAS by ID	0.54	J	ng/L	24
011	MW-23_110822	Aqueous	PFBA	PFAS by ID	2.5	J	ng/L	26
011	MW-23_110822	Aqueous	PFOS	PFAS by ID	3.0	J	ng/L	26
012	MW-91-2R_110822	Aqueous	PFBS	PFAS by ID	1.4	J	ng/L	28
012	MW-91-2R_110822	Aqueous	PFHxS	PFAS by ID	2.5	J	ng/L	28
012	MW-91-2R_110822	Aqueous	PFBA	PFAS by ID	9.3		ng/L	28
012	MW-91-2R_110822	Aqueous	PFHpA	PFAS by ID	1.7	J	ng/L	28
012	MW-91-2R_110822	Aqueous	PFHxA	PFAS by ID	4.2		ng/L	28
012	MW-91-2R_110822	Aqueous	PFOA	PFAS by ID	2.1	J	ng/L	28
012	MW-91-2R_110822	Aqueous	PFPeA	PFAS by ID	2.6	J	ng/L	28
013	MW-18-88_110822	Aqueous	6:2 FTS	PFAS by ID	17		ng/L	30
013	MW-18-88_110822	Aqueous	PFBS	PFAS by ID	1.8	J	ng/L	30
013	MW-18-88_110822	Aqueous	PFHpS	PFAS by ID	2.3	J	ng/L	30
013	MW-18-88_110822	Aqueous	PFPeS	PFAS by ID	0.55	J	ng/L	30
013	MW-18-88_110822	Aqueous	PFHxS	PFAS by ID	3.9		ng/L	30
013	MW-18-88_110822	Aqueous	PFBA	PFAS by ID	8.4		ng/L	30
013	MW-18-88_110822	Aqueous	PFHpA	PFAS by ID	0.54	J	ng/L	30
013	MW-18-88_110822	Aqueous	PFOA	PFAS by ID	7.1		ng/L	30
013	MW-18-88_110822	Aqueous	PFOS	PFAS by ID	220		ng/L	30
014	MW-18-91_110822	Aqueous	6:2 FTS	PFAS by ID	2.4	JQ	ng/L	32
014	MW-18-91_110822	Aqueous	PFBS	PFAS by ID	1.4	J	ng/L	32
014	MW-18-91_110822	Aqueous	PFDS	PFAS by ID	1.2	J	ng/L	32
014	MW-18-91_110822	Aqueous	PFHpS	PFAS by ID	0.69	J	ng/L	32

Detection Summary (Continued)

Lot Number: XK09063

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
014	MW-18-91_110822	Aqueous	PFHxS	PFAS by ID	1.5	J	ng/L	32
014	MW-18-91_110822	Aqueous	PFBA	PFAS by ID	8.7		ng/L	32
014	MW-18-91_110822	Aqueous	PFDA	PFAS by ID	1.1	J	ng/L	32
014	MW-18-91_110822	Aqueous	PFHpA	PFAS by ID	2.7	J	ng/L	32
014	MW-18-91_110822	Aqueous	PFHxA	PFAS by ID	3.0	J	ng/L	32
014	MW-18-91_110822	Aqueous	PFNA	PFAS by ID	1.2	J	ng/L	32
014	MW-18-91_110822	Aqueous	PFOA	PFAS by ID	7.9		ng/L	32
014	MW-18-91_110822	Aqueous	PFPeA	PFAS by ID	2.9	J	ng/L	32
014	MW-18-91_110822	Aqueous	PFOS	PFAS by ID	50		ng/L	32
015	MW-18-89_110822	Aqueous	PFBS	PFAS by ID	0.96	J	ng/L	34
015	MW-18-89_110822	Aqueous	PFHpS	PFAS by ID	2.6	J	ng/L	34
015	MW-18-89_110822	Aqueous	PFPeS	PFAS by ID	0.69	J	ng/L	34
015	MW-18-89_110822	Aqueous	PFHxS	PFAS by ID	4.6		ng/L	34
015	MW-18-89_110822	Aqueous	PFBA	PFAS by ID	7.7		ng/L	34
015	MW-18-89_110822	Aqueous	PFDA	PFAS by ID	1.1	J	ng/L	34
015	MW-18-89_110822	Aqueous	PFHpA	PFAS by ID	3.6		ng/L	34
015	MW-18-89_110822	Aqueous	PFHxA	PFAS by ID	6.1		ng/L	34
015	MW-18-89_110822	Aqueous	PFNA	PFAS by ID	1.2	J	ng/L	34
015	MW-18-89_110822	Aqueous	PFOA	PFAS by ID	12		ng/L	34
015	MW-18-89_110822	Aqueous	PFPeA	PFAS by ID	5.1		ng/L	34
015	MW-18-89_110822	Aqueous	PFOS	PFAS by ID	130		ng/L	34
016	MW-18-92_110822	Aqueous	PFBS	PFAS by ID	0.52	J	ng/L	36
017	MW-19-111_110822	Aqueous	PFBS	PFAS by ID	1.1	J	ng/L	38
017	MW-19-111_110822	Aqueous	PFHxS	PFAS by ID	0.91	J	ng/L	38
017	MW-19-111_110822	Aqueous	PFBA	PFAS by ID	2.3	J	ng/L	38
017	MW-19-111_110822	Aqueous	PFHpA	PFAS by ID	0.51	J	ng/L	38
017	MW-19-111_110822	Aqueous	PFHxA	PFAS by ID	0.76	J	ng/L	38
017	MW-19-111_110822	Aqueous	PFOA	PFAS by ID	4.4		ng/L	38
018	MW-18-98_110822	Aqueous	PFBS	PFAS by ID	0.45	J	ng/L	40
018	MW-18-98_110822	Aqueous	PFHpS	PFAS by ID	0.93	J	ng/L	40
018	MW-18-98_110822	Aqueous	PFBA	PFAS by ID	8.3		ng/L	40
018	MW-18-98_110822	Aqueous	PFDA	PFAS by ID	0.87	J	ng/L	40
018	MW-18-98_110822	Aqueous	PFHpA	PFAS by ID	1.4	J	ng/L	40
018	MW-18-98_110822	Aqueous	PFHxA	PFAS by ID	2.5	J	ng/L	40
018	MW-18-98_110822	Aqueous	PFNA	PFAS by ID	9.5		ng/L	40
018	MW-18-98_110822	Aqueous	PFOA	PFAS by ID	5.3		ng/L	40
018	MW-18-98_110822	Aqueous	PFPeA	PFAS by ID	1.4	J	ng/L	40
018	MW-18-98_110822	Aqueous	PFOS	PFAS by ID	440		ng/L	40
019	MW-19-107_110822	Aqueous	PFBS	PFAS by ID	2.1	J	ng/L	42
019	MW-19-107_110822	Aqueous	PFHxS	PFAS by ID	4.7		ng/L	42
019	MW-19-107_110822	Aqueous	PFBA	PFAS by ID	2.6	J	ng/L	42
019	MW-19-107_110822	Aqueous	PFHxA	PFAS by ID	0.70	J	ng/L	42
019	MW-19-107_110822	Aqueous	PFOA	PFAS by ID	2.0	J	ng/L	42

(86 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-001**

Description: **MW-18-97_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1105** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2241	BWS	11/14/2022 0951	60071

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.39**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		150	25-150
13C2_6:2FTS		121	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		129	25-150
13C2_PFTeDA		136	25-150
13C3_PFBS		122	25-150
13C3_PFHxS		120	25-150
13C3-HFPO-DA		89	25-150
13C4_PFBA		93	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		123	25-150
13C5_PFPeA		111	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		134	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-001**

Description: **MW-18-97_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1105** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		120	25-150
13C8_PFOS		118	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		113	25-150
d5-EtFOSAA		115	25-150
d3-MeFOSAA		111	25-150

LOQ = Limit of Quantitation
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-002**

Description: **Dup-07_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2252	BWS	11/14/2022 0951	60071

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.6	0.46	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.6	0.63	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.6	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.6	0.83	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.6	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.6	0.46	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.6	0.71	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.6	0.88	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.8	0.39	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.74	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.47	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.67	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.56	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.8	0.52	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.5**	**J**	**3.8**	**0.57**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.45	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.8	0.42	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.8	0.65	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.8	0.44	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.8	0.79	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.8	0.52	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.8	0.57	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.59	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.8	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	153	25-150
13C2_6:2FTS		106	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		119	25-150
13C3_PFBS		107	25-150
13C3_PFHxS		92	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		91	25-150
13C7_PFUdA		113	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-002**

Description: **Dup-07_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		107	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-003**

Description: **MW-18-101_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1250** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2302	BWS	11/14/2022 0951	60071

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**4.4**		**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		114	25-150
13C2_6:2FTS		117	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		140	25-150
13C3_PFBS		113	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		78	25-150
13C4_PFHpA		94	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		112	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-003**

Description: **MW-18-101_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1250** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	25-150
13C8_PFOS		115	25-150
13C8_PFOSA		133	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		107	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-004**

Description: **MW-02-04(3)_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1435** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2313	BWS	11/14/2022 0951	60071

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.75**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND	S	3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**6.2**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		143	25-150
13C2_6:2FTS		119	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		112	25-150
13C3_PFBS		121	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		81	25-150
13C4_PFHpA		95	25-150
13C5_PFHxA		118	25-150
13C5_PFPeA		115	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		116	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-004**

Description: **MW-02-04(3)_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1435** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		111	25-150
13C8_PFOS		111	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		114	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		104	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-005**

Description: **MW-18-93_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1600** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2013	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.72	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		92	25-150
13C2_6:2FTS		98	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		98	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		83	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		98	25-150
13C6_PFDA		89	25-150
13C7_PFUdA		93	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-005**

Description: **MW-18-93_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1600** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	25-150
13C8_PFOS		92	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		89	25-150
d3-MeFOSAA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-006**

Description: **EB-03_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1630** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2025	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		97	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		100	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		81	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		101	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		102	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		93	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-006**

Description: **EB-03_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1630** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		91	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-007**

Description: **MW-18-99_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1415** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2038	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.4	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.69	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.86	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.87**	**J**	**3.7**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.91**	**J**	**3.7**	**0.46**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.6**	**J**	**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.8**		**3.7**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.98**	**J**	**3.7**	**0.48**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.4**	**J**	**3.7**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**4.0**		**3.7**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.1**	**J**	**3.7**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**4.6**		**3.7**	**0.76**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.4**	**J**	**3.7**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**70**		**3.7**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	177	25-150
13C2_6:2FTS		129	25-150
13C2_8:2FTS		114	25-150
13C2_PFDoA		100	25-150
13C2_PFTeDA		105	25-150
13C3_PFBS		103	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		69	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		97	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		108	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-007**

Description: **MW-18-99_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1415** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		106	25-150
13C8_PFOSA		101	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-008**

Description: **MW-18-100_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1225** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1429	ARC2	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	0.64	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.8	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.8	0.85	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	0.73	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	0.91	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.9	0.40	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.76	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.69	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.60	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.9	0.54	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.5**		**3.9**	**0.58**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.9	0.44	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.9	0.67	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	0.45	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.9	0.81	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.9	0.53	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.61	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.9	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		127	25-150
13C2_6:2FTS		114	25-150
13C2_8:2FTS		117	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		105	25-150
13C3_PFBS		111	25-150
13C3_PFHxS		108	25-150
13C3-HFPO-DA		111	25-150
13C4_PFBA		69	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		101	25-150
13C6_PFDA		109	25-150
13C7_PFUdA		111	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-008**

Description: **MW-18-100_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1225** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		114	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		107	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-009**

Description: **MW-19-112_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1555** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2117	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	0.65	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.8	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.8	0.85	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	0.73	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	0.91	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.9	0.40	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.76	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.60	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.9	0.54	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND	Q	3.9	0.59	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.9	0.44	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.9	0.67	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	0.45	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.9	0.81	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.9	0.53	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.61	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.9	2.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	249	25-150
13C2_6:2FTS	N	173	25-150
13C2_8:2FTS		105	25-150
13C2_PFDoA		78	25-150
13C2_PFTeDA		42	25-150
13C3_PFBS		92	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		85	25-150
13C4_PFBA	N	14	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		91	25-150
13C5_PFPeA		57	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-009**

Description: **MW-19-112_110722** Matrix: **Aqueous**

Date Sampled: **11/07/2022 1555** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		112	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		88	10-150
13C9_PFNA		113	25-150
d5-EtFOSAA		91	25-150
d3-MeFOSAA		93	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-010**

Description: **MW-18-94_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 0905** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2155	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**4.2**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.54**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		107	25-150
13C2_6:2FTS		103	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		106	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		77	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		95	25-150
13C7_PFUdA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-010**

Description: **MW-18-94_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 0905** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		103	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		90	25-150
d3-MeFOSAA		94	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-011**

Description: **MW-23_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1055** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2208	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		9.6	0.58	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		9.6	0.80	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		9.6	1.9	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		9.6	2.4	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		9.6	1.1	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		9.6	2.5	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		9.6	0.58	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		9.6	0.90	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		9.6	1.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.8	0.50	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.8	0.93	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.8	0.60	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.8	0.86	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.8	0.74	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.8	0.71	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.8	0.66	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.5**	**J**	**4.8**	**0.72**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.8	0.63	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.8	0.57	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.8	0.54	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.8	0.83	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.8	0.56	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.8	1.0	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.8	0.65	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.8	0.72	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.8	0.64	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.8	0.75	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**3.0**	**J**	**4.8**	**2.4**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		88	25-150
13C2_6:2FTS		84	25-150
13C2_8:2FTS		68	25-150
13C2_PFDoA		55	25-150
13C2_PFTeDA		60	25-150
13C3_PFBS		81	25-150
13C3_PFHxS		81	25-150
13C3-HFPO-DA		77	25-150
13C4_PFBA		63	25-150
13C4_PFHpA		82	25-150
13C5_PFHxA		86	25-150
13C5_PFPeA		82	25-150
13C6_PFDA		71	25-150
13C7_PFUdA		63	25-150

LOQ = Limit of Quantitation
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DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-011**

Description: **MW-23_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1055** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		82	25-150
13C8_PFOS		70	25-150
13C8_PFOSA		71	10-150
13C9_PFNA		80	25-150
d5-EtFOSAA		59	25-150
d3-MeFOSAA		63	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-012**

Description: **MW-91-2R_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1225** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2233	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	0.65	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.8	0.86	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	0.74	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	0.91	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.4**	**J**	**3.9**	**0.41**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.76	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.60	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.5**	**J**	**3.9**	**0.54**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.3**		**3.9**	**0.59**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.7**	**J**	**3.9**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**4.2**		**3.9**	**0.67**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	0.45	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.1**	**J**	**3.9**	**0.81**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.6**	**J**	**3.9**	**0.53**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.61	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.9	2.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		107	25-150
13C2_6:2FTS		101	25-150
13C2_8:2FTS		99	25-150
13C2_PFDoA		95	25-150
13C2_PFTeDA		94	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		103	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		95	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		105	25-150
13C6_PFDA		98	25-150
13C7_PFUdA		97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-012**

Description: **MW-91-2R_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1225** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-013**

Description: **MW-18-88_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1400** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2246	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**17**		**7.1**	**1.8**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.8**	**J**	**3.5**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**2.3**	**J**	**3.5**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.55**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.9**		**3.5**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.4**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.54**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.1**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**220**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	185	25-150
13C2_6:2FTS		141	25-150
13C2_8:2FTS		114	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		96	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		102	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		58	25-150
13C4_PFHpA		118	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		91	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-013**

Description: **MW-18-88_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1400** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		110	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-014**

Description: **MW-18-91_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1445** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2259	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**2.4**	**JQ**	**7.0**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	Q	7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	**335-77-3**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.68**	**ng/L**	**1**
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.69**	**J**	**3.5**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.5**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.7**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**2.7**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.0**	**J**	**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.2**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.9**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.9**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**50**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	266	25-150
13C2_6:2FTS	N	277	25-150
13C2_8:2FTS	N	301	25-150
13C2_PFDoA		110	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		96	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		85	25-150
13C4_PFBA		35	25-150
13C4_PFHpA		99	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		73	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		112	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-014**

Description: **MW-18-91_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1445** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		98	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA	N	152	25-150
d3-MeFOSAA		133	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-015**

Description: **MW-18-89_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1525** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2312	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.96**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**2.6**	**J**	**3.4**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.69**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**4.6**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.7**		**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.45**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.6**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**6.1**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.2**	**J**	**3.4**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**12**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.1**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**130**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	249	25-150
13C2_6:2FTS	N	212	25-150
13C2_8:2FTS	N	162	25-150
13C2_PFDoA		99	25-150
13C2_PFTeDA		92	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		88	25-150
13C4_PFBA		46	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		95	25-150
13C5_PFPeA		78	25-150
13C6_PFDA		104	25-150
13C7_PFUdA		112	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-015**

Description: **MW-18-89_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1525** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		118	25-150
d3-MeFOSAA		122	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-016**

Description: **MW-18-92_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1420** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2324	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.7	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.7	0.64	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.7	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.7	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.7	0.84	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.7	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.7	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.7	0.72	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.7	0.90	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.52**	**J**	**3.9**	**0.40**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.75	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.48	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.69	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.57	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.9	0.53	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.9	0.43	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.9	0.66	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.9	0.45	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.9	0.80	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.9	0.53	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.51	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.60	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.9	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		139	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		96	25-150
13C2_PFTeDA		105	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		53	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		96	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		100	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-016**

Description: **MW-18-92_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1420** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		107	25-150
13C8_PFOS		105	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		98	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-017**

Description: **MW-19-111_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1015** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2337	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.2	0.49	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.2	0.68	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.2	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.2	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.2	0.90	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.2	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.2	0.50	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.2	0.77	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.2	0.96	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.1**	**J**	**4.1**	**0.42**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	0.80	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	0.51	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	0.73	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	0.63	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	0.61	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.91**	**J**	**4.1**	**0.57**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.3**	**J**	**4.1**	**0.61**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.1	0.54	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	0.48	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.51**	**J**	**4.1**	**0.46**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.76**	**J**	**4.1**	**0.70**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.1	0.47	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**4.4**		**4.1**	**0.85**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.1	0.56	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	0.61	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	0.54	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	0.64	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.1	2.1	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		137	25-150
13C2_6:2FTS		108	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		92	25-150
13C2_PFTeDA		100	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		53	25-150
13C4_PFHpA		109	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		95	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-017**

Description: **MW-19-111_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1015** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		95	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		101	25-150
d5-EtFOSAA		95	25-150
d3-MeFOSAA		100	25-150

LOQ = Limit of Quantitation	B = Detected in the method blank	E = Quantitation of compound exceeded the calibration range	DL = Detection Limit	Q = Surrogate failure
ND = Not detected at or above the DL	N = Recovery is out of criteria	P = The RPD between two GC columns exceeds 40%	J = Estimated result < LOQ and ≥ DL	L = LCS/LCSD failure
H = Out of holding time	W = Reported on wet weight basis			S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-018**

Description: **MW-18-98_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1210** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 2350	ALM	11/15/2022 1141	60140
2	SOP SPE	PFAS by ID SOP	5	11/18/2022 1333	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	0.65	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.8	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.8	0.85	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	0.73	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	0.91	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.45**	**J**	**3.9**	**0.40**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.76	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.93**	**J**	**3.9**	**0.49**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.60	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.9	0.54	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.3**		**3.9**	**0.59**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**0.87**	**J**	**3.9**	**0.51**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.4**	**J**	**3.9**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.5**	**J**	**3.9**	**0.67**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**9.5**		**3.9**	**0.45**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.3**		**3.9**	**0.81**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.4**	**J**	**3.9**	**0.53**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.61	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**440**		**20**	**9.8**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	215	25-150		128	25-150
13C2_6:2FTS	N	160	25-150		123	25-150
13C2_8:2FTS		120	25-150		98	25-150
13C2_PFDoA		96	25-150		121	25-150
13C2_PFTeDA		98	25-150		115	25-150
13C3_PFBS		96	25-150		112	25-150
13C3_PFHxS		102	25-150		126	25-150
13C3-HFPO-DA		93	25-150		112	25-150
13C4_PFBA		48	25-150		121	25-150
13C4_PFHpA		109	25-150		118	25-150
13C5_PFHxA		102	25-150		135	25-150
13C5_PFPeA		86	25-150		129	25-150
13C6_PFDA		99	25-150		107	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-018**

Description: **MW-18-98_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1210** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		106	25-150		124	25-150
13C8_PFOA		107	25-150		114	25-150
13C8_PFOS		98	25-150		118	25-150
13C8_PFOSA		97	10-150		112	10-150
13C9_PFNA		107	25-150		119	25-150
d5-EtFOSAA		104	25-150		113	25-150
d3-MeFOSAA		107	25-150		127	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-019**

Description: **MW-19-107_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1545** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 0003	ALM	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.5	0.62	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.5	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.5	0.82	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.5	0.70	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.5	0.87	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.1**	**J**	**3.7**	**0.39**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.73	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.47	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.67	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**4.7**		**3.7**	**0.52**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.6**	**J**	**3.7**	**0.56**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	0.42	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.70**	**J**	**3.7**	**0.64**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**2.0**	**J**	**3.7**	**0.78**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	0.51	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.59	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		140	25-150
13C2_6:2FTS		96	25-150
13C2_8:2FTS		80	25-150
13C2_PFDoA		85	25-150
13C2_PFTeDA		87	25-150
13C3_PFBS		83	25-150
13C3_PFHxS		87	25-150
13C3-HFPO-DA		85	25-150
13C4_PFBA		45	25-150
13C4_PFHpA		97	25-150
13C5_PFHxA		90	25-150
13C5_PFPeA		81	25-150
13C6_PFDA		88	25-150
13C7_PFUdA		83	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-019**

Description: **MW-19-107_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1545** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		92	25-150
13C8_PFOS		83	25-150
13C8_PFOSA		80	10-150
13C9_PFNA		90	25-150
d5-EtFOSAA		80	25-150
d3-MeFOSAA		83	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-020**

Description: **EB-04_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1615** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1441	ARC2	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.4	0.81	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.69	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.86	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.7	0.38	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.72	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.66	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.7	0.51	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	0.41	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.7	0.63	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.7	0.76	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	0.50	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		112	25-150
13C2_6:2FTS		116	25-150
13C2_8:2FTS		118	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		110	25-150
13C3_PFBS		109	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		112	25-150
13C4_PFBA		113	25-150
13C4_PFHpA		115	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		110	25-150
13C6_PFDA		108	25-150
13C7_PFUdA		119	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK09063-020**

Description: **EB-04_110822** Matrix: **Aqueous**

Date Sampled: **11/08/2022 1615** Project Name: **RACER Lansing**

Date Received: **11/09/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		115	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		118	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ60071-001
Batch: 60071
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/16/2022 2001
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/16/2022 2001
8:2 FTS	ND		1	8.0	1.6	ng/L	11/16/2022 2001
6:2 FTS	**3.5**	**J**	**1**	**8.0**	**2.0**	**ng/L**	**11/16/2022 2001**
4:2 FTS	ND		1	8.0	0.87	ng/L	11/16/2022 2001
GenX	ND		1	8.0	2.1	ng/L	11/16/2022 2001
ADONA	ND		1	8.0	0.48	ng/L	11/16/2022 2001
EtFOSAA	ND		1	8.0	0.75	ng/L	11/16/2022 2001
MeFOSAA	ND		1	8.0	0.93	ng/L	11/16/2022 2001
PFBS	ND		1	4.0	0.41	ng/L	11/16/2022 2001
PFDS	ND		1	4.0	0.78	ng/L	11/16/2022 2001
PFHpS	ND		1	4.0	0.50	ng/L	11/16/2022 2001
PFNS	ND		1	4.0	0.71	ng/L	11/16/2022 2001
PFOSA	ND		1	4.0	0.61	ng/L	11/16/2022 2001
PFPeS	ND		1	4.0	0.59	ng/L	11/16/2022 2001
PFHxS	ND		1	4.0	0.55	ng/L	11/16/2022 2001
PFBA	ND		1	4.0	0.60	ng/L	11/16/2022 2001
PFDA	ND		1	4.0	0.52	ng/L	11/16/2022 2001
PFDoA	ND		1	4.0	0.47	ng/L	11/16/2022 2001
PFHpA	ND		1	4.0	0.45	ng/L	11/16/2022 2001
PFHxA	ND		1	4.0	0.69	ng/L	11/16/2022 2001
PFNA	ND		1	4.0	0.46	ng/L	11/16/2022 2001
PFOA	ND		1	4.0	0.83	ng/L	11/16/2022 2001
PFPeA	ND		1	4.0	0.54	ng/L	11/16/2022 2001
PFTeDA	ND		1	4.0	0.60	ng/L	11/16/2022 2001
PFTrDA	ND		1	4.0	0.53	ng/L	11/16/2022 2001
PFUdA	ND		1	4.0	0.63	ng/L	11/16/2022 2001
PFOS	ND		1	4.0	2.0	ng/L	11/16/2022 2001

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		101	25-150
13C2_6:2FTS		98	25-150
13C2_8:2FTS		83	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		82	25-150
13C3_PFBS		119	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		92	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60071-001
Batch: 60071
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		99	25-150
13C7_PFUdA		101	25-150
13C8_PFOA		105	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit

ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60071-002
Batch: 60071
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	99	50-150	11/16/2022 2012
11Cl-PF3OUdS	15	16		1	109	50-150	11/16/2022 2012
8:2 FTS	15	13		1	83	50-150	11/16/2022 2012
6:2 FTS	15	17		1	109	50-150	11/16/2022 2012
4:2 FTS	15	16		1	108	50-150	11/16/2022 2012
GenX	32	31		1	96	50-150	11/16/2022 2012
ADONA	15	16		1	105	50-150	11/16/2022 2012
EtFOSAA	16	15		1	96	50-150	11/16/2022 2012
MeFOSAA	16	16		1	100	50-150	11/16/2022 2012
PFBS	14	14		1	96	50-150	11/16/2022 2012
PFDS	15	15		1	100	50-150	11/16/2022 2012
PFHpS	15	15		1	101	50-150	11/16/2022 2012
PFNS	15	18		1	119	50-150	11/16/2022 2012
PFOSA	16	16		1	97	50-150	11/16/2022 2012
PFPeS	15	15		1	102	50-150	11/16/2022 2012
PFHxS	15	15		1	100	50-150	11/16/2022 2012
PFBA	16	16		1	98	50-150	11/16/2022 2012
PFDA	16	16		1	99	50-150	11/16/2022 2012
PFDoA	16	15		1	94	50-150	11/16/2022 2012
PFHpA	16	15		1	96	50-150	11/16/2022 2012
PFHxA	16	16		1	99	50-150	11/16/2022 2012
PFNA	16	17		1	103	50-150	11/16/2022 2012
PFOA	16	17		1	108	50-150	11/16/2022 2012
PFPeA	16	15		1	91	50-150	11/16/2022 2012
PFTeDA	16	16		1	99	50-150	11/16/2022 2012
PFTrDA	16	15		1	95	50-150	11/16/2022 2012
PFUdA	16	18		1	110	50-150	11/16/2022 2012
PFOS	15	17		1	115	50-150	11/16/2022 2012

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		101	25-150
13C2_6:2FTS		103	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		114	25-150
13C3_PFHxS		88	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		101	25-150
13C4_PFHpA		85	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		111	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60071-002
Batch: 60071
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		99	25-150
13C7_PFUdA		90	25-150
13C8_PFOA		96	25-150
13C8_PFOS		97	25-150
13C8_PFOSA		109	10-150
13C9_PFNA		101	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK09063-004MS
Batch: 60071
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	14	14		1	100	50-150	11/16/2022 2324
11Cl-PF3OUdS	ND	14	12		1	89	50-150	11/16/2022 2324
8:2 FTS	ND	14	14		1	101	50-150	11/16/2022 2324
6:2 FTS	ND	14	17		1	125	50-150	11/16/2022 2324
4:2 FTS	ND	14	15		1	111	50-150	11/16/2022 2324
GenX	ND	29	33		1	113	50-150	11/16/2022 2324
ADONA	ND	14	15		1	107	50-150	11/16/2022 2324
EtFOSAA	ND	15	15		1	103	50-150	11/16/2022 2324
MeFOSAA	ND	15	14		1	98	50-150	11/16/2022 2324
PFBS	0.75	13	14		1	102	50-150	11/16/2022 2324
PFDS	ND	14	13		1	92	50-150	11/16/2022 2324
PFHpS	ND	14	14		1	101	50-150	11/16/2022 2324
PFNS	ND	14	13		1	93	50-150	11/16/2022 2324
PFOSA	ND	15	19		1	132	50-150	11/16/2022 2324
PFPeS	ND	14	13		1	92	50-150	11/16/2022 2324
PFHxS	ND	13	14		1	103	50-150	11/16/2022 2324
PFBA	11	15	24		1	92	50-150	11/16/2022 2324
PFDA	ND	15	15		1	102	50-150	11/16/2022 2324
PFDoA	ND	15	15		1	100	50-150	11/16/2022 2324
PFHpA	ND	15	20		1	135	50-150	11/16/2022 2324
PFHxA	ND	15	24	N	1	164	50-150	11/16/2022 2324
PFNA	ND	15	15		1	105	50-150	11/16/2022 2324
PFOA	ND	15	16		1	106	50-150	11/16/2022 2324
PFPeA	6.2	15	20		1	95	50-150	11/16/2022 2324
PFTeDA	ND	15	14		1	99	50-150	11/16/2022 2324
PFTrDA	ND	15	15		1	100	50-150	11/16/2022 2324
PFUdA	ND	15	15		1	99	50-150	11/16/2022 2324
PFOS	ND	14	13		1	99	50-150	11/16/2022 2324

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		127	25-150
13C2_6:2FTS		120	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		110	25-150
13C3_PFBS		121	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		100	25-150
13C4_PFBA		88	25-150
13C4_PFHpA		91	25-150
13C5_PFHxA		88	25-150
13C5_PFPeA		112	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK09063-004MS
Batch: 60071
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		107	25-150
13C7_PFUdA		114	25-150
13C8_PFOA		107	25-150
13C8_PFOS		112	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XK09063-004MD
Batch: 60071
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	13	14		1	111	3.7	50-150	30	11/16/2022 2334
11Cl-PF3OUdS	ND	13	12		1	91	5.1	50-150	30	11/16/2022 2334
8:2 FTS	ND	13	11		1	83	27	50-150	30	11/16/2022 2334
6:2 FTS	ND	13	13		1	99	29	50-150	30	11/16/2022 2334
4:2 FTS	ND	13	13		1	99	18	50-150	30	11/16/2022 2334
GenX	ND	27	29		1	107	12	50-150	30	11/16/2022 2334
ADONA	ND	13	16		1	121	5.9	50-150	30	11/16/2022 2334
EtFOSAA	ND	14	13		1	95	15	50-150	30	11/16/2022 2334
MeFOSAA	ND	14	14		1	102	2.3	50-150	30	11/16/2022 2334
PFBS	0.75	12	12		1	96	12	50-150	30	11/16/2022 2334
PFDS	ND	13	12		1	92	6.8	50-150	30	11/16/2022 2334
PFHpS	ND	13	13		1	98	10	50-150	30	11/16/2022 2334
PFNS	ND	13	14		1	105	5.5	50-150	30	11/16/2022 2334
PFOSA	ND	14	14	+	1	99	36	50-150	30	11/16/2022 2334
PFPeS	ND	13	12		1	92	6.7	50-150	30	11/16/2022 2334
PFHxS	ND	12	13		1	101	8.4	50-150	30	11/16/2022 2334
PFBA	11	14	24		1	94	2.7	50-150	30	11/16/2022 2334
PFDA	ND	14	14		1	102	6.6	50-150	30	11/16/2022 2334
PFDoA	ND	14	15		1	109	1.8	50-150	30	11/16/2022 2334
PFHpA	ND	14	13	+	1	94	42	50-150	30	11/16/2022 2334
PFHxA	ND	14	17	+	1	121	37	50-150	30	11/16/2022 2334
PFNA	ND	14	14		1	101	11	50-150	30	11/16/2022 2334
PFOA	ND	14	13		1	96	17	50-150	30	11/16/2022 2334
PFPeA	6.2	14	19		1	93	6.6	50-150	30	11/16/2022 2334
PFTeDA	ND	14	13		1	98	7.8	50-150	30	11/16/2022 2334
PFTrDA	ND	14	14		1	106	1.1	50-150	30	11/16/2022 2334
PFUdA	ND	14	14		1	103	3.7	50-150	30	11/16/2022 2334
PFOS	ND	13	12		1	96	10	50-150	30	11/16/2022 2334

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		132	25-150
13C2_6:2FTS		111	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		98	25-150
13C2_PFTeDA		105	25-150
13C3_PFBS		123	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		84	25-150
13C4_PFHpA		89	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		113	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XK09063-004MD
Batch: 60071
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0951

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		103	25-150
13C7_PFUdA		101	25-150
13C8_PFOA		94	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		110	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60140-001
Batch: 60140
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/16/2022 1947
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/16/2022 1947
8:2 FTS	ND		1	8.0	1.6	ng/L	11/16/2022 1947
6:2 FTS	ND		1	8.0	2.0	ng/L	11/16/2022 1947
4:2 FTS	ND		1	8.0	0.87	ng/L	11/16/2022 1947
GenX	ND		1	8.0	2.1	ng/L	11/16/2022 1947
ADONA	ND		1	8.0	0.48	ng/L	11/16/2022 1947
EtFOSAA	ND		1	8.0	0.75	ng/L	11/16/2022 1947
MeFOSAA	ND		1	8.0	0.93	ng/L	11/16/2022 1947
PFBS	ND		1	4.0	0.41	ng/L	11/16/2022 1947
PFDS	ND		1	4.0	0.78	ng/L	11/16/2022 1947
PFHpS	ND		1	4.0	0.50	ng/L	11/16/2022 1947
PFNS	ND		1	4.0	0.71	ng/L	11/16/2022 1947
PFOSA	ND		1	4.0	0.61	ng/L	11/16/2022 1947
PFPeS	ND		1	4.0	0.59	ng/L	11/16/2022 1947
PFHxS	ND		1	4.0	0.55	ng/L	11/16/2022 1947
PFBA	ND		1	4.0	0.60	ng/L	11/16/2022 1947
PFDA	ND		1	4.0	0.52	ng/L	11/16/2022 1947
PFDoA	ND		1	4.0	0.47	ng/L	11/16/2022 1947
PFHpA	ND		1	4.0	0.45	ng/L	11/16/2022 1947
PFHxA	ND		1	4.0	0.69	ng/L	11/16/2022 1947
PFNA	ND		1	4.0	0.46	ng/L	11/16/2022 1947
PFOA	ND		1	4.0	0.83	ng/L	11/16/2022 1947
PFPeA	ND		1	4.0	0.54	ng/L	11/16/2022 1947
PFTeDA	ND		1	4.0	0.60	ng/L	11/16/2022 1947
PFTrDA	ND		1	4.0	0.53	ng/L	11/16/2022 1947
PFUdA	ND		1	4.0	0.63	ng/L	11/16/2022 1947
PFOS	ND		1	4.0	2.0	ng/L	11/16/2022 1947

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		96	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		92	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60140-001
Batch: 60140
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		97	25-150
13C8_PFOA		101	25-150
13C8_PFOS		95	25-150
13C8_PFOSA		93	10-150
13C9_PFNA		94	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit

ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60140-002
Batch: 60140
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	103	50-150	11/16/2022 2000
11Cl-PF3OUdS	15	14		1	96	50-150	11/16/2022 2000
8:2 FTS	15	16		1	104	50-150	11/16/2022 2000
6:2 FTS	15	16		1	109	50-150	11/16/2022 2000
4:2 FTS	15	16		1	106	50-150	11/16/2022 2000
GenX	32	33		1	104	50-150	11/16/2022 2000
ADONA	15	16		1	107	50-150	11/16/2022 2000
EtFOSAA	16	17		1	106	50-150	11/16/2022 2000
MeFOSAA	16	18		1	110	50-150	11/16/2022 2000
PFBS	14	15		1	107	50-150	11/16/2022 2000
PFDS	15	14		1	94	50-150	11/16/2022 2000
PFHpS	15	15		1	101	50-150	11/16/2022 2000
PFNS	15	15		1	99	50-150	11/16/2022 2000
PFOSA	16	16		1	102	50-150	11/16/2022 2000
PFPeS	15	16		1	104	50-150	11/16/2022 2000
PFHxS	15	15		1	100	50-150	11/16/2022 2000
PFBA	16	17		1	104	50-150	11/16/2022 2000
PFDA	16	17		1	103	50-150	11/16/2022 2000
PFDoA	16	16		1	103	50-150	11/16/2022 2000
PFHpA	16	17		1	106	50-150	11/16/2022 2000
PFHxA	16	16		1	103	50-150	11/16/2022 2000
PFNA	16	16		1	103	50-150	11/16/2022 2000
PFOA	16	16		1	102	50-150	11/16/2022 2000
PFPeA	16	16		1	103	50-150	11/16/2022 2000
PFTeDA	16	16		1	102	50-150	11/16/2022 2000
PFTrDA	16	16		1	101	50-150	11/16/2022 2000
PFUdA	16	17		1	107	50-150	11/16/2022 2000
PFOS	15	15		1	100	50-150	11/16/2022 2000

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		96	25-150
13C2_6:2FTS		96	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		89	25-150
13C2_PFTeDA		96	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		97	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60140-002
Batch: 60140
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		95	25-150
13C8_PFOA		100	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		92	10-150
13C9_PFNA		99	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK09063-007MS
Batch: 60140
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	14	12		1	87	50-150	11/16/2022 2051
11Cl-PF3OUdS	ND	14	12		1	87	50-150	11/16/2022 2051
8:2 FTS	ND	14	13		1	94	50-150	11/16/2022 2051
6:2 FTS	ND	14	13		1	89	50-150	11/16/2022 2051
4:2 FTS	ND	14	13		1	91	50-150	11/16/2022 2051
GenX	ND	30	26		1	88	50-150	11/16/2022 2051
ADONA	ND	14	13		1	90	50-150	11/16/2022 2051
EtFOSAA	ND	15	14		1	95	50-150	11/16/2022 2051
MeFOSAA	ND	15	14		1	94	50-150	11/16/2022 2051
PFBS	0.87	13	12		1	87	50-150	11/16/2022 2051
PFDS	ND	14	13		1	91	50-150	11/16/2022 2051
PFHpS	0.91	14	13		1	88	50-150	11/16/2022 2051
PFNS	ND	14	13		1	89	50-150	11/16/2022 2051
PFOSA	ND	15	13		1	91	50-150	11/16/2022 2051
PFPeS	ND	14	13		1	93	50-150	11/16/2022 2051
PFHxS	1.6	13	14		1	89	50-150	11/16/2022 2051
PFBA	7.8	15	20		1	84	50-150	11/16/2022 2051
PFDA	0.98	15	14		1	85	50-150	11/16/2022 2051
PFDoA	ND	15	14		1	94	50-150	11/16/2022 2051
PFHpA	2.4	15	15		1	87	50-150	11/16/2022 2051
PFHxA	4.0	15	17		1	87	50-150	11/16/2022 2051
PFNA	1.1	15	15		1	93	50-150	11/16/2022 2051
PFOA	4.6	15	18		1	88	50-150	11/16/2022 2051
PFPeA	2.4	15	15		1	85	50-150	11/16/2022 2051
PFTeDA	ND	15	13		1	88	50-150	11/16/2022 2051
PFTrDA	ND	15	14		1	95	50-150	11/16/2022 2051
PFUdA	ND	15	14		1	93	50-150	11/16/2022 2051
PFOS	70	14	80		1	68	50-150	11/16/2022 2051

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	185	25-150
13C2_6:2FTS	N	151	25-150
13C2_8:2FTS		121	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		109	25-150
13C3_PFBS		111	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		106	25-150
13C4_PFBA		70	25-150
13C4_PFHpA		120	25-150
13C5_PFHxA		115	25-150
13C5_PFPeA		100	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK09063-007MS
Batch: 60140
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		112	25-150
13C7_PFUdA		115	25-150
13C8_PFOA		116	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		115	25-150
d5-EtFOSAA		112	25-150
d3-MeFOSAA		113	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XK09063-011DU
Batch: 60140
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Parameter	Sample Amount (ng/L)	Result (ng/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
9Cl-PF3ONS	ND	ND		1	0.00	20	11/16/2022 2221
11Cl-PF3OUdS	ND	ND		1	0.00	20	11/16/2022 2221
8:2 FTS	ND	ND		1	0.00	20	11/16/2022 2221
6:2 FTS	ND	ND		1	0.00	20	11/16/2022 2221
4:2 FTS	ND	ND		1	0.00	20	11/16/2022 2221
GenX	ND	ND		1	0.00	20	11/16/2022 2221
ADONA	ND	ND		1	0.00	20	11/16/2022 2221
EtFOSAA	ND	ND		1	0.00	20	11/16/2022 2221
MeFOSAA	ND	ND		1	0.00	20	11/16/2022 2221
PFBS	ND	ND		1	0.00	20	11/16/2022 2221
PFDS	ND	ND		1	0.00	20	11/16/2022 2221
PFHpS	ND	ND		1	0.00	20	11/16/2022 2221
PFNS	ND	ND		1	0.00	20	11/16/2022 2221
PFOSA	ND	ND		1	0.00	20	11/16/2022 2221
PFPeS	ND	ND		1	0.00	20	11/16/2022 2221
PFHxS	ND	ND		1	0.00	20	11/16/2022 2221
PFBA	2.5	2.5	J	1	1.3	20	11/16/2022 2221
PFDA	ND	ND		1	0.00	20	11/16/2022 2221
PFDoA	ND	ND		1	0.00	20	11/16/2022 2221
PFHpA	ND	ND		1	0.00	20	11/16/2022 2221
PFHxA	ND	0.65	J	1	10	20	11/16/2022 2221
PFNA	ND	ND		1	0.00	20	11/16/2022 2221
PFOA	ND	ND		1	0.00	20	11/16/2022 2221
PFPeA	ND	ND		1	0.00	20	11/16/2022 2221
PFTeDA	ND	ND		1	0.00	20	11/16/2022 2221
PFTrDA	ND	ND		1	0.00	20	11/16/2022 2221
PFUdA	ND	ND		1	0.00	20	11/16/2022 2221
PFOS	3.0	2.5	J	1	19	20	11/16/2022 2221

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		132	25-150
13C2_6:2FTS		108	25-150
13C2_8:2FTS		102	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		107	25-150
13C3_PFHxS		106	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		74	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		104	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XK09063-011DU
Batch: 60140
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		100	25-150
13C7_PFUdA		103	25-150
13C8_PFOA		107	25-150
13C8_PFOS		95	25-150
13C8_PFOSA		99	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		96	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical® Plant 3

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 140219

Client: Arcadis	Report to Contact: Kaitlyn Hunt	Telephone No. / E-mail: 947-777-5215 Kaitlyn.Hunt@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Novi / State: MI / Zip Code: 48377	Printed Name: Austin Westhuis		XK09063 KES2
Project Name: RACER Lansing			
Project No.: 30112892.0370A	P.O. No.		Remarks / Cooler I.D.

Sample ID / Description (Containers for each sample may be combined on one line)	Collection Date(s)	Collection Time (Military)	Grab G / Composite C	Matrix: Aqueous	Soil	Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	5035 Kit	Field Filtered	PFAS Method 537.1 mod. w/ Isotope dilution (acc. QSM 5.1)	Remarks / Cooler I.D.
MW-18-97_110722	11/7/22	1105	G	X			2							X	
Dup-07_110722	11/7/22	----	G	X			2							X	
MW-18-101_110722	11/7/22	1250	G	X			2							X	
MW-02-04(3)_110722	11/7/22	1435	G	X			6							X	MS/MSD
MW-18-93_110722	11/7/22	1600	G	X			2							X	
EB-03_110722	11/7/22	1630	G	X			2							X	
MW-18-99_110722	11/7/22	1415	G	X			2							X	
MW-18-100_110722	11/7/22	1225	G	X			2							X	
MW-19-112_110722	11/7/22	1555	G	X			2							X	
MW-18-94_110822	11/8/22	0905	G	X			2							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☑ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Relinquished by	Date	Time	Received by	Date	Time
1	Austin Westhuis / Arcadis	11/8/22	1700	1. FedEx	11/8/22	1700
2				2.		
3				3.		
4	FedEx	11/9/22	1055	4. Laboratory received by: [illegible]	11/9/22	1055

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle): Yes / No — Ice Pack — Receipt Temp: 1.7 °C — Temp Blank: ☑ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N2-01

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Plant 3

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Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 140220

Client: Arcadis	Report to Contact: Kaitlyn Hunt	Telephone No. / E-mail: 947-777-5215 Kaitlyn.Hunt@arcadis.com
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x [signature]	Analysis (Attach list if more space is needed)
City: Novi / State: MI / Zip Code: 48377	Printed Name: Austin Westhuis	Page 2 of 2
Project Name: RACER Lansing		XK09063 KESZ
Project No.: 30112892.0370A	P.O. No.	

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Grab(G) C-Composite	Matrix: Aqueous	Solid	Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	NaOH/ZN	Other	PFAS method 537 mod. w/ isotope dilution ASTM D7979-17 Perc	Remarks / Cooler I.D.
MW-23_110822	11/8/22	1055	G	X			2							X	
MW-91-2R_110822	11/8/22	1225	G	X			2							X	
MW-18-88_110822	11/8/22	1400	G	X			2							X	
MW-18-91_110822	11/8/22	1445	G	X			2							X	
MW-18-89_110822	11/8/22	1525	G	X			2							X	
MW-18-92_110822	11/8/22	1420	G	X			2							X	
MW-19-111_110822	11/8/22	1015	G	X			2							X	
MW-18-98_110822	11/8/22	1210	G	X			2							X	
MW-19-107_110822	11/8/22	1545	G	X			2							X	
EB-04_110822	11/8/22	1615	G	X			2							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☑ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: [signature] / Austin Westhuis / Arcadis	11/8/22	1700	1. Received by: FedEx	11/8/22	1700
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	11/9/22	1055	4. Laboratory received by: [signature]	11/9/22	1055

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

PACE USE ONLY: Received on ice (Circle) Yes / No Ice Pack — Receipt Temp: 1.3 °C — Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N2-01

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: Arcadis Cooler Inspected by/date: BRB / 11/09/2022 Lot #: XK09063

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other: _____

☑ Yes	☐ No	1. Were custody seals present on the cooler?
☑ Yes	☐ No ☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

1.3 / 1.3 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 8 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		11. Was adequate sample volume available?
☑ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☑ Yes	☐ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote #: 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. if more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Qualtrax ID: 56360 Pace® Analytical Services, LLC Page 1 of 1

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER Lansing

Project Number: 30112892.0370A

Lot Number:**XK10061**

Date Completed:11/21/2022

11/22/2022 4:57 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XK10061

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Samples XK10061-008, XK10061-011 required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of MeOH. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <5mL and reconstituted to 5mL using MeOH by transfer pipet.

Surrogate recovery for the following samples was outside the upper control limit: XK10061-006, XK10061-007, XK10061-008, XK10061-009, XK10061-011. These samples did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

The method blank for prep batch 60240 contained analyte: 6:2 FTS greater than the acceptance criteria. The associated samples did not contain detections for the target analyte; therefore, re-extraction and/or re-analysis of samples was not performed. The data has been reported.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XK10061

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-18-102_110922	Aqueous	11/09/2022 0910	11/10/2022
002	MW-18-103_110922	Aqueous	11/09/2022 1000	11/10/2022
003	MW-18-104_110922	Aqueous	11/09/2022 1110	11/10/2022
004	MW-18-105_110922	Aqueous	11/09/2022 1255	11/10/2022
005	MW-19-114_110922	Aqueous	11/09/2022 1355	11/10/2022
006	MW-18-90_110922	Aqueous	11/09/2022 0910	11/10/2022
007	Dup-03_110922	Aqueous	11/09/2022	11/10/2022
008	MW-19-108_110922	Aqueous	11/09/2022 1110	11/10/2022
009	UNK-15_110922	Aqueous	11/09/2022 1220	11/10/2022
010	CH-14-RO_110922	Aqueous	11/09/2022 1345	11/10/2022
011	MW-18-95_110922	Aqueous	11/09/2022 1550	11/10/2022

(11 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XK10061

Project Name: RACER Lansing

Project Number: 30112892.0370A

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
002	MW-18-103_110922	Aqueous	PFBS	PFAS by ID	12		ng/L	8
002	MW-18-103_110922	Aqueous	PFPeS	PFAS by ID	9.5		ng/L	8
002	MW-18-103_110922	Aqueous	PFHxS	PFAS by ID	84		ng/L	8
002	MW-18-103_110922	Aqueous	PFBA	PFAS by ID	11		ng/L	8
002	MW-18-103_110922	Aqueous	PFHpA	PFAS by ID	0.46	J	ng/L	8
002	MW-18-103_110922	Aqueous	PFHxA	PFAS by ID	1.5	J	ng/L	8
002	MW-18-103_110922	Aqueous	PFOA	PFAS by ID	1.1	J	ng/L	8
002	MW-18-103_110922	Aqueous	PFPeA	PFAS by ID	2.1	J	ng/L	8
002	MW-18-103_110922	Aqueous	PFOS	PFAS by ID	4.9		ng/L	8
003	MW-18-104_110922	Aqueous	PFBS	PFAS by ID	1.6	J	ng/L	10
003	MW-18-104_110922	Aqueous	PFHxS	PFAS by ID	1.1	J	ng/L	10
003	MW-18-104_110922	Aqueous	PFBA	PFAS by ID	1.4	J	ng/L	10
003	MW-18-104_110922	Aqueous	PFOS	PFAS by ID	3.2	J	ng/L	10
004	MW-18-105_110922	Aqueous	PFBS	PFAS by ID	1.2	J	ng/L	12
004	MW-18-105_110922	Aqueous	PFHxS	PFAS by ID	0.59	J	ng/L	12
004	MW-18-105_110922	Aqueous	PFBA	PFAS by ID	2.5	J	ng/L	12
004	MW-18-105_110922	Aqueous	PFOS	PFAS by ID	2.7	J	ng/L	12
005	MW-19-114_110922	Aqueous	PFBS	PFAS by ID	4.6		ng/L	14
005	MW-19-114_110922	Aqueous	PFHxS	PFAS by ID	1.4	J	ng/L	14
005	MW-19-114_110922	Aqueous	PFBA	PFAS by ID	1.2	J	ng/L	14
005	MW-19-114_110922	Aqueous	PFOS	PFAS by ID	4.1		ng/L	14
006	MW-18-90_110922	Aqueous	PFBS	PFAS by ID	1.3	J	ng/L	16
006	MW-18-90_110922	Aqueous	PFHpS	PFAS by ID	20		ng/L	16
006	MW-18-90_110922	Aqueous	PFOSA	PFAS by ID	0.75	J	ng/L	16
006	MW-18-90_110922	Aqueous	PFPeS	PFAS by ID	2.6	J	ng/L	16
006	MW-18-90_110922	Aqueous	PFHxS	PFAS by ID	19		ng/L	16
006	MW-18-90_110922	Aqueous	PFBA	PFAS by ID	9.9		ng/L	16
006	MW-18-90_110922	Aqueous	PFDA	PFAS by ID	1.6	J	ng/L	16
006	MW-18-90_110922	Aqueous	PFHpA	PFAS by ID	3.9		ng/L	16
006	MW-18-90_110922	Aqueous	PFHxA	PFAS by ID	6.7		ng/L	16
006	MW-18-90_110922	Aqueous	PFNA	PFAS by ID	1.3	J	ng/L	16
006	MW-18-90_110922	Aqueous	PFOA	PFAS by ID	15		ng/L	16
006	MW-18-90_110922	Aqueous	PFPeA	PFAS by ID	4.0		ng/L	16
006	MW-18-90_110922	Aqueous	PFOS	PFAS by ID	920		ng/L	16
007	Dup-03_110922	Aqueous	PFBS	PFAS by ID	1.2	J	ng/L	18
007	Dup-03_110922	Aqueous	PFHpS	PFAS by ID	19		ng/L	18
007	Dup-03_110922	Aqueous	PFOSA	PFAS by ID	0.74	J	ng/L	18
007	Dup-03_110922	Aqueous	PFPeS	PFAS by ID	2.7	J	ng/L	18
007	Dup-03_110922	Aqueous	PFHxS	PFAS by ID	19		ng/L	18
007	Dup-03_110922	Aqueous	PFBA	PFAS by ID	10		ng/L	18
007	Dup-03_110922	Aqueous	PFDA	PFAS by ID	1.4	J	ng/L	18
007	Dup-03_110922	Aqueous	PFHpA	PFAS by ID	3.8		ng/L	18
007	Dup-03_110922	Aqueous	PFHxA	PFAS by ID	6.9		ng/L	18

Detection Summary (Continued)

Lot Number: XK10061

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
007	Dup-03_110922	Aqueous	PFNA	PFAS by ID	1.2	J	ng/L	18
007	Dup-03_110922	Aqueous	PFOA	PFAS by ID	15		ng/L	18
007	Dup-03_110922	Aqueous	PFPeA	PFAS by ID	4.3		ng/L	18
007	Dup-03_110922	Aqueous	PFOS	PFAS by ID	930		ng/L	18
008	MW-19-108_110922	Aqueous	PFBS	PFAS by ID	1.4	J	ng/L	20
008	MW-19-108_110922	Aqueous	PFHxS	PFAS by ID	0.85	J	ng/L	20
008	MW-19-108_110922	Aqueous	PFBA	PFAS by ID	1.5	J	ng/L	20
008	MW-19-108_110922	Aqueous	PFHpA	PFAS by ID	0.53	J	ng/L	20
008	MW-19-108_110922	Aqueous	PFHxA	PFAS by ID	0.76	J	ng/L	20
008	MW-19-108_110922	Aqueous	PFOA	PFAS by ID	3.2	J	ng/L	20
008	MW-19-108_110922	Aqueous	PFOS	PFAS by ID	4.9		ng/L	20
009	UNK-15_110922	Aqueous	PFBS	PFAS by ID	1.1	J	ng/L	22
009	UNK-15_110922	Aqueous	PFHpS	PFAS by ID	13		ng/L	22
009	UNK-15_110922	Aqueous	PFPeS	PFAS by ID	2.1	J	ng/L	22
009	UNK-15_110922	Aqueous	PFHxS	PFAS by ID	14		ng/L	22
009	UNK-15_110922	Aqueous	PFBA	PFAS by ID	15		ng/L	22
009	UNK-15_110922	Aqueous	PFDA	PFAS by ID	3.2	J	ng/L	22
009	UNK-15_110922	Aqueous	PFHpA	PFAS by ID	6.3		ng/L	22
009	UNK-15_110922	Aqueous	PFHxA	PFAS by ID	9.8		ng/L	22
009	UNK-15_110922	Aqueous	PFNA	PFAS by ID	4.7		ng/L	22
009	UNK-15_110922	Aqueous	PFOA	PFAS by ID	27		ng/L	22
009	UNK-15_110922	Aqueous	PFPeA	PFAS by ID	11		ng/L	22
009	UNK-15_110922	Aqueous	PFOS	PFAS by ID	1200		ng/L	22
010	CH-14-RO_110922	Aqueous	PFBS	PFAS by ID	64		ng/L	24
010	CH-14-RO_110922	Aqueous	PFHpS	PFAS by ID	200		ng/L	24
010	CH-14-RO_110922	Aqueous	PFPeS	PFAS by ID	190		ng/L	24
010	CH-14-RO_110922	Aqueous	PFHxS	PFAS by ID	1000		ng/L	24
010	CH-14-RO_110922	Aqueous	PFBA	PFAS by ID	15		ng/L	24
010	CH-14-RO_110922	Aqueous	PFHpA	PFAS by ID	14		ng/L	24
010	CH-14-RO_110922	Aqueous	PFHxA	PFAS by ID	27		ng/L	24
010	CH-14-RO_110922	Aqueous	PFNA	PFAS by ID	0.76	J	ng/L	24
010	CH-14-RO_110922	Aqueous	PFOA	PFAS by ID	85		ng/L	24
010	CH-14-RO_110922	Aqueous	PFPeA	PFAS by ID	11		ng/L	24
010	CH-14-RO_110922	Aqueous	PFOS	PFAS by ID	7100		ng/L	24
011	MW-18-95_110922	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	26
011	MW-18-95_110922	Aqueous	PFHpS	PFAS by ID	1.2	J	ng/L	26
011	MW-18-95_110922	Aqueous	PFHxS	PFAS by ID	2.0	J	ng/L	26
011	MW-18-95_110922	Aqueous	PFBA	PFAS by ID	23		ng/L	26
011	MW-18-95_110922	Aqueous	PFHpA	PFAS by ID	1.5	J	ng/L	26
011	MW-18-95_110922	Aqueous	PFHxA	PFAS by ID	2.2	J	ng/L	26
011	MW-18-95_110922	Aqueous	PFNA	PFAS by ID	1.1	J	ng/L	26
011	MW-18-95_110922	Aqueous	PFOA	PFAS by ID	11		ng/L	26
011	MW-18-95_110922	Aqueous	PFPeA	PFAS by ID	1.9	J	ng/L	26
011	MW-18-95_110922	Aqueous	PFOS	PFAS by ID	46		ng/L	26

(87 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-001**

Description: **MW-18-102_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 0910** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1818	ALM	11/11/2022 0835	59894

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		110	25-150
13C2_6:2FTS		109	25-150
13C2_8:2FTS		109	25-150
13C2_PFDoA		110	25-150
13C2_PFTeDA		114	25-150
13C3_PFBS		114	25-150
13C3_PFHxS		115	25-150
13C3-HFPO-DA		105	25-150
13C4_PFBA		82	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		110	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		112	25-150
13C7_PFUdA		115	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK10061-001**
Description: **MW-18-102_110922**
Matrix: **Aqueous**
Date Sampled: **11/09/2022 0910**
Project Name: **RACER Lansing**
Date Received: **11/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		114	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		113	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-002**

Description: **MW-18-103_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1000** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1830	ALM	11/11/2022 0835	59894

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**12**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**9.5**		**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**84**		**3.5**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.46**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.5**	**J**	**3.5**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.1**	**J**	**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.1**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.9**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		110	25-150
13C2_6:2FTS		98	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		104	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		98	25-150
13C4_PFBA		57	25-150
13C4_PFHpA		107	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		100	25-150
13C6_PFDA		102	25-150
13C7_PFUdA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK10061-002**
Description: **MW-18-103_110922**
Matrix: **Aqueous**
Date Sampled: **11/09/2022 1000**
Project Name: **RACER Lansing**
Date Received: **11/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		103	25-150
d5-EtFOSAA		97	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-003**

Description: **MW-18-104_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1110** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1909	ALM	11/11/2022 0835	59894

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.6**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.4**	**J**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**3.2**	**J**	**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		103	25-150
13C2_6:2FTS		94	25-150
13C2_8:2FTS		96	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		96	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		58	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		100	25-150
13C6_PFDA		100	25-150
13C7_PFUdA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK10061-003**
Description: **MW-18-104_110922**
Matrix: **Aqueous**
Date Sampled: **11/09/2022 1110**
Project Name: **RACER Lansing**
Date Received: **11/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	25-150
13C8_PFOS		99	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		101	25-150
d5-EtFOSAA		92	25-150
d3-MeFOSAA		93	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-004**

Description: **MW-18-105_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1255** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1921	ALM	11/11/2022 0835	59894

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.2**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.59**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.5**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.7**	**J**	**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		111	25-150
13C2_6:2FTS		101	25-150
13C2_8:2FTS		104	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		108	25-150
13C3_PFBS		110	25-150
13C3_PFHxS		107	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		83	25-150
13C4_PFHpA		116	25-150
13C5_PFHxA		109	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		109	25-150
13C7_PFUdA		110	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK10061-004**
Description: **MW-18-105_110922**
Matrix: **Aqueous**
Date Sampled: **11/09/2022 1255**
Project Name: **RACER Lansing**
Date Received: **11/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		108	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		104	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		105	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-005**

Description: **MW-19-114_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1355** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/16/2022 1934	ALM	11/11/2022 0835	59894

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**4.6**		**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.4**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.2**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.1**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		122	25-150
13C2_6:2FTS		107	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		113	25-150
13C3_PFBS		112	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		76	25-150
13C4_PFHpA		116	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		110	25-150
13C7_PFUdA		112	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-005**

Description: **MW-19-114_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1355** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		109	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		105	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-006**

Description: **MW-18-90_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 0910** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1923	ARC2	11/16/2022 0952	60240
2	SOP SPE	PFAS by ID SOP	5	11/18/2022 1344	ALM	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	0.65	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.9	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.9	0.86	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	0.48	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	Q	7.9	0.74	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	Q	7.9	0.92	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.3**	**J**	**3.9**	**0.41**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.77	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**20**		**3.9**	**0.49**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.75**	**J**	**3.9**	**0.60**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**2.6**	**J**	**3.9**	**0.58**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**19**		**3.9**	**0.54**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.9**		**3.9**	**0.59**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.6**	**J**	**3.9**	**0.52**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.9**		**3.9**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**6.7**		**3.9**	**0.68**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.3**	**J**	**3.9**	**0.45**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**15**		**3.9**	**0.82**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**4.0**		**3.9**	**0.54**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.62	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**920**		**20**	**9.9**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	313	25-150	N	190	25-150
13C2_6:2FTS	N	249	25-150		141	25-150
13C2_8:2FTS	N	270	25-150		123	25-150
13C2_PFDoA		134	25-150		122	25-150
13C2_PFTeDA		122	25-150		120	25-150
13C3_PFBS		113	25-150		122	25-150
13C3_PFHxS		118	25-150		129	25-150
13C3-HFPO-DA		104	25-150		116	25-150
13C4_PFBA		40	25-150		65	25-150
13C4_PFHpA		113	25-150		127	25-150
13C5_PFHxA		115	25-150		146	25-150
13C5_PFPeA		93	25-150		127	25-150
13C6_PFDA		134	25-150		121	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-006**

Description: **MW-18-90_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 0910** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		150	25-150		125	25-150
13C8_PFOA		118	25-150		121	25-150
13C8_PFOS		111	25-150		134	25-150
13C8_PFOSA		127	10-150		128	10-150
13C9_PFNA		134	25-150		124	25-150
d5-EtFOSAA	N	158	25-150		135	25-150
d3-MeFOSAA	N	151	25-150		124	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-007**

Description: **Dup-03_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2001	ARC2	11/16/2022 0952	60240
2	SOP SPE	PFAS by ID SOP	5	11/18/2022 1355	ALM	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.5	0.62	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.5	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.5	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.5	0.82	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	Q	7.5	0.70	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.5	0.87	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.2**	**J**	**3.7**	**0.39**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.73	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**19**		**3.7**	**0.47**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.67	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.74**	**J**	**3.7**	**0.57**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**2.7**	**J**	**3.7**	**0.56**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**19**		**3.7**	**0.52**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**10**		**3.7**	**0.56**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.4**	**J**	**3.7**	**0.49**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.8**		**3.7**	**0.42**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**6.9**		**3.7**	**0.64**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.2**	**J**	**3.7**	**0.43**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**15**		**3.7**	**0.78**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**4.3**		**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.59	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**930**		**19**	**9.4**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	297	25-150	N	186	25-150
13C2_6:2FTS	N	243	25-150		141	25-150
13C2_8:2FTS	N	281	25-150		125	25-150
13C2_PFDoA		137	25-150		121	25-150
13C2_PFTeDA		124	25-150		112	25-150
13C3_PFBS		109	25-150		121	25-150
13C3_PFHxS		116	25-150		125	25-150
13C3-HFPO-DA		102	25-150		114	25-150
13C4_PFBA		38	25-150		62	25-150
13C4_PFHpA		114	25-150		127	25-150
13C5_PFHxA		111	25-150		132	25-150
13C5_PFPeA		91	25-150		127	25-150
13C6_PFDA		123	25-150		124	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-007**

Description: **Dup-03_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		145	25-150		124	25-150
13C8_PFOA		116	25-150		122	25-150
13C8_PFOS		107	25-150		136	25-150
13C8_PFOSA		123	10-150		128	10-150
13C9_PFNA		133	25-150		121	25-150
d5-EtFOSAA	N	152	25-150		124	25-150
d3-MeFOSAA		149	25-150		131	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-008**

Description: **MW-19-108_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1110** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2014	ARC2	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.6	0.46	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.6	0.63	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.6	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.6	0.83	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.6	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.6	0.46	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.6	0.71	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.6	0.88	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.4**	**J**	**3.8**	**0.39**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.74	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.47	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.67	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.56	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.85**	**J**	**3.8**	**0.52**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.5**	**J**	**3.8**	**0.57**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.45	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**0.53**	**J**	**3.8**	**0.42**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.76**	**J**	**3.8**	**0.65**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.8	0.44	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**3.2**	**J**	**3.8**	**0.79**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.8	0.52	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.8	0.57	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.59	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.9**		**3.8**	**1.9**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	203	25-150
13C2_6:2FTS		128	25-150
13C2_8:2FTS		120	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		102	25-150
13C3_PFBS		107	25-150
13C3_PFHxS		115	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		39	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		112	25-150
13C5_PFPeA		88	25-150
13C6_PFDA		113	25-150
13C7_PFUdA		114	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-008**

Description: **MW-19-108_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1110** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		120	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		123	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-009**

Description: **UNK-15_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1220** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2027	ARC2	11/16/2022 0952	60240
2	SOP SPE	PFAS by ID SOP	5	11/18/2022 1406	ALM	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.4	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.4	0.81	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.69	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.86	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.1**	**J**	**3.7**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.72	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**13**		**3.7**	**0.46**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.66	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**2.1**	**J**	**3.7**	**0.55**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**14**		**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**15**		**3.7**	**0.56**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**3.2**	**J**	**3.7**	**0.49**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.3**		**3.7**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**9.8**		**3.7**	**0.64**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**4.7**		**3.7**	**0.43**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**27**		**3.7**	**0.77**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**11**		**3.7**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1200**		**19**	**9.3**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	295	25-150	N	209	25-150
13C2_6:2FTS	N	244	25-150		129	25-150
13C2_8:2FTS	N	233	25-150		114	25-150
13C2_PFDoA		122	25-150		117	25-150
13C2_PFTeDA		119	25-150		113	25-150
13C3_PFBS		88	25-150		110	25-150
13C3_PFHxS		113	25-150		125	25-150
13C3-HFPO-DA		96	25-150		116	25-150
13C4_PFBA		47	25-150		127	25-150
13C4_PFHpA		106	25-150		130	25-150
13C5_PFHxA		101	25-150		138	25-150
13C5_PFPeA		80	25-150		119	25-150
13C6_PFDA		121	25-150		117	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-009**

Description: **UNK-15_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1220** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		142	25-150		124	25-150
13C8_PFOA		108	25-150		124	25-150
13C8_PFOS		103	25-150		128	25-150
13C8_PFOSA		118	10-150		123	10-150
13C9_PFNA		122	25-150		119	25-150
d5-EtFOSAA		137	25-150		111	25-150
d3-MeFOSAA		137	25-150		127	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-010**

Description: **CH-14-RO_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1345** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2040	ARC2	11/16/2022 0952	60240
2	SOP SPE	PFAS by ID SOP	50	11/18/2022 1417	ALM	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.5	0.62	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.5	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.5	0.82	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.5	0.45	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.5	0.70	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.5	0.87	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**64**		**3.7**	**0.39**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.73	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**200**		**3.7**	**0.47**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.66	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.57	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**190**		**3.7**	**0.55**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1000**		**190**	**26**	**ng/L**	**2**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**15**		**3.7**	**0.56**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.44	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**14**		**3.7**	**0.42**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**27**		**3.7**	**0.64**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.76**	**J**	**3.7**	**0.43**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**85**		**3.7**	**0.77**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**11**		**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**7100**		**190**	**93**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		91	25-150		115	25-150
13C2_6:2FTS		26	25-150		107	25-150
13C2_8:2FTS		67	25-150		103	25-150
13C2_PFDoA		61	25-150		134	25-150
13C2_PFTeDA		64	25-150		125	25-150
13C3_PFBS		68	25-150		121	25-150
13C3_PFHxS		55	25-150		125	25-150
13C3-HFPO-DA		62	25-150		126	25-150
13C4_PFBA		49	25-150		134	25-150
13C4_PFHpA		57	25-150		125	25-150
13C5_PFHxA		70	25-150		136	25-150
13C5_PFPeA		64	25-150		129	25-150
13C6_PFDA		65	25-150		116	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-010**

Description: **CH-14-RO_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1345** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		69	25-150		142	25-150
13C8_PFOA		27	25-150		116	25-150
13C8_PFOS		53	25-150		134	25-150
13C8_PFOSA		64	10-150		118	10-150
13C9_PFNA		57	25-150		122	25-150
d5-EtFOSAA		62	25-150		122	25-150
d3-MeFOSAA		61	25-150		133	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK10061-011**

Description: **MW-18-95_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1550** Project Name: **RACER Lansing**

Date Received: **11/10/2022** Project Number: **30112892.0370A**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2052	ARC2	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**1.2**	**J**	**3.4**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**23**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.5**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.2**	**J**	**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**11**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1.9**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**46**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	271	25-150
13C2_6:2FTS	N	194	25-150
13C2_8:2FTS		139	25-150
13C2_PFDoA		110	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		104	25-150
13C4_PFBA		54	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		112	25-150
13C5_PFPeA		88	25-150
13C6_PFDA		120	25-150
13C7_PFUdA		114	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK10061-011**
Description: **MW-18-95_110922**
Matrix: **Aqueous**
Date Sampled: **11/09/2022 1550**
Project Name: **RACER Lansing**
Date Received: **11/10/2022**
Project Number: **30112892.0370A**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		123	25-150
13C8_PFOS		113	25-150
13C8_PFOSA		112	10-150
13C9_PFNA		121	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		112	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
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L = LCS/LCSD failure
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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ59894-001
Batch: 59894
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0835

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/16/2022 1648
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/16/2022 1648
8:2 FTS	ND		1	8.0	1.6	ng/L	11/16/2022 1648
6:2 FTS	ND		1	8.0	2.0	ng/L	11/16/2022 1648
4:2 FTS	ND		1	8.0	0.87	ng/L	11/16/2022 1648
GenX	ND		1	8.0	2.1	ng/L	11/16/2022 1648
ADONA	ND		1	8.0	0.48	ng/L	11/16/2022 1648
EtFOSAA	ND		1	8.0	0.75	ng/L	11/16/2022 1648
MeFOSAA	ND		1	8.0	0.93	ng/L	11/16/2022 1648
PFBS	ND		1	4.0	0.41	ng/L	11/16/2022 1648
PFDS	ND		1	4.0	0.78	ng/L	11/16/2022 1648
PFHpS	ND		1	4.0	0.50	ng/L	11/16/2022 1648
PFNS	ND		1	4.0	0.71	ng/L	11/16/2022 1648
PFOSA	ND		1	4.0	0.61	ng/L	11/16/2022 1648
PFPeS	ND		1	4.0	0.59	ng/L	11/16/2022 1648
PFHxS	ND		1	4.0	0.55	ng/L	11/16/2022 1648
PFBA	ND		1	4.0	0.60	ng/L	11/16/2022 1648
PFDA	ND		1	4.0	0.52	ng/L	11/16/2022 1648
PFDoA	ND		1	4.0	0.47	ng/L	11/16/2022 1648
PFHpA	ND		1	4.0	0.45	ng/L	11/16/2022 1648
PFHxA	ND		1	4.0	0.69	ng/L	11/16/2022 1648
PFNA	ND		1	4.0	0.46	ng/L	11/16/2022 1648
PFOA	ND		1	4.0	0.83	ng/L	11/16/2022 1648
PFPeA	ND		1	4.0	0.54	ng/L	11/16/2022 1648
PFTeDA	ND		1	4.0	0.60	ng/L	11/16/2022 1648
PFTrDA	ND		1	4.0	0.53	ng/L	11/16/2022 1648
PFUdA	ND		1	4.0	0.63	ng/L	11/16/2022 1648
PFOS	ND		1	4.0	2.0	ng/L	11/16/2022 1648

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		95	25-150
13C2_6:2FTS		93	25-150
13C2_8:2FTS		91	25-150
13C2_PFDoA		92	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		94	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		99	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		100	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ59894-001
Batch: 59894
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0835

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		92	25-150
13C7_PFUdA		97	25-150
13C8_PFOA		97	25-150
13C8_PFOS		91	25-150
13C8_PFOSA		91	10-150
13C9_PFNA		96	25-150
d5-EtFOSAA		92	25-150
d3-MeFOSAA		95	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59894-002
Batch: 59894
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0835

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	98	50-150	11/16/2022 1700
11Cl-PF3OUdS	15	14		1	91	50-150	11/16/2022 1700
8:2 FTS	15	16		1	103	50-150	11/16/2022 1700
6:2 FTS	15	16		1	108	50-150	11/16/2022 1700
4:2 FTS	15	15		1	102	50-150	11/16/2022 1700
GenX	32	32		1	99	50-150	11/16/2022 1700
ADONA	15	15		1	97	50-150	11/16/2022 1700
EtFOSAA	16	15		1	95	50-150	11/16/2022 1700
MeFOSAA	16	16		1	103	50-150	11/16/2022 1700
PFBS	14	13		1	95	50-150	11/16/2022 1700
PFDS	15	14		1	88	50-150	11/16/2022 1700
PFHpS	15	14		1	94	50-150	11/16/2022 1700
PFNS	15	14		1	91	50-150	11/16/2022 1700
PFOSA	16	17		1	105	50-150	11/16/2022 1700
PFPeS	15	15		1	100	50-150	11/16/2022 1700
PFHxS	15	13		1	91	50-150	11/16/2022 1700
PFBA	16	16		1	100	50-150	11/16/2022 1700
PFDA	16	15		1	94	50-150	11/16/2022 1700
PFDoA	16	16		1	97	50-150	11/16/2022 1700
PFHpA	16	15		1	95	50-150	11/16/2022 1700
PFHxA	16	16		1	98	50-150	11/16/2022 1700
PFNA	16	15		1	94	50-150	11/16/2022 1700
PFOA	16	16		1	98	50-150	11/16/2022 1700
PFPeA	16	15		1	94	50-150	11/16/2022 1700
PFTeDA	16	15		1	95	50-150	11/16/2022 1700
PFTrDA	16	14		1	86	50-150	11/16/2022 1700
PFUdA	16	15		1	94	50-150	11/16/2022 1700
PFOS	15	14		1	92	50-150	11/16/2022 1700

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		99	25-150
13C2_6:2FTS		104	25-150
13C2_8:2FTS		101	25-150
13C2_PFDoA		97	25-150
13C2_PFTeDA		84	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		105	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		102	25-150
13C4_PFHpA		115	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		109	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59894-002
Batch: 59894
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0835

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		110	25-150
13C7_PFUdA		113	25-150
13C8_PFOA		108	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		98	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK10061-002MS
Batch: 59894
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0835

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	13		1	97	50-150	11/16/2022 1843
11Cl-PF3OUdS	ND	13	13		1	96	50-150	11/16/2022 1843
8:2 FTS	ND	13	15		1	108	50-150	11/16/2022 1843
6:2 FTS	ND	13	15		1	113	50-150	11/16/2022 1843
4:2 FTS	ND	13	15		1	115	50-150	11/16/2022 1843
GenX	ND	28	31		1	109	50-150	11/16/2022 1843
ADONA	ND	13	14		1	103	50-150	11/16/2022 1843
EtFOSAA	ND	14	15		1	104	50-150	11/16/2022 1843
MeFOSAA	ND	14	15		1	106	50-150	11/16/2022 1843
PFBS	12	12	25		1	103	50-150	11/16/2022 1843
PFDS	ND	14	13		1	95	50-150	11/16/2022 1843
PFHpS	ND	13	14		1	102	50-150	11/16/2022 1843
PFNS	ND	14	12		1	88	50-150	11/16/2022 1843
PFOSA	ND	14	15		1	107	50-150	11/16/2022 1843
PFPeS	9.5	13	24		1	113	50-150	11/16/2022 1843
PFHxS	84	13	98		1	107	50-150	11/16/2022 1843
PFBA	11	14	25		1	101	50-150	11/16/2022 1843
PFDA	ND	14	14		1	99	50-150	11/16/2022 1843
PFDoA	ND	14	14		1	101	50-150	11/16/2022 1843
PFHpA	0.46	14	15		1	102	50-150	11/16/2022 1843
PFHxA	1.5	14	16		1	103	50-150	11/16/2022 1843
PFNA	ND	14	14		1	102	50-150	11/16/2022 1843
PFOA	1.1	14	15		1	102	50-150	11/16/2022 1843
PFPeA	2.1	14	16		1	101	50-150	11/16/2022 1843
PFTeDA	ND	14	14		1	102	50-150	11/16/2022 1843
PFTrDA	ND	14	15		1	104	50-150	11/16/2022 1843
PFUdA	ND	14	16		1	111	50-150	11/16/2022 1843
PFOS	4.9	13	17		1	130	50-150	11/16/2022 1843

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		105	25-150
13C2_6:2FTS		95	25-150
13C2_8:2FTS		94	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		100	25-150
13C3_PFBS		100	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		55	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS - MS

Sample ID: XK10061-002MS
Batch: 59894
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0835

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		99	25-150
13C7_PFUdA		96	25-150
13C8_PFOA		102	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		101	25-150
d5-EtFOSAA		94	25-150
d3-MeFOSAA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XK10061-002MD
Batch: 59894
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0835

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	13	13		1	102	2.3	50-150	30	11/16/2022 1856
11Cl-PF3OUdS	ND	13	13		1	100	0.39	50-150	30	11/16/2022 1856
8:2 FTS	ND	13	15		1	117	4.4	50-150	30	11/16/2022 1856
6:2 FTS	ND	13	14		1	109	6.9	50-150	30	11/16/2022 1856
4:2 FTS	ND	13	14		1	111	7.3	50-150	30	11/16/2022 1856
GenX	ND	27	29		1	106	5.5	50-150	30	11/16/2022 1856
ADONA	ND	13	13		1	103	3.8	50-150	30	11/16/2022 1856
EtFOSAA	ND	14	14		1	100	7.2	50-150	30	11/16/2022 1856
MeFOSAA	ND	14	14		1	104	5.5	50-150	30	11/16/2022 1856
PFBS	12	12	24		1	104	1.2	50-150	30	11/16/2022 1856
PFDS	ND	13	12		1	95	4.2	50-150	30	11/16/2022 1856
PFHpS	ND	13	13		1	101	3.6	50-150	30	11/16/2022 1856
PFNS	ND	13	13		1	98	6.6	50-150	30	11/16/2022 1856
PFOSA	ND	14	15		1	110	0.47	50-150	30	11/16/2022 1856
PFPeS	9.5	13	23		1	105	6.6	50-150	30	11/16/2022 1856
PFHxS	84	12	92		1	68	5.6	50-150	30	11/16/2022 1856
PFBA	11	14	25		1	102	1.5	50-150	30	11/16/2022 1856
PFDA	ND	14	13		1	97	5.8	50-150	30	11/16/2022 1856
PFDoA	ND	14	14		1	105	0.17	50-150	30	11/16/2022 1856
PFHpA	0.46	14	14		1	100	4.7	50-150	30	11/16/2022 1856
PFHxA	1.5	14	15		1	103	3.4	50-150	30	11/16/2022 1856
PFNA	ND	14	14		1	101	3.7	50-150	30	11/16/2022 1856
PFOA	1.1	14	15		1	104	1.4	50-150	30	11/16/2022 1856
PFPeA	2.1	14	16		1	101	3.5	50-150	30	11/16/2022 1856
PFTeDA	ND	14	13		1	99	6.9	50-150	30	11/16/2022 1856
PFTrDA	ND	14	14		1	102	4.8	50-150	30	11/16/2022 1856
PFUdA	ND	14	13		1	96	18	50-150	30	11/16/2022 1856
PFOS	4.9	13	17		1	134	0.87	50-150	30	11/16/2022 1856

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		110	25-150
13C2_6:2FTS		97	25-150
13C2_8:2FTS		94	25-150
13C2_PFDoA		93	25-150
13C2_PFTeDA		106	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		55	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		105	25-150
13C5_PFPeA		98	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XK10061-002MD
Batch: 59894
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0835

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		102	25-150
13C7_PFUdA		107	25-150
13C8_PFOA		102	25-150
13C8_PFOS		103	25-150
13C8_PFOSA		95	10-150
13C9_PFNA		106	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60240-001
Batch: 60240
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/17/2022 1546
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/17/2022 1546
8:2 FTS	ND		1	8.0	1.6	ng/L	11/17/2022 1546
6:2 FTS	**7.1**	**J**	**1**	**8.0**	**2.0**	**ng/L**	**11/17/2022 1546**
4:2 FTS	ND		1	8.0	0.87	ng/L	11/17/2022 1546
GenX	ND		1	8.0	2.1	ng/L	11/17/2022 1546
ADONA	ND		1	8.0	0.48	ng/L	11/17/2022 1546
EtFOSAA	ND		1	8.0	0.75	ng/L	11/17/2022 1546
MeFOSAA	ND		1	8.0	0.93	ng/L	11/17/2022 1546
PFBS	ND		1	4.0	0.41	ng/L	11/17/2022 1546
PFDS	ND		1	4.0	0.78	ng/L	11/17/2022 1546
PFHpS	ND		1	4.0	0.50	ng/L	11/17/2022 1546
PFNS	ND		1	4.0	0.71	ng/L	11/17/2022 1546
PFOSA	ND		1	4.0	0.61	ng/L	11/17/2022 1546
PFPeS	ND		1	4.0	0.59	ng/L	11/17/2022 1546
PFHxS	ND		1	4.0	0.55	ng/L	11/17/2022 1546
PFBA	ND		1	4.0	0.60	ng/L	11/17/2022 1546
PFDA	ND		1	4.0	0.52	ng/L	11/17/2022 1546
PFDoA	ND		1	4.0	0.47	ng/L	11/17/2022 1546
PFHpA	ND		1	4.0	0.45	ng/L	11/17/2022 1546
PFHxA	ND		1	4.0	0.69	ng/L	11/17/2022 1546
PFNA	ND		1	4.0	0.46	ng/L	11/17/2022 1546
PFOA	ND		1	4.0	0.83	ng/L	11/17/2022 1546
PFPeA	ND		1	4.0	0.54	ng/L	11/17/2022 1546
PFTeDA	ND		1	4.0	0.60	ng/L	11/17/2022 1546
PFTrDA	ND		1	4.0	0.53	ng/L	11/17/2022 1546
PFUdA	ND		1	4.0	0.63	ng/L	11/17/2022 1546
PFOS	ND		1	4.0	2.0	ng/L	11/17/2022 1546

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		116	25-150
13C2_6:2FTS		115	25-150
13C2_8:2FTS		121	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		106	25-150
13C3_PFBS		111	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		112	25-150
13C4_PFBA		113	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		115	25-150
13C5_PFPeA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60240-001
Batch: 60240
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		111	25-150
13C7_PFUdA		116	25-150
13C8_PFOA		116	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		119	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60240-002
Batch: 60240
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	98	50-150	11/17/2022 1558
11Cl-PF3OUdS	15	14		1	90	50-150	11/17/2022 1558
8:2 FTS	15	16		1	105	50-150	11/17/2022 1558
6:2 FTS	15	15		1	102	50-150	11/17/2022 1558
4:2 FTS	15	16		1	107	50-150	11/17/2022 1558
GenX	32	31		1	97	50-150	11/17/2022 1558
ADONA	15	14		1	96	50-150	11/17/2022 1558
EtFOSAA	16	16		1	102	50-150	11/17/2022 1558
MeFOSAA	16	16		1	102	50-150	11/17/2022 1558
PFBS	14	14		1	100	50-150	11/17/2022 1558
PFDS	15	13		1	87	50-150	11/17/2022 1558
PFHpS	15	14		1	92	50-150	11/17/2022 1558
PFNS	15	14		1	94	50-150	11/17/2022 1558
PFOSA	16	17		1	104	50-150	11/17/2022 1558
PFPeS	15	15		1	101	50-150	11/17/2022 1558
PFHxS	15	14		1	93	50-150	11/17/2022 1558
PFBA	16	16		1	99	50-150	11/17/2022 1558
PFDA	16	16		1	99	50-150	11/17/2022 1558
PFDoA	16	16		1	99	50-150	11/17/2022 1558
PFHpA	16	16		1	101	50-150	11/17/2022 1558
PFHxA	16	16		1	99	50-150	11/17/2022 1558
PFNA	16	16		1	100	50-150	11/17/2022 1558
PFOA	16	15		1	96	50-150	11/17/2022 1558
PFPeA	16	16		1	98	50-150	11/17/2022 1558
PFTeDA	16	15		1	96	50-150	11/17/2022 1558
PFTrDA	16	15		1	92	50-150	11/17/2022 1558
PFUdA	16	16		1	101	50-150	11/17/2022 1558
PFOS	15	14		1	97	50-150	11/17/2022 1558

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		114	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		97	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		113	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		107	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60240-002
Batch: 60240
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		106	25-150
13C7_PFUdA		111	25-150
13C8_PFOA		113	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

Plant 3

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 140221

Client: Arcadis	Report to Contact: Kaitlyn Hunt	Telephone No. / E-mail: 947-777-5215 Kaitlyn.Hunt@arcadis.com
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Quote No.
City: Novi	State: MI	Zip Code: 48377
Project Name: RACER Lansing	Printed Name: Austin Westhuis	Page: 1 of 2
Project No.: 30112892.0370A	P.O. No.	XK10061

Analysis (Attach list if more space is needed): PFAS method 537 mod. w/ isotope dilution per QSM 5.1

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Sample Type (G=Grab, C=Composite)	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No. of Containers by Preservative Type: Unpres.	HNO3	H2SO4	HCl	NaOH	ZnAc/NaOH	Field Filtered	Remarks / Cooler I.D.
MW-18-102_110922	11/9/22	0910	G	X			2						X	
MW-18-103_110922	11/9/22	1000	G	X			6						X	MS/MSD
MW-18-104_110922	11/9/22	1110	G	X			2						X	
MW-18-105_110922	11/9/22	1255	G	X			2						X	
MW-19-114_110922	11/9/22	1355	G	X			2						X	
[redacted]														
MW-18-90_110922	11/9/22	0910	G	X			2						X	No sample for MW-LSS-106
Dup-03_110922	11/9/22	—	G	X			2						X	
MW-19-108_110922	11/9/22	1110	G	X			2						X	
UNK-15_110922	11/9/22	1220												

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☑ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☑ Disposal by Lab

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by: Austin Westhuis / Arcadis	Date: 11/9/22	Time: 1645	1. Received by: FedEx	Date: 11/9/22	Time: 1645
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	Date: 11/10/22	Time: 1100	4. Laboratory received by: Cerulean	Date: 11/10/22	Time: 1100

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on Ice (Circle): (Yes) No Ice Pack — Receipt Temp: 1.2 °C — Temp Blank: ☐ Y ☑ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME009N2-01

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Plant 3

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 140222

Client: Arcadis	Report to Contact: Kaitlyn Hunt	Telephone No. / E-mail: 947-777-5215 kaitlyn.hunt@arcadis.com
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Quote No.
City: Novi	State: MI Zip Code: 48377	Page 2 of 2
Project Name: PAER Lansing	Printed Name: Austin Westhuis	XK10061
Project No.: 80112892.03701A	P.O. No.	KES?

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	G=Grab C=Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	HSO4	HNO3	HCl	NaOH	NaS2O3	Other Preserv.	PFAS Method 537 (Modified, 15 field PFAS)	Remarks / Cooler I.D.
CH-14-RO_110922	11/9/22	1345	G	X			2							X	
MW-18-96_110922	11/9/22	1550	G	X			2							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.)
☒ Standard ☐ Rush (Specify)

Sample Disposal
☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time
1. Relinquished by: Austin Westhuis/Arcadis	11/9/22	1645
2. Relinquished by		
3. Relinquished by		
4. Relinquished by: Fedex	11/10/22	1600

	Date	Time
1. Received by: FedEx	11/9/22	1645
2. Received by		
3. Received by		
4. Laboratory received by: Cerlinka	11/10/22	1600

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack Receipt Temp 1.2 °C Temp Blank ☐ Y ☒ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: Arcadis Cooler Inspected by/date: CDR / 11/10/2022 Lot #: XK10061

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

1.2 / 1.2 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 8 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		11. Was adequate sample volume available?
☑ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☑ Yes	☐ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is ***no***) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Qualtrax ID: 56360

Pace® Analytical Services, LLC

Page 1 of 1

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER Lansing

Lot Number:**XK11057**

Date Completed:11/22/2022

11/22/2022 5:38 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Case Narrative
Arcadis U.S., Inc.
Lot Number: XK11057

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

The method blank associated with batches 60006, 60240 had 6:2 FTS detected at a concentration that was above the MDL but below the PQL. All samples associated with these method blanks that have detections for 6:2 FTS have been flagged with a "B".

Samples XK11057-009, XK11057-014, XK11057-015, XK11057-016, XK11057-018, XK11057-020, XK11057-022, XK11057-024, XK11057-027 required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of MeOH. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <5mL and reconstituted to 5mL using MeOH by transfer pipet.

Surrogate recovery for the following samples was outside the upper control limit: XK11057-002, XK11057-003, XK11057-004, XK11057-005, XK11057-006, XK11057-007, XK11057-008, XK11057-009, XK11057-010, XK11057-011, XK11057-013, XK11057-015, XK11057-020, XK11057-021, XK11057-023, XK11057-025, XK11057-028. This sample did not contain any target analytes detected over the LOQ; therefore, re-extraction and/or re-analysis was not performed.

Surrogate recovery for the following samples was outside control limits: XK11057-022, XK11057-024. Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XK11057

Project Name: RACER Lansing

Project Number:

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	EB-05_110922	Aqueous	11/09/2022 0800	11/11/2022
002	MW-12-12_110922	Aqueous	11/09/2022 0930	11/11/2022
003	MW-14-70_110922	Aqueous	11/09/2022 1025	11/11/2022
004	MW-12-13_110922	Aqueous	11/09/2022 1115	11/11/2022
005	MW-14-67_110922	Aqueous	11/09/2022 1225	11/11/2022
006	MW-13-36R_110922	Aqueous	11/09/2022 1325	11/11/2022
007	MW-21-133_110922	Aqueous	11/09/2022 1415	11/11/2022
008	MW-21-134_110922	Aqueous	11/09/2022 1510	11/11/2022
009	MW-21-135_110922	Aqueous	11/09/2022 1600	11/11/2022
010	P6-SB-07_110922	Aqueous	11/09/2022 1700	11/11/2022
011	Dup-08_110922	Aqueous	11/09/2022	11/11/2022
012	MW-21-136_111022	Aqueous	11/10/2022 0910	11/11/2022
013	MW-21-137_111022	Aqueous	11/10/2022 1005	11/11/2022
014	MW-21-138_111022	Aqueous	11/10/2022 1045	11/11/2022
015	MW-22-143_111022	Aqueous	11/10/2022 1145	11/11/2022
016	MW-22-145_111022	Aqueous	11/10/2022 1250	11/11/2022
017	MW-22-144_111022	Aqueous	11/10/2022 1340	11/11/2022
018	MW-22-146_111022	Aqueous	11/10/2022 1430	11/11/2022
019	Dup-10_111022	Aqueous	11/10/2022	11/11/2022
020	MW-20-132_110922	Aqueous	11/09/2022 1615	11/11/2022
021	Dup-09_111022	Aqueous	11/10/2022	11/11/2022
022	MW-20-131_111022	Aqueous	11/10/2022 0905	11/11/2022
023	MW-22-152_111022	Aqueous	11/10/2022 1000	11/11/2022
024	MW-22-151_111022	Aqueous	11/10/2022 1045	11/11/2022
025	MW-22-150_111022	Aqueous	11/10/2022 1130	11/11/2022
026	MW-22-149_111022	Aqueous	11/10/2022 1215	11/11/2022
027	MW-22-148_111022	Aqueous	11/10/2022 1310	11/11/2022
028	MW-22-147_111022	Aqueous	11/10/2022 1400	11/11/2022

(28 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XK11057

Project Name: RACER Lansing

Project Number:

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
002	MW-12-12_110922	Aqueous	PFBS	PFAS by ID	1.9	J	ng/L	11
002	MW-12-12_110922	Aqueous	PFHxS	PFAS by ID	1.9	J	ng/L	11
002	MW-12-12_110922	Aqueous	PFBA	PFAS by ID	45		ng/L	11
002	MW-12-12_110922	Aqueous	PFDA	PFAS by ID	13		ng/L	11
002	MW-12-12_110922	Aqueous	PFHpA	PFAS by ID	45		ng/L	11
002	MW-12-12_110922	Aqueous	PFHxA	PFAS by ID	120		ng/L	11
002	MW-12-12_110922	Aqueous	PFNA	PFAS by ID	7.8		ng/L	11
002	MW-12-12_110922	Aqueous	PFOA	PFAS by ID	99		ng/L	11
002	MW-12-12_110922	Aqueous	PFPeA	PFAS by ID	71		ng/L	11
002	MW-12-12_110922	Aqueous	PFOS	PFAS by ID	43		ng/L	11
003	MW-14-70_110922	Aqueous	PFBS	PFAS by ID	6.7		ng/L	13
003	MW-14-70_110922	Aqueous	PFPeS	PFAS by ID	0.52	J	ng/L	13
003	MW-14-70_110922	Aqueous	PFBA	PFAS by ID	100		ng/L	13
003	MW-14-70_110922	Aqueous	PFHpA	PFAS by ID	130		ng/L	13
003	MW-14-70_110922	Aqueous	PFHxA	PFAS by ID	280		ng/L	13
003	MW-14-70_110922	Aqueous	PFOA	PFAS by ID	18		ng/L	13
003	MW-14-70_110922	Aqueous	PFPeA	PFAS by ID	350		ng/L	13
004	MW-12-13_110922	Aqueous	PFBS	PFAS by ID	4.6		ng/L	15
004	MW-12-13_110922	Aqueous	PFBA	PFAS by ID	26		ng/L	15
004	MW-12-13_110922	Aqueous	PFHpA	PFAS by ID	17		ng/L	15
004	MW-12-13_110922	Aqueous	PFHxA	PFAS by ID	57		ng/L	15
004	MW-12-13_110922	Aqueous	PFOA	PFAS by ID	4.1		ng/L	15
004	MW-12-13_110922	Aqueous	PFPeA	PFAS by ID	36		ng/L	15
005	MW-14-67_110922	Aqueous	PFBS	PFAS by ID	1.6	J	ng/L	17
005	MW-14-67_110922	Aqueous	PFPeS	PFAS by ID	0.54	J	ng/L	17
005	MW-14-67_110922	Aqueous	PFBA	PFAS by ID	43		ng/L	17
005	MW-14-67_110922	Aqueous	PFDA	PFAS by ID	1.3	J	ng/L	17
005	MW-14-67_110922	Aqueous	PFHpA	PFAS by ID	29		ng/L	17
005	MW-14-67_110922	Aqueous	PFHxA	PFAS by ID	78		ng/L	17
005	MW-14-67_110922	Aqueous	PFNA	PFAS by ID	0.72	J	ng/L	17
005	MW-14-67_110922	Aqueous	PFOA	PFAS by ID	15		ng/L	17
005	MW-14-67_110922	Aqueous	PFPeA	PFAS by ID	57		ng/L	17
005	MW-14-67_110922	Aqueous	PFOS	PFAS by ID	2.2	J	ng/L	17
006	MW-13-36R_110922	Aqueous	EtFOSAA	PFAS by ID	5.6	JQ	ng/L	19
006	MW-13-36R_110922	Aqueous	MeFOSAA	PFAS by ID	3.7	J	ng/L	19
006	MW-13-36R_110922	Aqueous	PFBS	PFAS by ID	1.7	J	ng/L	19
006	MW-13-36R_110922	Aqueous	PFOSA	PFAS by ID	3.4	J	ng/L	19
006	MW-13-36R_110922	Aqueous	PFHxS	PFAS by ID	1.4	J	ng/L	19
006	MW-13-36R_110922	Aqueous	PFBA	PFAS by ID	16		ng/L	19
006	MW-13-36R_110922	Aqueous	PFDA	PFAS by ID	22		ng/L	19
006	MW-13-36R_110922	Aqueous	PFDoA	PFAS by ID	0.45	J	ng/L	19
006	MW-13-36R_110922	Aqueous	PFHpA	PFAS by ID	28		ng/L	19
006	MW-13-36R_110922	Aqueous	PFHxA	PFAS by ID	31		ng/L	19

Detection Summary (Continued)

Lot Number: XK11057

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
006	MW-13-36R_110922	Aqueous	PFNA	PFAS by ID	13		ng/L	19
006	MW-13-36R_110922	Aqueous	PFOA	PFAS by ID	65		ng/L	19
006	MW-13-36R_110922	Aqueous	PFPeA	PFAS by ID	26		ng/L	19
006	MW-13-36R_110922	Aqueous	PFOS	PFAS by ID	42		ng/L	19
007	MW-21-133_110922	Aqueous	PFBS	PFAS by ID	2.6	J	ng/L	21
007	MW-21-133_110922	Aqueous	PFPeS	PFAS by ID	0.93	J	ng/L	21
007	MW-21-133_110922	Aqueous	PFHxS	PFAS by ID	2.6	J	ng/L	21
007	MW-21-133_110922	Aqueous	PFBA	PFAS by ID	36		ng/L	21
007	MW-21-133_110922	Aqueous	PFHpA	PFAS by ID	47		ng/L	21
007	MW-21-133_110922	Aqueous	PFHxA	PFAS by ID	63		ng/L	21
007	MW-21-133_110922	Aqueous	PFNA	PFAS by ID	3.7		ng/L	21
007	MW-21-133_110922	Aqueous	PFOA	PFAS by ID	110		ng/L	21
007	MW-21-133_110922	Aqueous	PFPeA	PFAS by ID	43		ng/L	21
007	MW-21-133_110922	Aqueous	PFOS	PFAS by ID	10		ng/L	21
008	MW-21-134_110922	Aqueous	PFBS	PFAS by ID	2.4	J	ng/L	23
008	MW-21-134_110922	Aqueous	PFHpS	PFAS by ID	0.49	J	ng/L	23
008	MW-21-134_110922	Aqueous	PFPeS	PFAS by ID	0.82	J	ng/L	23
008	MW-21-134_110922	Aqueous	PFHxS	PFAS by ID	2.7	J	ng/L	23
008	MW-21-134_110922	Aqueous	PFBA	PFAS by ID	23		ng/L	23
008	MW-21-134_110922	Aqueous	PFHpA	PFAS by ID	35		ng/L	23
008	MW-21-134_110922	Aqueous	PFHxA	PFAS by ID	52		ng/L	23
008	MW-21-134_110922	Aqueous	PFNA	PFAS by ID	0.60	J	ng/L	23
008	MW-21-134_110922	Aqueous	PFOA	PFAS by ID	55		ng/L	23
008	MW-21-134_110922	Aqueous	PFPeA	PFAS by ID	52		ng/L	23
008	MW-21-134_110922	Aqueous	PFOS	PFAS by ID	5.0		ng/L	23
009	MW-21-135_110922	Aqueous	PFBS	PFAS by ID	1.8	J	ng/L	25
009	MW-21-135_110922	Aqueous	PFPeS	PFAS by ID	1.1	J	ng/L	25
009	MW-21-135_110922	Aqueous	PFHxS	PFAS by ID	1.8	J	ng/L	25
009	MW-21-135_110922	Aqueous	PFBA	PFAS by ID	9.5		ng/L	25
009	MW-21-135_110922	Aqueous	PFHpA	PFAS by ID	54		ng/L	25
009	MW-21-135_110922	Aqueous	PFHxA	PFAS by ID	34		ng/L	25
009	MW-21-135_110922	Aqueous	PFNA	PFAS by ID	1.0	J	ng/L	25
009	MW-21-135_110922	Aqueous	PFOA	PFAS by ID	41		ng/L	25
009	MW-21-135_110922	Aqueous	PFPeA	PFAS by ID	31		ng/L	25
010	P6-SB-07_110922	Aqueous	PFBS	PFAS by ID	5.0		ng/L	27
010	P6-SB-07_110922	Aqueous	PFHpS	PFAS by ID	0.98	J	ng/L	27
010	P6-SB-07_110922	Aqueous	PFOSA	PFAS by ID	0.72	J	ng/L	27
010	P6-SB-07_110922	Aqueous	PFPeS	PFAS by ID	2.0	J	ng/L	27
010	P6-SB-07_110922	Aqueous	PFHxS	PFAS by ID	5.3		ng/L	27
010	P6-SB-07_110922	Aqueous	PFBA	PFAS by ID	350		ng/L	27
010	P6-SB-07_110922	Aqueous	PFDA	PFAS by ID	46		ng/L	27
010	P6-SB-07_110922	Aqueous	PFHpA	PFAS by ID	1000		ng/L	27
010	P6-SB-07_110922	Aqueous	PFHxA	PFAS by ID	1300		ng/L	27
010	P6-SB-07_110922	Aqueous	PFNA	PFAS by ID	170		ng/L	27
010	P6-SB-07_110922	Aqueous	PFOA	PFAS by ID	1500		ng/L	27
010	P6-SB-07_110922	Aqueous	PFPeA	PFAS by ID	1400		ng/L	27
010	P6-SB-07_110922	Aqueous	PFOS	PFAS by ID	91		ng/L	27
011	Dup-08_110922	Aqueous	PFBS	PFAS by ID	1.2	J	ng/L	29

Detection Summary (Continued)

Lot Number: XK11057

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
011	Dup-08_110922	Aqueous	PFHxS	PFAS by ID	1.6	J	ng/L	29
011	Dup-08_110922	Aqueous	PFBA	PFAS by ID	48		ng/L	29
011	Dup-08_110922	Aqueous	PFDA	PFAS by ID	15		ng/L	29
011	Dup-08_110922	Aqueous	PFHpA	PFAS by ID	42		ng/L	29
011	Dup-08_110922	Aqueous	PFHxA	PFAS by ID	120		ng/L	29
011	Dup-08_110922	Aqueous	PFNA	PFAS by ID	9.2		ng/L	29
011	Dup-08_110922	Aqueous	PFOA	PFAS by ID	100		ng/L	29
011	Dup-08_110922	Aqueous	PFPeA	PFAS by ID	74		ng/L	29
011	Dup-08_110922	Aqueous	PFOS	PFAS by ID	47		ng/L	29
012	MW-21-136_111022	Aqueous	PFBS	PFAS by ID	0.62	J	ng/L	31
012	MW-21-136_111022	Aqueous	PFBA	PFAS by ID	2.0	J	ng/L	31
012	MW-21-136_111022	Aqueous	PFPeA	PFAS by ID	0.80	J	ng/L	31
013	MW-21-137_111022	Aqueous	6:2 FTS	PFAS by ID	2.6	BJ	ng/L	33
014	MW-21-138_111022	Aqueous	6:2 FTS	PFAS by ID	3.8	BJ	ng/L	35
015	MW-22-143_111022	Aqueous	PFBS	PFAS by ID	1.3	J	ng/L	37
015	MW-22-143_111022	Aqueous	PFBA	PFAS by ID	10		ng/L	37
015	MW-22-143_111022	Aqueous	PFHpA	PFAS by ID	6.7		ng/L	37
015	MW-22-143_111022	Aqueous	PFHxA	PFAS by ID	15		ng/L	37
015	MW-22-143_111022	Aqueous	PFOA	PFAS by ID	6.0		ng/L	37
015	MW-22-143_111022	Aqueous	PFPeA	PFAS by ID	12		ng/L	37
016	MW-22-145_111022	Aqueous	6:2 FTS	PFAS by ID	9.6	B	ng/L	39
016	MW-22-145_111022	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	39
016	MW-22-145_111022	Aqueous	PFPeS	PFAS by ID	0.73	J	ng/L	39
016	MW-22-145_111022	Aqueous	PFHxS	PFAS by ID	3.5		ng/L	39
016	MW-22-145_111022	Aqueous	PFBA	PFAS by ID	7.2		ng/L	39
016	MW-22-145_111022	Aqueous	PFHpA	PFAS by ID	9.5		ng/L	39
016	MW-22-145_111022	Aqueous	PFHxA	PFAS by ID	15		ng/L	39
016	MW-22-145_111022	Aqueous	PFOA	PFAS by ID	17		ng/L	39
016	MW-22-145_111022	Aqueous	PFPeA	PFAS by ID	13		ng/L	39
017	MW-22-144_111022	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	41
017	MW-22-144_111022	Aqueous	PFPeS	PFAS by ID	0.55	J	ng/L	41
017	MW-22-144_111022	Aqueous	PFHxS	PFAS by ID	5.6		ng/L	41
017	MW-22-144_111022	Aqueous	PFBA	PFAS by ID	3.8		ng/L	41
017	MW-22-144_111022	Aqueous	PFHpA	PFAS by ID	3.6		ng/L	41
017	MW-22-144_111022	Aqueous	PFHxA	PFAS by ID	6.2		ng/L	41
017	MW-22-144_111022	Aqueous	PFOA	PFAS by ID	5.9		ng/L	41
017	MW-22-144_111022	Aqueous	PFPeA	PFAS by ID	5.1		ng/L	41
018	MW-22-146_111022	Aqueous	PFBS	PFAS by ID	2.5	J	ng/L	43
018	MW-22-146_111022	Aqueous	PFHxS	PFAS by ID	0.57	J	ng/L	43
018	MW-22-146_111022	Aqueous	PFBA	PFAS by ID	5.5		ng/L	43
018	MW-22-146_111022	Aqueous	PFOA	PFAS by ID	1.4	J	ng/L	43
018	MW-22-146_111022	Aqueous	PFOS	PFAS by ID	1.7	J	ng/L	43
019	Dup-10_111022	Aqueous	PFBS	PFAS by ID	2.7	J	ng/L	45
019	Dup-10_111022	Aqueous	PFHxS	PFAS by ID	0.61	J	ng/L	45
019	Dup-10_111022	Aqueous	PFBA	PFAS by ID	5.7		ng/L	45
019	Dup-10_111022	Aqueous	PFOA	PFAS by ID	1.3	J	ng/L	45
019	Dup-10_111022	Aqueous	PFOS	PFAS by ID	1.8	J	ng/L	45
020	MW-20-132_110922	Aqueous	PFBS	PFAS by ID	1.5	J	ng/L	47

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
020	MW-20-132_110922	Aqueous	PFHxS	PFAS by ID	1.8	J	ng/L	47
020	MW-20-132_110922	Aqueous	PFBA	PFAS by ID	17		ng/L	47
020	MW-20-132_110922	Aqueous	PFDA	PFAS by ID	1.8	J	ng/L	47
020	MW-20-132_110922	Aqueous	PFHpA	PFAS by ID	23		ng/L	47
020	MW-20-132_110922	Aqueous	PFHxA	PFAS by ID	26		ng/L	47
020	MW-20-132_110922	Aqueous	PFNA	PFAS by ID	5.0		ng/L	47
020	MW-20-132_110922	Aqueous	PFOA	PFAS by ID	33		ng/L	47
020	MW-20-132_110922	Aqueous	PFPeA	PFAS by ID	25		ng/L	47
020	MW-20-132_110922	Aqueous	PFOS	PFAS by ID	13		ng/L	47
021	Dup-09_111022	Aqueous	PFBS	PFAS by ID	0.98	J	ng/L	49
021	Dup-09_111022	Aqueous	PFHxS	PFAS by ID	1.8	J	ng/L	49
021	Dup-09_111022	Aqueous	PFBA	PFAS by ID	19		ng/L	49
021	Dup-09_111022	Aqueous	PFHpA	PFAS by ID	26		ng/L	49
021	Dup-09_111022	Aqueous	PFHxA	PFAS by ID	26		ng/L	49
021	Dup-09_111022	Aqueous	PFNA	PFAS by ID	2.2	J	ng/L	49
021	Dup-09_111022	Aqueous	PFOA	PFAS by ID	36		ng/L	49
021	Dup-09_111022	Aqueous	PFPeA	PFAS by ID	28		ng/L	49
021	Dup-09_111022	Aqueous	PFOS	PFAS by ID	4.9		ng/L	49
022	MW-20-131_111022	Aqueous	PFBS	PFAS by ID	1.0	J	ng/L	51
022	MW-20-131_111022	Aqueous	PFHxS	PFAS by ID	1.8	J	ng/L	51
022	MW-20-131_111022	Aqueous	PFBA	PFAS by ID	20		ng/L	51
022	MW-20-131_111022	Aqueous	PFHpA	PFAS by ID	25		ng/L	51
022	MW-20-131_111022	Aqueous	PFHxA	PFAS by ID	27		ng/L	51
022	MW-20-131_111022	Aqueous	PFNA	PFAS by ID	2.1	J	ng/L	51
022	MW-20-131_111022	Aqueous	PFOA	PFAS by ID	38		ng/L	51
022	MW-20-131_111022	Aqueous	PFPeA	PFAS by ID	29		ng/L	51
022	MW-20-131_111022	Aqueous	PFOS	PFAS by ID	4.8		ng/L	51
023	MW-22-152_111022	Aqueous	PFBS	PFAS by ID	9.1		ng/L	53
023	MW-22-152_111022	Aqueous	PFHxS	PFAS by ID	3.5		ng/L	53
023	MW-22-152_111022	Aqueous	PFBA	PFAS by ID	5.6		ng/L	53
023	MW-22-152_111022	Aqueous	PFHpA	PFAS by ID	1.5	J	ng/L	53
023	MW-22-152_111022	Aqueous	PFHxA	PFAS by ID	3.6		ng/L	53
023	MW-22-152_111022	Aqueous	PFOA	PFAS by ID	5.5		ng/L	53
023	MW-22-152_111022	Aqueous	PFPeA	PFAS by ID	5.4		ng/L	53
023	MW-22-152_111022	Aqueous	PFOS	PFAS by ID	2.1	J	ng/L	53
024	MW-22-151_111022	Aqueous	PFBS	PFAS by ID	7.2		ng/L	55
024	MW-22-151_111022	Aqueous	PFHxS	PFAS by ID	0.98	J	ng/L	55
024	MW-22-151_111022	Aqueous	PFBA	PFAS by ID	11		ng/L	55
024	MW-22-151_111022	Aqueous	PFHpA	PFAS by ID	3.7		ng/L	55
024	MW-22-151_111022	Aqueous	PFHxA	PFAS by ID	9.1		ng/L	55
024	MW-22-151_111022	Aqueous	PFNA	PFAS by ID	0.42	J	ng/L	55
024	MW-22-151_111022	Aqueous	PFOA	PFAS by ID	7.8		ng/L	55
024	MW-22-151_111022	Aqueous	PFPeA	PFAS by ID	19		ng/L	55
024	MW-22-151_111022	Aqueous	PFOS	PFAS by ID	4.3		ng/L	55
025	MW-22-150_111022	Aqueous	PFBA	PFAS by ID	2.7	J	ng/L	57
025	MW-22-150_111022	Aqueous	PFPeA	PFAS by ID	2.8	J	ng/L	57
026	MW-22-149_111022	Aqueous	PFBS	PFAS by ID	1.3	J	ng/L	59
026	MW-22-149_111022	Aqueous	PFHpS	PFAS by ID	2.3	J	ng/L	59

Detection Summary (Continued)

Lot Number: XK11057

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
026	MW-22-149_111022	Aqueous	PFHxS	PFAS by ID	0.79	J	ng/L	59
026	MW-22-149_111022	Aqueous	PFBA	PFAS by ID	0.62	J	ng/L	59
026	MW-22-149_111022	Aqueous	PFNA	PFAS by ID	0.46	J	ng/L	59
026	MW-22-149_111022	Aqueous	PFOA	PFAS by ID	0.93	J	ng/L	59
026	MW-22-149_111022	Aqueous	PFOS	PFAS by ID	2.2	J	ng/L	59
027	MW-22-148_111022	Aqueous	PFBS	PFAS by ID	2.0	J	ng/L	61
027	MW-22-148_111022	Aqueous	PFBA	PFAS by ID	1.7	J	ng/L	61
028	MW-22-147_111022	Aqueous	6:2 FTS	PFAS by ID	3.3	BJ	ng/L	63
028	MW-22-147_111022	Aqueous	PFBS	PFAS by ID	3.0	J	ng/L	63
028	MW-22-147_111022	Aqueous	PFHxS	PFAS by ID	1.8	J	ng/L	63
028	MW-22-147_111022	Aqueous	PFBA	PFAS by ID	6.5		ng/L	63
028	MW-22-147_111022	Aqueous	PFHpA	PFAS by ID	1.1	J	ng/L	63
028	MW-22-147_111022	Aqueous	PFHxA	PFAS by ID	2.0	J	ng/L	63
028	MW-22-147_111022	Aqueous	PFOA	PFAS by ID	4.6		ng/L	63
028	MW-22-147_111022	Aqueous	PFPeA	PFAS by ID	2.3	J	ng/L	63
028	MW-22-147_111022	Aqueous	PFOS	PFAS by ID	2.6	J	ng/L	63

(203 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-001**

Description: **EB-05_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 0800** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/15/2022 1402	ALM	11/14/2022 0946	60000

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.7	0.46	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.7	0.64	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.7	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.7	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.7	0.84	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.7	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.7	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.7	0.72	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.7	0.90	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.8	0.40	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.75	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.48	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.68	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.59	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.57	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.8	0.53	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.45	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.8	0.43	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.8	0.66	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.8	0.44	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.8	0.80	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.8	0.52	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.51	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.60	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.8	1.9	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		105	25-150
13C2_6:2FTS		103	25-150
13C2_8:2FTS		103	25-150
13C2_PFDoA		88	25-150
13C2_PFTeDA		89	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		88	25-150
13C3-HFPO-DA		99	25-150
13C4_PFBA		91	25-150
13C4_PFHpA		90	25-150
13C5_PFHxA		87	25-150
13C5_PFPeA		93	25-150
13C6_PFDA		93	25-150
13C7_PFUdA		89	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-001**

Description: **EB-05_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 0800** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		94	25-150
13C8_PFOS		86	25-150
13C8_PFOSA		97	10-150
13C9_PFNA		85	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
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Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-002**

Description: **MW-12-12_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 0930** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/15/2022 1413	ALM	11/14/2022 0946	60000

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.6	0.46	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.6	0.63	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.6	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.6	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.6	0.83	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.6	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.6	0.46	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.6	0.71	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.6	0.89	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.9**	**J**	**3.8**	**0.39**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.74	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.47	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.68	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.58	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.56	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.9**	**J**	**3.8**	**0.52**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**45**		**3.8**	**0.57**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**13**		**3.8**	**0.50**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.45	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**45**		**3.8**	**0.43**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**120**		**3.8**	**0.65**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**7.8**		**3.8**	**0.44**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**99**		**3.8**	**0.79**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**71**		**3.8**	**0.52**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.8	0.57	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.50	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.60	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**43**		**3.8**	**1.9**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	193	25-150
13C2_6:2FTS	N	204	25-150
13C2_8:2FTS	N	169	25-150
13C2_PFDoA		92	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		77	25-150
13C3_PFHxS		81	25-150
13C3-HFPO-DA		73	25-150
13C4_PFBA		37	25-150
13C4_PFHpA		79	25-150
13C5_PFHxA		67	25-150
13C5_PFPeA		52	25-150
13C6_PFDA		105	25-150
13C7_PFUdA		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-002**

Description: **MW-12-12_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 0930** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		87	25-150
13C8_PFOS		86	25-150
13C8_PFOSA		100	10-150
13C9_PFNA		88	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		112	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-003**

Description: **MW-14-70_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1025** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/15/2022 1424	ALM	11/14/2022 0946	60000
2	SOP SPE	PFAS by ID SOP	5	11/16/2022 1635	ALM	11/14/2022 0946	60000

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**6.7**		**3.5**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.52**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**100**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**130**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**280**		**3.5**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**18**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**350**		**18**	**2.4**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	178	25-150		116	25-150
13C2_6:2FTS		115	25-150		107	25-150
13C2_8:2FTS		91	25-150		106	25-150
13C2_PFDoA		89	25-150		114	25-150
13C2_PFTeDA		90	25-150		116	25-150
13C3_PFBS		88	25-150		119	25-150
13C3_PFHxS		93	25-150		111	25-150
13C3-HFPO-DA		91	25-150		108	25-150
13C4_PFBA		50	25-150		91	25-150
13C4_PFHpA		90	25-150		123	25-150
13C5_PFHxA		86	25-150		116	25-150
13C5_PFPeA		68	25-150		114	25-150
13C6_PFDA		91	25-150		104	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-003**

Description: **MW-14-70_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1025** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		89	25-150		117	25-150
13C8_PFOA		91	25-150		111	25-150
13C8_PFOS		85	25-150		109	25-150
13C8_PFOSA		93	10-150		105	10-150
13C9_PFNA		82	25-150		113	25-150
d5-EtFOSAA		92	25-150		112	25-150
d3-MeFOSAA		94	25-150		110	25-150

LOQ = Limit of Quantitation
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N = Recovery is out of criteria
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-004**

Description: **MW-12-13_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1115** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/15/2022 1435	ALM	11/14/2022 0946	60000

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**4.6**		**3.5**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**26**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**17**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**57**		**3.5**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**4.1**		**3.5**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**36**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	199	25-150
13C2_6:2FTS		111	25-150
13C2_8:2FTS		94	25-150
13C2_PFDoA		84	25-150
13C2_PFTeDA		88	25-150
13C3_PFBS		89	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		92	25-150
13C4_PFBA		56	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		87	25-150
13C5_PFPeA		74	25-150
13C6_PFDA		92	25-150
13C7_PFUdA		86	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-004**

Description: **MW-12-13_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1115** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		90	25-150
13C8_PFOS		88	25-150
13C8_PFOSA		92	10-150
13C9_PFNA		81	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-005**

Description: **MW-14-67_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1225** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2131	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.6**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.54**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.50	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**43**		**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.3**	**J**	**3.6**	**0.47**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**29**		**3.6**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**78**		**3.6**	**0.62**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.72**	**J**	**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**15**		**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**57**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.2**	**J**	**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	253	25-150
13C2_6:2FTS	N	172	25-150
13C2_8:2FTS		123	25-150
13C2_PFDoA		117	25-150
13C2_PFTeDA		115	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		120	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		27	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		66	25-150
13C6_PFDA		121	25-150
13C7_PFUdA		131	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-005**

Description: **MW-14-67_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1225** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		126	25-150
13C8_PFOS		116	25-150
13C8_PFOSA		114	10-150
13C9_PFNA		131	25-150
d5-EtFOSAA		108	25-150
d3-MeFOSAA		111	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-006**

Description: **MW-13-36R_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1325** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2157	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	**2991-50-6**	**PFAS by ID SOP**	**5.6**	**JQ**	**7.1**	**0.66**	**ng/L**	**1**
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	**2355-31-9**	**PFAS by ID SOP**	**3.7**	**J**	**7.1**	**0.82**	**ng/L**	**1**
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**3.4**	**J**	**3.5**	**0.54**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**16**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**22**		**3.5**	**0.46**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	**307-55-1**	**PFAS by ID SOP**	**0.45**	**J**	**3.5**	**0.42**	**ng/L**	**1**
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**28**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**31**		**3.5**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**13**		**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**65**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**26**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**42**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	332	25-150
13C2_6:2FTS	N	356	25-150
13C2_8:2FTS	N	367	25-150
13C2_PFDoA		132	25-150
13C2_PFTeDA		122	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		113	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		26	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		83	25-150
13C6_PFDA		128	25-150
13C7_PFUdA		141	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-006**

Description: **MW-13-36R_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1325** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		114	25-150
13C8_PFOS		118	25-150
13C8_PFOSA		114	10-150
13C9_PFNA		134	25-150
d5-EtFOSAA	N	153	25-150
d3-MeFOSAA		149	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-007**

Description: **MW-21-133_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1415** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2222	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.6**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.93**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.6**	**J**	**3.4**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**36**		**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**47**		**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**63**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**3.7**		**3.4**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**110**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**43**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**10**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	260	25-150
13C2_6:2FTS	N	192	25-150
13C2_8:2FTS		129	25-150
13C2_PFDoA		110	25-150
13C2_PFTeDA		119	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		115	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		42	25-150
13C4_PFHpA		114	25-150
13C5_PFHxA		108	25-150
13C5_PFPeA		82	25-150
13C6_PFDA		120	25-150
13C7_PFUdA		123	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-007**

Description: **MW-21-133_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1415** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		121	25-150
13C8_PFOS		116	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		128	25-150
d5-EtFOSAA		105	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-008**

Description: **MW-21-134_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1510** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2235	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.4**	**J**	**3.5**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.49**	**J**	**3.5**	**0.44**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.82**	**J**	**3.5**	**0.53**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.7**	**J**	**3.5**	**0.49**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**23**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**35**		**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**52**		**3.5**	**0.61**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.60**	**J**	**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**55**		**3.5**	**0.74**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**52**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**5.0**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	160	25-150
13C2_6:2FTS		116	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		110	25-150
13C2_PFTeDA		115	25-150
13C3_PFBS		116	25-150
13C3_PFHxS		117	25-150
13C3-HFPO-DA		109	25-150
13C4_PFBA		69	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		119	25-150
13C5_PFPeA		103	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		116	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-008**

Description: **MW-21-134_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1510** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		118	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		120	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-009**

Description: **MW-21-135_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1600** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2248	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.4	0.61	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.4	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.4	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.4	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.4	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.4	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.4	0.69	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.4	0.86	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.8**	**J**	**3.7**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.46	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**1.1**	**J**	**3.7**	**0.55**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.7**	**0.51**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**9.5**		**3.7**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.48	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**54**		**3.7**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**34**		**3.7**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.0**	**J**	**3.7**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**41**		**3.7**	**0.76**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**31**		**3.7**	**0.50**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.49	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.58	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	172	25-150
13C2_6:2FTS		130	25-150
13C2_8:2FTS		119	25-150
13C2_PFDoA		96	25-150
13C2_PFTeDA		81	25-150
13C3_PFBS		119	25-150
13C3_PFHxS		121	25-150
13C3-HFPO-DA		109	25-150
13C4_PFBA		71	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		120	25-150
13C5_PFPeA		106	25-150
13C6_PFDA		113	25-150
13C7_PFUdA		116	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-009**

Description: **MW-21-135_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1600** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		119	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		121	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-010**

Description: **P6-SB-07_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1700** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2326	ARC2	11/14/2022 0928	60006
2	SOP SPE	PFAS by ID SOP	5	11/18/2022 1429	ALM	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.3	0.80	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**5.0**		**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**0.98**	**J**	**3.6**	**0.46**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	**754-91-6**	**PFAS by ID SOP**	**0.72**	**J**	**3.6**	**0.56**	**ng/L**	**1**
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**2.0**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**5.3**		**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**350**		**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**46**		**3.6**	**0.48**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1000**		**18**	**2.0**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1300**		**18**	**3.1**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**170**		**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1500**		**18**	**3.8**	**ng/L**	**2**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**1400**		**18**	**2.5**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**91**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	281	25-150	N	186	25-150
13C2_6:2FTS	N	215	25-150		128	25-150
13C2_8:2FTS	N	191	25-150		105	25-150
13C2_PFDoA		122	25-150		120	25-150
13C2_PFTeDA		121	25-150		117	25-150
13C3_PFBS		114	25-150		122	25-150
13C3_PFHxS		121	25-150		135	25-150
13C3-HFPO-DA		100	25-150		111	25-150
13C4_PFBA		44	25-150		125	25-150
13C4_PFHpA		105	25-150		128	25-150
13C5_PFHxA		97	25-150		138	25-150
13C5_PFPeA		73	25-150		120	25-150
13C6_PFDA		134	25-150		121	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-010**

Description: **P6-SB-07_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1700** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		148	25-150		126	25-150
13C8_PFOA		109	25-150		118	25-150
13C8_PFOS		125	25-150		137	25-150
13C8_PFOSA		120	10-150		119	10-150
13C9_PFNA		142	25-150		119	25-150
d5-EtFOSAA		130	25-150		116	25-150
d3-MeFOSAA		134	25-150		123	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-011**

Description: **Dup-08_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2339	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.3	0.60	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.3	1.5	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.3	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.3	0.79	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.3	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.3	0.44	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.3	0.68	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.3	0.85	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.2**	**J**	**3.6**	**0.38**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.71	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.65	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.6**	**J**	**3.6**	**0.50**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**48**		**3.6**	**0.55**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**15**		**3.6**	**0.48**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.43	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**42**		**3.6**	**0.41**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**120**		**3.6**	**0.63**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**9.2**		**3.6**	**0.42**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**100**		**3.6**	**0.75**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**74**		**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.57	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**47**		**3.6**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	279	25-150
13C2_6:2FTS	N	257	25-150
13C2_8:2FTS	N	200	25-150
13C2_PFDoA		111	25-150
13C2_PFTeDA		101	25-150
13C3_PFBS		99	25-150
13C3_PFHxS		104	25-150
13C3-HFPO-DA		84	25-150
13C4_PFBA		32	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		64	25-150
13C6_PFDA		119	25-150
13C7_PFUdA		129	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-011**

Description: **Dup-08_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		101	25-150
13C8_PFOS		113	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		117	25-150
d5-EtFOSAA		119	25-150
d3-MeFOSAA		123	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-012**

Description: **MW-21-136_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 0910** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 2352	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.2	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.2	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.2	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.2	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.2	0.84	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.62**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.70	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.0**	**J**	**3.6**	**0.54**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.62	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.80**	**J**	**3.6**	**0.49**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		142	25-150
13C2_6:2FTS		117	25-150
13C2_8:2FTS		117	25-150
13C2_PFDoA		115	25-150
13C2_PFTeDA		125	25-150
13C3_PFBS		120	25-150
13C3_PFHxS		120	25-150
13C3-HFPO-DA		114	25-150
13C4_PFBA		73	25-150
13C4_PFHpA		122	25-150
13C5_PFHxA		123	25-150
13C5_PFPeA		114	25-150
13C6_PFDA		122	25-150
13C7_PFUdA		130	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-012**

Description: **MW-21-136_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 0910** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		126	25-150
13C8_PFOS		117	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		124	25-150
d5-EtFOSAA		110	25-150
d3-MeFOSAA		114	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-013**

Description: **MW-21-137_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1005** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2022 0005	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**2.6**	**BJ**	**7.1**	**1.8**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.6	0.37	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.45	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.64	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.54	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	153	25-150
13C2_6:2FTS		122	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		106	25-150
13C2_PFTeDA		107	25-150
13C3_PFBS		110	25-150
13C3_PFHxS		117	25-150
13C3-HFPO-DA		110	25-150
13C4_PFBA		46	25-150
13C4_PFHpA		119	25-150
13C5_PFHxA		115	25-150
13C5_PFPeA		102	25-150
13C6_PFDA		112	25-150
13C7_PFUdA		121	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-013**

Description: **MW-21-137_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1005** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		119	25-150
13C8_PFOS		111	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		116	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-014**

Description: **MW-21-138_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1045** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2022 0018	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**3.8**	**BJ**	**6.8**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.35	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		144	25-150
13C2_6:2FTS		111	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		112	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		109	25-150
13C4_PFBA		44	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		100	25-150
13C6_PFDA		113	25-150
13C7_PFUdA		118	25-150

LOQ = Limit of Quantitation
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DL = Detection Limit
Q = Surrogate failure
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N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-014**

Description: **MW-21-138_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1045** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		118	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		105	10-150
13C9_PFNA		118	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-015**

Description: **MW-22-143_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1145** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2022 0031	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.3**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**10**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.7**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**15**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**6.0**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**12**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	164	25-150
13C2_6:2FTS		116	25-150
13C2_8:2FTS		107	25-150
13C2_PFDoA		102	25-150
13C2_PFTeDA		100	25-150
13C3_PFBS		111	25-150
13C3_PFHxS		118	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		55	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		117	25-150
13C5_PFPeA		96	25-150
13C6_PFDA		106	25-150
13C7_PFUdA		113	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-015**

Description: **MW-22-143_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1145** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		117	25-150
13C8_PFOS		111	25-150
13C8_PFOSA		102	10-150
13C9_PFNA		119	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		103	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-016**

Description: **MW-22-145_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1250** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/18/2022 0043	ARC2	11/14/2022 0928	60006

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.7	0.40	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.7	0.55	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.7	1.3	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**9.6**	**B**	**6.7**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.7	0.73	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.7	1.7	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.7	0.40	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.7	0.63	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.7	0.78	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.3**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.3	0.65	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.3	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.3	0.59	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.3	0.51	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.73**	**J**	**3.3**	**0.50**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.5**		**3.3**	**0.46**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.2**		**3.3**	**0.50**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.3	0.44	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.3	0.39	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**9.5**		**3.3**	**0.37**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**15**		**3.3**	**0.57**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.3	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**17**		**3.3**	**0.69**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**13**		**3.3**	**0.45**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.3	0.50	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.3	0.44	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.3	0.52	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.3	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		128	25-150
13C2_6:2FTS		113	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		102	25-150
13C3_PFBS		111	25-150
13C3_PFHxS		115	25-150
13C3-HFPO-DA		107	25-150
13C4_PFBA		74	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		114	25-150
13C5_PFPeA		107	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		120	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-016**

Description: **MW-22-145_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1250** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		115	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		103	10-150
13C9_PFNA		117	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		102	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-017**

Description: **MW-22-144_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1340** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1454	ARC2	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.56	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.74	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.79	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.35**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.42	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	**2706-91-4**	**PFAS by ID SOP**	**0.55**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**5.6**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.8**		**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.6**		**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**6.2**		**3.4**	**0.58**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.9**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.1**		**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		127	25-150
13C2_6:2FTS		109	25-150
13C2_8:2FTS		110	25-150
13C2_PFDoA		94	25-150
13C2_PFTeDA		104	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		103	25-150
13C4_PFBA		66	25-150
13C4_PFHpA		104	25-150
13C5_PFHxA		106	25-150
13C5_PFPeA		100	25-150
13C6_PFDA		101	25-150
13C7_PFUdA		107	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-017**

Description: **MW-22-144_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1340** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	25-150
13C8_PFOS		100	25-150
13C8_PFOSA		101	10-150
13C9_PFNA		109	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		98	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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L = LCS/LCSD failure
H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-018**

Description: **MW-22-146_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1430** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1507	ARC2	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.5**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.57**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.5**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1.7**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		143	25-150
13C2_6:2FTS		126	25-150
13C2_8:2FTS		120	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		109	25-150
13C3_PFBS		116	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		111	25-150
13C4_PFBA		74	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		122	25-150
13C5_PFPeA		109	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		119	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-018**

Description: **MW-22-146_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1430** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		120	25-150
13C8_PFOS		111	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		121	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-019**

Description: **Dup-10_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1520	ARC2	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.7**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.61**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.7**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.3**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1.8**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		133	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		111	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		109	25-150
13C3_PFBS		108	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		67	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		114	25-150
13C5_PFPeA		101	25-150
13C6_PFDA		109	25-150
13C7_PFUdA		111	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-019**

Description: **Dup-10_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		114	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		111	25-150
d5-EtFOSAA		100	25-150
d3-MeFOSAA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-020**

Description: **MW-20-132_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1615** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1533	ARC2	11/15/2022 1141	60140

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.8	0.65	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.8	1.6	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.8	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.8	0.85	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.8	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.8	0.47	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.8	0.73	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.8	0.91	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.5**	**J**	**3.9**	**0.40**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.9	0.76	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.9	0.49	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.9	0.70	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.9	0.60	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.9	0.58	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.9**	**0.54**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**17**		**3.9**	**0.59**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.8**	**J**	**3.9**	**0.51**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.9	0.46	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**23**		**3.9**	**0.44**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**26**		**3.9**	**0.67**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**5.0**		**3.9**	**0.45**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**33**		**3.9**	**0.81**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**25**		**3.9**	**0.53**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.9	0.59	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.9	0.52	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.9	0.61	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**13**		**3.9**	**2.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	260	25-150
13C2_6:2FTS	N	187	25-150
13C2_8:2FTS		129	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		104	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		45	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		84	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		116	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-020**

Description: **MW-20-132_110922** Matrix: **Aqueous**

Date Sampled: **11/09/2022 1615** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		118	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		106	10-150
13C9_PFNA		118	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		105	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-021**

Description: **Dup-09_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1715	ARC2	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**0.98**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**19**		**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**26**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**26**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.2**	**J**	**3.5**	**0.41**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**36**		**3.5**	**0.73**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**28**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.9**		**3.5**	**1.8**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	305	25-150
13C2_6:2FTS	N	254	25-150
13C2_8:2FTS	N	163	25-150
13C2_PFDoA		117	25-150
13C2_PFTeDA		121	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		32	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		100	25-150
13C5_PFPeA		70	25-150
13C6_PFDA		122	25-150
13C7_PFUdA		133	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-021**

Description: **Dup-09_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		119	25-150
13C8_PFOS		118	25-150
13C8_PFOSA		115	10-150
13C9_PFNA		131	25-150
d5-EtFOSAA		120	25-150
d3-MeFOSAA		124	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-022**

Description: **MW-20-131_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 0905** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1728	ARC2	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.0**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.4**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**20**		**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**25**		**3.4**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**27**		**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.1**	**J**	**3.4**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**38**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**29**		**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.8**		**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	306	25-150
13C2_6:2FTS	N	265	25-150
13C2_8:2FTS	N	177	25-150
13C2_PFDoA		119	25-150
13C2_PFTeDA		112	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		115	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		30	25-150
13C4_PFHpA		103	25-150
13C5_PFHxA		101	25-150
13C5_PFPeA		71	25-150
13C6_PFDA		125	25-150
13C7_PFUdA		132	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-022**

Description: **MW-20-131_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 0905** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		117	25-150
13C8_PFOS		117	25-150
13C8_PFOSA		117	10-150
13C9_PFNA		135	25-150
d5-EtFOSAA		120	25-150
d3-MeFOSAA		127	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-023**

Description: **MW-22-152_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1000** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1741	ARC2	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**9.1**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**3.5**		**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.6**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.5**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.6**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**5.5**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.4**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.1**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	170	25-150
13C2_6:2FTS		130	25-150
13C2_8:2FTS		124	25-150
13C2_PFDoA		109	25-150
13C2_PFTeDA		121	25-150
13C3_PFBS		114	25-150
13C3_PFHxS		118	25-150
13C3-HFPO-DA		115	25-150
13C4_PFBA		70	25-150
13C4_PFHpA		117	25-150
13C5_PFHxA		121	25-150
13C5_PFPeA		105	25-150
13C6_PFDA		119	25-150
13C7_PFUdA		120	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-023**

Description: **MW-22-152_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1000** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		123	25-150
13C8_PFOS		110	25-150
13C8_PFOSA		114	10-150
13C9_PFNA		126	25-150
d5-EtFOSAA		109	25-150
d3-MeFOSAA		116	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-024**

Description: **MW-22-151_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1045** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1753	ARC2	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.0	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**7.2**		**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.98**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**3.7**		**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**9.1**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.42**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**7.8**		**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**19**		**3.5**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**4.3**		**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	305	25-150
13C2_6:2FTS	N	267	25-150
13C2_8:2FTS	N	180	25-150
13C2_PFDoA		111	25-150
13C2_PFTeDA		108	25-150
13C3_PFBS		102	25-150
13C3_PFHxS		114	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		28	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		97	25-150
13C5_PFPeA		69	25-150
13C6_PFDA		123	25-150
13C7_PFUdA		128	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-024**

Description: **MW-22-151_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1045** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		116	25-150
13C8_PFOS		113	25-150
13C8_PFOSA		116	10-150
13C9_PFNA		126	25-150
d5-EtFOSAA		116	25-150
d3-MeFOSAA		127	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-025**

Description: **MW-22-150_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1130** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1806	ARC2	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.35	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.66	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.7**	**J**	**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.8**	**J**	**3.4**	**0.46**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	285	25-150
13C2_6:2FTS	N	165	25-150
13C2_8:2FTS		122	25-150
13C2_PFDoA		105	25-150
13C2_PFTeDA		115	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		119	25-150
13C3-HFPO-DA		102	25-150
13C4_PFBA		32	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		107	25-150
13C5_PFPeA		75	25-150
13C6_PFDA		114	25-150
13C7_PFUdA		124	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-025**

Description: **MW-22-150_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1130** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		124	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		115	10-150
13C9_PFNA		124	25-150
d5-EtFOSAA		110	25-150
d3-MeFOSAA		124	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-026**

Description: **MW-22-149_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1215** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1819	ARC2	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.76	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.81	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.3**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	**375-92-8**	**PFAS by ID SOP**	**2.3**	**J**	**3.5**	**0.43**	**ng/L**	**1**
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**0.79**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**0.62**	**J**	**3.5**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.60	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**0.46**	**J**	**3.5**	**0.40**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**0.93**	**J**	**3.5**	**0.72**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.2**	**J**	**3.5**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		124	25-150
13C2_6:2FTS		119	25-150
13C2_8:2FTS		116	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		119	25-150
13C3_PFBS		114	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		113	25-150
13C4_PFBA		95	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		120	25-150
13C5_PFPeA		110	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		121	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-026**

Description: **MW-22-149_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1215** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		119	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		117	10-150
13C9_PFNA		119	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-027**

Description: **MW-22-148_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1310** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1831	ARC2	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.1	0.59	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.1	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.1	0.78	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.1	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.1	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.1	0.67	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.1	0.83	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.0**	**J**	**3.6**	**0.37**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	0.69	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.6	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.6	0.55	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.7**	**J**	**3.6**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	0.40	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.6	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.6	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.6	0.74	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	0.48	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.6	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.6	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.6	0.56	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.6	1.8	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		119	25-150
13C2_6:2FTS		115	25-150
13C2_8:2FTS		115	25-150
13C2_PFDoA		104	25-150
13C2_PFTeDA		104	25-150
13C3_PFBS		110	25-150
13C3_PFHxS		113	25-150
13C3-HFPO-DA		113	25-150
13C4_PFBA		83	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		116	25-150
13C5_PFPeA		110	25-150
13C6_PFDA		111	25-150
13C7_PFUdA		113	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-027**

Description: **MW-22-148_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1310** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		115	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		107	10-150
13C9_PFNA		114	25-150
d5-EtFOSAA		101	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-028**

Description: **MW-22-147_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1400** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	11/17/2022 1910	ARC2	11/16/2022 0952	60240

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**3.3**	**BJ**	**6.9**	**1.7**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.0**	**J**	**3.4**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.8**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**6.5**		**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.1**	**J**	**3.4**	**0.38**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.0**	**J**	**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**4.6**		**3.4**	**0.71**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.3**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.6**	**J**	**3.4**	**1.7**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	217	25-150
13C2_6:2FTS		130	25-150
13C2_8:2FTS		123	25-150
13C2_PFDoA		109	25-150
13C2_PFTeDA		107	25-150
13C3_PFBS		116	25-150
13C3_PFHxS		120	25-150
13C3-HFPO-DA		116	25-150
13C4_PFBA		53	25-150
13C4_PFHpA		121	25-150
13C5_PFHxA		122	25-150
13C5_PFPeA		98	25-150
13C6_PFDA		117	25-150
13C7_PFUdA		119	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK11057-028**

Description: **MW-22-147_111022** Matrix: **Aqueous**

Date Sampled: **11/10/2022 1400** Project Name: **RACER Lansing**

Date Received: **11/11/2022** Project Number:

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		124	25-150
13C8_PFOS		117	25-150
13C8_PFOSA		112	10-150
13C9_PFNA		125	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		110	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ60000-001
Batch: 60000
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0946

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/15/2022 1446
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/15/2022 1446
8:2 FTS	ND		1	8.0	1.6	ng/L	11/15/2022 1446
6:2 FTS	ND		1	8.0	2.0	ng/L	11/15/2022 1446
4:2 FTS	ND		1	8.0	0.87	ng/L	11/15/2022 1446
GenX	ND		1	8.0	2.1	ng/L	11/15/2022 1446
ADONA	ND		1	8.0	0.48	ng/L	11/15/2022 1446
EtFOSAA	ND		1	8.0	0.75	ng/L	11/15/2022 1446
MeFOSAA	ND		1	8.0	0.93	ng/L	11/15/2022 1446
PFBS	ND		1	4.0	0.41	ng/L	11/15/2022 1446
PFDS	ND		1	4.0	0.78	ng/L	11/15/2022 1446
PFHpS	ND		1	4.0	0.50	ng/L	11/15/2022 1446
PFNS	ND		1	4.0	0.71	ng/L	11/15/2022 1446
PFOSA	ND		1	4.0	0.61	ng/L	11/15/2022 1446
PFPeS	ND		1	4.0	0.59	ng/L	11/15/2022 1446
PFHxS	ND		1	4.0	0.55	ng/L	11/15/2022 1446
PFBA	ND		1	4.0	0.60	ng/L	11/15/2022 1446
PFDA	ND		1	4.0	0.52	ng/L	11/15/2022 1446
PFDoA	ND		1	4.0	0.47	ng/L	11/15/2022 1446
PFHpA	ND		1	4.0	0.45	ng/L	11/15/2022 1446
PFHxA	ND		1	4.0	0.69	ng/L	11/15/2022 1446
PFNA	ND		1	4.0	0.46	ng/L	11/15/2022 1446
PFOA	ND		1	4.0	0.83	ng/L	11/15/2022 1446
PFPeA	ND		1	4.0	0.54	ng/L	11/15/2022 1446
PFTeDA	ND		1	4.0	0.60	ng/L	11/15/2022 1446
PFTrDA	ND		1	4.0	0.53	ng/L	11/15/2022 1446
PFUdA	ND		1	4.0	0.63	ng/L	11/15/2022 1446
PFOS	ND		1	4.0	2.0	ng/L	11/15/2022 1446

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		96	25-150
13C2_6:2FTS		93	25-150
13C2_8:2FTS		100	25-150
13C2_PFDoA		90	25-150
13C2_PFTeDA		90	25-150
13C3_PFBS		92	25-150
13C3_PFHxS		91	25-150
13C3-HFPO-DA		101	25-150
13C4_PFBA		93	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		89	25-150
13C5_PFPeA		91	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60000-001
Batch: 60000
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0946

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		91	25-150
13C7_PFUdA		89	25-150
13C8_PFOA		92	25-150
13C8_PFOS		86	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		84	25-150
d5-EtFOSAA		91	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60000-002
Batch: 60000
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0946

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	16		1	105	50-150	11/15/2022 1457
11Cl-PF3OUdS	15	13		1	83	50-150	11/15/2022 1457
8:2 FTS	15	14		1	95	50-150	11/15/2022 1457
6:2 FTS	15	15		1	99	50-150	11/15/2022 1457
4:2 FTS	15	15		1	100	50-150	11/15/2022 1457
GenX	32	30		1	93	50-150	11/15/2022 1457
ADONA	15	15		1	101	50-150	11/15/2022 1457
EtFOSAA	16	14		1	89	50-150	11/15/2022 1457
MeFOSAA	16	15		1	94	50-150	11/15/2022 1457
PFBS	14	13		1	93	50-150	11/15/2022 1457
PFDS	15	12		1	78	50-150	11/15/2022 1457
PFHpS	15	13		1	87	50-150	11/15/2022 1457
PFNS	15	13		1	88	50-150	11/15/2022 1457
PFOSA	16	14		1	90	50-150	11/15/2022 1457
PFPeS	15	13		1	90	50-150	11/15/2022 1457
PFHxS	15	13		1	92	50-150	11/15/2022 1457
PFBA	16	15		1	94	50-150	11/15/2022 1457
PFDA	16	16		1	97	50-150	11/15/2022 1457
PFDoA	16	15		1	94	50-150	11/15/2022 1457
PFHpA	16	15		1	92	50-150	11/15/2022 1457
PFHxA	16	15		1	91	50-150	11/15/2022 1457
PFNA	16	15		1	91	50-150	11/15/2022 1457
PFOA	16	15		1	95	50-150	11/15/2022 1457
PFPeA	16	15		1	93	50-150	11/15/2022 1457
PFTeDA	16	16		1	98	50-150	11/15/2022 1457
PFTrDA	16	11		1	71	50-150	11/15/2022 1457
PFUdA	16	15		1	92	50-150	11/15/2022 1457
PFOS	15	14		1	95	50-150	11/15/2022 1457

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		91	25-150
13C2_6:2FTS		103	25-150
13C2_8:2FTS		98	25-150
13C2_PFDoA		78	25-150
13C2_PFTeDA		54	25-150
13C3_PFBS		91	25-150
13C3_PFHxS		88	25-150
13C3-HFPO-DA		97	25-150
13C4_PFBA		89	25-150
13C4_PFHpA		90	25-150
13C5_PFHxA		87	25-150
13C5_PFPeA		91	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60000-002
Batch: 60000
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0946

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		89	25-150
13C7_PFUdA		86	25-150
13C8_PFOA		89	25-150
13C8_PFOS		80	25-150
13C8_PFOSA		92	10-150
13C9_PFNA		82	25-150
d5-EtFOSAA		91	25-150
d3-MeFOSAA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60006-001
Batch: 60006
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0928

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/17/2022 2105
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/17/2022 2105
8:2 FTS	ND		1	8.0	1.6	ng/L	11/17/2022 2105
6:2 FTS	**2.8**	**J**	**1**	**8.0**	**2.0**	**ng/L**	**11/17/2022 2105**
4:2 FTS	ND		1	8.0	0.87	ng/L	11/17/2022 2105
GenX	ND		1	8.0	2.1	ng/L	11/17/2022 2105
ADONA	ND		1	8.0	0.48	ng/L	11/17/2022 2105
EtFOSAA	ND		1	8.0	0.75	ng/L	11/17/2022 2105
MeFOSAA	ND		1	8.0	0.93	ng/L	11/17/2022 2105
PFBS	ND		1	4.0	0.41	ng/L	11/17/2022 2105
PFDS	ND		1	4.0	0.78	ng/L	11/17/2022 2105
PFHpS	ND		1	4.0	0.50	ng/L	11/17/2022 2105
PFNS	ND		1	4.0	0.71	ng/L	11/17/2022 2105
PFOSA	ND		1	4.0	0.61	ng/L	11/17/2022 2105
PFPeS	ND		1	4.0	0.59	ng/L	11/17/2022 2105
PFHxS	ND		1	4.0	0.55	ng/L	11/17/2022 2105
PFBA	ND		1	4.0	0.60	ng/L	11/17/2022 2105
PFDA	ND		1	4.0	0.52	ng/L	11/17/2022 2105
PFDoA	ND		1	4.0	0.47	ng/L	11/17/2022 2105
PFHpA	ND		1	4.0	0.45	ng/L	11/17/2022 2105
PFHxA	ND		1	4.0	0.69	ng/L	11/17/2022 2105
PFNA	ND		1	4.0	0.46	ng/L	11/17/2022 2105
PFOA	ND		1	4.0	0.83	ng/L	11/17/2022 2105
PFPeA	ND		1	4.0	0.54	ng/L	11/17/2022 2105
PFTeDA	ND		1	4.0	0.60	ng/L	11/17/2022 2105
PFTrDA	ND		1	4.0	0.53	ng/L	11/17/2022 2105
PFUdA	ND		1	4.0	0.63	ng/L	11/17/2022 2105
PFOS	ND		1	4.0	2.0	ng/L	11/17/2022 2105

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		112	25-150
13C2_6:2FTS		109	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		114	25-150
13C2_PFTeDA		95	25-150
13C3_PFBS		115	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		114	25-150
13C4_PFBA		116	25-150
13C4_PFHpA		112	25-150
13C5_PFHxA		118	25-150
13C5_PFPeA		115	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60006-001
Batch: 60006
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0928

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		120	25-150
13C7_PFUdA		125	25-150
13C8_PFOA		122	25-150
13C8_PFOS		116	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		122	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60006-002
Batch: 60006
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0928

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	99	50-150	11/17/2022 2118
11Cl-PF3OUdS	15	13		1	89	50-150	11/17/2022 2118
8:2 FTS	15	17		1	108	50-150	11/17/2022 2118
6:2 FTS	15	16		1	107	50-150	11/17/2022 2118
4:2 FTS	15	17		1	111	50-150	11/17/2022 2118
GenX	32	33		1	103	50-150	11/17/2022 2118
ADONA	15	15		1	100	50-150	11/17/2022 2118
EtFOSAA	16	17		1	107	50-150	11/17/2022 2118
MeFOSAA	16	17		1	104	50-150	11/17/2022 2118
PFBS	14	14		1	96	50-150	11/17/2022 2118
PFDS	15	13		1	86	50-150	11/17/2022 2118
PFHpS	15	14		1	94	50-150	11/17/2022 2118
PFNS	15	15		1	97	50-150	11/17/2022 2118
PFOSA	16	16		1	100	50-150	11/17/2022 2118
PFPeS	15	15		1	99	50-150	11/17/2022 2118
PFHxS	15	14		1	96	50-150	11/17/2022 2118
PFBA	16	16		1	98	50-150	11/17/2022 2118
PFDA	16	15		1	95	50-150	11/17/2022 2118
PFDoA	16	16		1	102	50-150	11/17/2022 2118
PFHpA	16	16		1	97	50-150	11/17/2022 2118
PFHxA	16	16		1	100	50-150	11/17/2022 2118
PFNA	16	16		1	100	50-150	11/17/2022 2118
PFOA	16	16		1	100	50-150	11/17/2022 2118
PFPeA	16	16		1	99	50-150	11/17/2022 2118
PFTeDA	16	16		1	99	50-150	11/17/2022 2118
PFTrDA	16	13		1	78	50-150	11/17/2022 2118
PFUdA	16	15		1	95	50-150	11/17/2022 2118
PFOS	15	15		1	101	50-150	11/17/2022 2118

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		111	25-150
13C2_6:2FTS		114	25-150
13C2_8:2FTS		115	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		77	25-150
13C3_PFBS		116	25-150
13C3_PFHxS		119	25-150
13C3-HFPO-DA		116	25-150
13C4_PFBA		116	25-150
13C4_PFHpA		115	25-150
13C5_PFHxA		119	25-150
13C5_PFPeA		114	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60006-002
Batch: 60006
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0928

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		119	25-150
13C7_PFUdA		124	25-150
13C8_PFOA		120	25-150
13C8_PFOS		112	25-150
13C8_PFOSA		110	10-150
13C9_PFNA		123	25-150
d5-EtFOSAA		104	25-150
d3-MeFOSAA		107	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK11057-005MS
Batch: 60006
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0928

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	13		1	101	50-150	11/17/2022 2144
11Cl-PF3OUdS	ND	13	13		1	99	50-150	11/17/2022 2144
8:2 FTS	ND	13	14		1	111	50-150	11/17/2022 2144
6:2 FTS	ND	13	14		1	106	50-150	11/17/2022 2144
4:2 FTS	ND	13	13		1	102	50-150	11/17/2022 2144
GenX	ND	27	27		1	99	50-150	11/17/2022 2144
ADONA	ND	13	12		1	92	50-150	11/17/2022 2144
EtFOSAA	ND	14	14		1	105	50-150	11/17/2022 2144
MeFOSAA	ND	14	15		1	107	50-150	11/17/2022 2144
PFBS	1.6	12	13		1	93	50-150	11/17/2022 2144
PFDS	ND	13	13		1	97	50-150	11/17/2022 2144
PFHpS	ND	13	13		1	102	50-150	11/17/2022 2144
PFNS	ND	13	13		1	100	50-150	11/17/2022 2144
PFOSA	ND	14	15		1	109	50-150	11/17/2022 2144
PFPeS	0.54	13	14		1	109	50-150	11/17/2022 2144
PFHxS	ND	12	12		1	99	50-150	11/17/2022 2144
PFBA	43	14	58		1	106	50-150	11/17/2022 2144
PFDA	1.3	14	15		1	100	50-150	11/17/2022 2144
PFDoA	ND	14	13		1	99	50-150	11/17/2022 2144
PFHpA	29	14	44		1	106	50-150	11/17/2022 2144
PFHxA	78	14	93		1	111	50-150	11/17/2022 2144
PFNA	0.72	14	14		1	98	50-150	11/17/2022 2144
PFOA	15	14	28		1	96	50-150	11/17/2022 2144
PFPeA	57	14	70		1	92	50-150	11/17/2022 2144
PFTeDA	ND	14	14		1	101	50-150	11/17/2022 2144
PFTrDA	ND	14	14		1	104	50-150	11/17/2022 2144
PFUdA	ND	14	14		1	101	50-150	11/17/2022 2144
PFOS	2.2	13	15		1	103	50-150	11/17/2022 2144

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	254	25-150
13C2_6:2FTS	N	172	25-150
13C2_8:2FTS		115	25-150
13C2_PFDoA		110	25-150
13C2_PFTeDA		112	25-150
13C3_PFBS		101	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		91	25-150
13C4_PFBA	N	24	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		92	25-150
13C5_PFPeA		62	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK11057-005MS
Batch: 60006
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0928

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		114	25-150
13C7_PFUdA		116	25-150
13C8_PFOA		123	25-150
13C8_PFOS		111	25-150
13C8_PFOSA		105	10-150
13C9_PFNA		127	25-150
d5-EtFOSAA		102	25-150
d3-MeFOSAA		106	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XK11057-006DU
Batch: 60006
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0928

Parameter	Sample Amount (ng/L)	Result (ng/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
9Cl-PF3ONS	ND	ND		1	0.00	20	11/17/2022 2209
11Cl-PF3OUdS	ND	ND		1	0.00	20	11/17/2022 2209
8:2 FTS	ND	ND		1	0.00	20	11/17/2022 2209
6:2 FTS	ND	ND		1	0.00	20	11/17/2022 2209
4:2 FTS	ND	ND		1	0.00	20	11/17/2022 2209
GenX	ND	ND		1	0.00	20	11/17/2022 2209
ADONA	ND	ND		1	0.00	20	11/17/2022 2209
EtFOSAA	5.6	5.5	J	1	1.2	20	11/17/2022 2209
MeFOSAA	3.7	3.7	J	1	0.62	20	11/17/2022 2209
PFBS	1.7	1.9	J	1	8.4	20	11/17/2022 2209
PFDS	ND	ND		1	0.00	20	11/17/2022 2209
PFHpS	ND	ND		1	0.00	20	11/17/2022 2209
PFNS	ND	ND		1	0.00	20	11/17/2022 2209
PFOSA	3.4	3.5	J	1	4.0	20	11/17/2022 2209
PFPeS	ND	ND		1	0.00	20	11/17/2022 2209
PFHxS	1.4	1.4	J	1	1.7	20	11/17/2022 2209
PFBA	16	20	+	1	22	20	11/17/2022 2209
PFDA	22	22		1	0.48	20	11/17/2022 2209
PFDoA	0.45	0.51	J	1	13	20	11/17/2022 2209
PFHpA	28	30		1	4.7	20	11/17/2022 2209
PFHxA	31	31		1	1.3	20	11/17/2022 2209
PFNA	13	13		1	3.2	20	11/17/2022 2209
PFOA	65	65		1	0.56	20	11/17/2022 2209
PFPeA	26	27		1	2.7	20	11/17/2022 2209
PFTeDA	ND	ND		1	0.00	20	11/17/2022 2209
PFTrDA	ND	ND		1	0.00	20	11/17/2022 2209
PFUdA	ND	0.68		1	200	20	11/17/2022 2209
PFOS	42	45		1	7.5	20	11/17/2022 2209

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	322	25-150
13C2_6:2FTS	N	335	25-150
13C2_8:2FTS	N	377	25-150
13C2_PFDoA		126	25-150
13C2_PFTeDA		133	25-150
13C3_PFBS		110	25-150
13C3_PFHxS		109	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		33	25-150
13C4_PFHpA		108	25-150
13C5_PFHxA		104	25-150
13C5_PFPeA		84	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XK11057-006DU
Batch: 60006
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/14/2022 0928

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		130	25-150
13C7_PFUdA		142	25-150
13C8_PFOA		115	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		115	10-150
13C9_PFNA		131	25-150
d5-EtFOSAA	N	156	25-150
d3-MeFOSAA		149	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60140-001
Batch: 60140
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/16/2022 1947
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/16/2022 1947
8:2 FTS	ND		1	8.0	1.6	ng/L	11/16/2022 1947
6:2 FTS	ND		1	8.0	2.0	ng/L	11/16/2022 1947
4:2 FTS	ND		1	8.0	0.87	ng/L	11/16/2022 1947
GenX	ND		1	8.0	2.1	ng/L	11/16/2022 1947
ADONA	ND		1	8.0	0.48	ng/L	11/16/2022 1947
EtFOSAA	ND		1	8.0	0.75	ng/L	11/16/2022 1947
MeFOSAA	ND		1	8.0	0.93	ng/L	11/16/2022 1947
PFBS	ND		1	4.0	0.41	ng/L	11/16/2022 1947
PFDS	ND		1	4.0	0.78	ng/L	11/16/2022 1947
PFHpS	ND		1	4.0	0.50	ng/L	11/16/2022 1947
PFNS	ND		1	4.0	0.71	ng/L	11/16/2022 1947
PFOSA	ND		1	4.0	0.61	ng/L	11/16/2022 1947
PFPeS	ND		1	4.0	0.59	ng/L	11/16/2022 1947
PFHxS	ND		1	4.0	0.55	ng/L	11/16/2022 1947
PFBA	ND		1	4.0	0.60	ng/L	11/16/2022 1947
PFDA	ND		1	4.0	0.52	ng/L	11/16/2022 1947
PFDoA	ND		1	4.0	0.47	ng/L	11/16/2022 1947
PFHpA	ND		1	4.0	0.45	ng/L	11/16/2022 1947
PFHxA	ND		1	4.0	0.69	ng/L	11/16/2022 1947
PFNA	ND		1	4.0	0.46	ng/L	11/16/2022 1947
PFOA	ND		1	4.0	0.83	ng/L	11/16/2022 1947
PFPeA	ND		1	4.0	0.54	ng/L	11/16/2022 1947
PFTeDA	ND		1	4.0	0.60	ng/L	11/16/2022 1947
PFTrDA	ND		1	4.0	0.53	ng/L	11/16/2022 1947
PFUdA	ND		1	4.0	0.63	ng/L	11/16/2022 1947
PFOS	ND		1	4.0	2.0	ng/L	11/16/2022 1947

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		96	25-150
13C2_6:2FTS		99	25-150
13C2_8:2FTS		97	25-150
13C2_PFDoA		92	25-150
13C2_PFTeDA		99	25-150
13C3_PFBS		97	25-150
13C3_PFHxS		99	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		105	25-150
13C5_PFHxA		99	25-150
13C5_PFPeA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60140-001
Batch: 60140
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		97	25-150
13C8_PFOA		101	25-150
13C8_PFOS		95	25-150
13C8_PFOSA		93	10-150
13C9_PFNA		94	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		97	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60140-002
Batch: 60140
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	103	50-150	11/16/2022 2000
11Cl-PF3OUdS	15	14		1	96	50-150	11/16/2022 2000
8:2 FTS	15	16		1	104	50-150	11/16/2022 2000
6:2 FTS	15	16		1	109	50-150	11/16/2022 2000
4:2 FTS	15	16		1	106	50-150	11/16/2022 2000
GenX	32	33		1	104	50-150	11/16/2022 2000
ADONA	15	16		1	107	50-150	11/16/2022 2000
EtFOSAA	16	17		1	106	50-150	11/16/2022 2000
MeFOSAA	16	18		1	110	50-150	11/16/2022 2000
PFBS	14	15		1	107	50-150	11/16/2022 2000
PFDS	15	14		1	94	50-150	11/16/2022 2000
PFHpS	15	15		1	101	50-150	11/16/2022 2000
PFNS	15	15		1	99	50-150	11/16/2022 2000
PFOSA	16	16		1	102	50-150	11/16/2022 2000
PFPeS	15	16		1	104	50-150	11/16/2022 2000
PFHxS	15	15		1	100	50-150	11/16/2022 2000
PFBA	16	17		1	104	50-150	11/16/2022 2000
PFDA	16	17		1	103	50-150	11/16/2022 2000
PFDoA	16	16		1	103	50-150	11/16/2022 2000
PFHpA	16	17		1	106	50-150	11/16/2022 2000
PFHxA	16	16		1	103	50-150	11/16/2022 2000
PFNA	16	16		1	103	50-150	11/16/2022 2000
PFOA	16	16		1	102	50-150	11/16/2022 2000
PFPeA	16	16		1	103	50-150	11/16/2022 2000
PFTeDA	16	16		1	102	50-150	11/16/2022 2000
PFTrDA	16	16		1	101	50-150	11/16/2022 2000
PFUdA	16	17		1	107	50-150	11/16/2022 2000
PFOS	15	15		1	100	50-150	11/16/2022 2000

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		96	25-150
13C2_6:2FTS		96	25-150
13C2_8:2FTS		93	25-150
13C2_PFDoA		89	25-150
13C2_PFTeDA		96	25-150
13C3_PFBS		93	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		95	25-150
13C4_PFBA		97	25-150
13C4_PFHpA		100	25-150
13C5_PFHxA		98	25-150
13C5_PFPeA		99	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60140-002
Batch: 60140
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/15/2022 1141

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	25-150
13C7_PFUdA		95	25-150
13C8_PFOA		100	25-150
13C8_PFOS		96	25-150
13C8_PFOSA		92	10-150
13C9_PFNA		99	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		96	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60240-001
Batch: 60240
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	11/17/2022 1546
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	11/17/2022 1546
8:2 FTS	ND		1	8.0	1.6	ng/L	11/17/2022 1546
6:2 FTS	**7.1**	**J**	**1**	**8.0**	**2.0**	**ng/L**	**11/17/2022 1546**
4:2 FTS	ND		1	8.0	0.87	ng/L	11/17/2022 1546
GenX	ND		1	8.0	2.1	ng/L	11/17/2022 1546
ADONA	ND		1	8.0	0.48	ng/L	11/17/2022 1546
EtFOSAA	ND		1	8.0	0.75	ng/L	11/17/2022 1546
MeFOSAA	ND		1	8.0	0.93	ng/L	11/17/2022 1546
PFBS	ND		1	4.0	0.41	ng/L	11/17/2022 1546
PFDS	ND		1	4.0	0.78	ng/L	11/17/2022 1546
PFHpS	ND		1	4.0	0.50	ng/L	11/17/2022 1546
PFNS	ND		1	4.0	0.71	ng/L	11/17/2022 1546
PFOSA	ND		1	4.0	0.61	ng/L	11/17/2022 1546
PFPeS	ND		1	4.0	0.59	ng/L	11/17/2022 1546
PFHxS	ND		1	4.0	0.55	ng/L	11/17/2022 1546
PFBA	ND		1	4.0	0.60	ng/L	11/17/2022 1546
PFDA	ND		1	4.0	0.52	ng/L	11/17/2022 1546
PFDoA	ND		1	4.0	0.47	ng/L	11/17/2022 1546
PFHpA	ND		1	4.0	0.45	ng/L	11/17/2022 1546
PFHxA	ND		1	4.0	0.69	ng/L	11/17/2022 1546
PFNA	ND		1	4.0	0.46	ng/L	11/17/2022 1546
PFOA	ND		1	4.0	0.83	ng/L	11/17/2022 1546
PFPeA	ND		1	4.0	0.54	ng/L	11/17/2022 1546
PFTeDA	ND		1	4.0	0.60	ng/L	11/17/2022 1546
PFTrDA	ND		1	4.0	0.53	ng/L	11/17/2022 1546
PFUdA	ND		1	4.0	0.63	ng/L	11/17/2022 1546
PFOS	ND		1	4.0	2.0	ng/L	11/17/2022 1546

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		116	25-150
13C2_6:2FTS		115	25-150
13C2_8:2FTS		121	25-150
13C2_PFDoA		107	25-150
13C2_PFTeDA		106	25-150
13C3_PFBS		111	25-150
13C3_PFHxS		111	25-150
13C3-HFPO-DA		112	25-150
13C4_PFBA		113	25-150
13C4_PFHpA		110	25-150
13C5_PFHxA		115	25-150
13C5_PFPeA		110	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60240-001
Batch: 60240
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		111	25-150
13C7_PFUdA		116	25-150
13C8_PFOA		116	25-150
13C8_PFOS		109	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		119	25-150
d5-EtFOSAA		103	25-150
d3-MeFOSAA		109	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60240-002
Batch: 60240
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	98	50-150	11/17/2022 1558
11Cl-PF3OUdS	15	14		1	90	50-150	11/17/2022 1558
8:2 FTS	15	16		1	105	50-150	11/17/2022 1558
6:2 FTS	15	15		1	102	50-150	11/17/2022 1558
4:2 FTS	15	16		1	107	50-150	11/17/2022 1558
GenX	32	31		1	97	50-150	11/17/2022 1558
ADONA	15	14		1	96	50-150	11/17/2022 1558
EtFOSAA	16	16		1	102	50-150	11/17/2022 1558
MeFOSAA	16	16		1	102	50-150	11/17/2022 1558
PFBS	14	14		1	100	50-150	11/17/2022 1558
PFDS	15	13		1	87	50-150	11/17/2022 1558
PFHpS	15	14		1	92	50-150	11/17/2022 1558
PFNS	15	14		1	94	50-150	11/17/2022 1558
PFOSA	16	17		1	104	50-150	11/17/2022 1558
PFPeS	15	15		1	101	50-150	11/17/2022 1558
PFHxS	15	14		1	93	50-150	11/17/2022 1558
PFBA	16	16		1	99	50-150	11/17/2022 1558
PFDA	16	16		1	99	50-150	11/17/2022 1558
PFDoA	16	16		1	99	50-150	11/17/2022 1558
PFHpA	16	16		1	101	50-150	11/17/2022 1558
PFHxA	16	16		1	99	50-150	11/17/2022 1558
PFNA	16	16		1	100	50-150	11/17/2022 1558
PFOA	16	15		1	96	50-150	11/17/2022 1558
PFPeA	16	16		1	98	50-150	11/17/2022 1558
PFTeDA	16	15		1	96	50-150	11/17/2022 1558
PFTrDA	16	15		1	92	50-150	11/17/2022 1558
PFUdA	16	16		1	101	50-150	11/17/2022 1558
PFOS	15	14		1	97	50-150	11/17/2022 1558

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		114	25-150
13C2_6:2FTS		112	25-150
13C2_8:2FTS		112	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		97	25-150
13C3_PFBS		105	25-150
13C3_PFHxS		113	25-150
13C3-HFPO-DA		108	25-150
13C4_PFBA		107	25-150
13C4_PFHpA		106	25-150
13C5_PFHxA		113	25-150
13C5_PFPeA		107	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60240-002
Batch: 60240
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		106	25-150
13C7_PFUdA		111	25-150
13C8_PFOA		113	25-150
13C8_PFOS		107	25-150
13C8_PFOSA		104	10-150
13C9_PFNA		112	25-150
d5-EtFOSAA		99	25-150
d3-MeFOSAA		101	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK11057-027MS
Batch: 60240
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	13	14		1	103	50-150	11/17/2022 1844
11Cl-PF3OUdS	ND	14	13		1	97	50-150	11/17/2022 1844
8:2 FTS	ND	14	15		1	112	50-150	11/17/2022 1844
6:2 FTS	ND	14	15		1	112	50-150	11/17/2022 1844
4:2 FTS	ND	13	14		1	102	50-150	11/17/2022 1844
GenX	ND	29	29		1	102	50-150	11/17/2022 1844
ADONA	ND	14	14		1	103	50-150	11/17/2022 1844
EtFOSAA	ND	14	14		1	96	50-150	11/17/2022 1844
MeFOSAA	ND	14	14		1	99	50-150	11/17/2022 1844
PFBS	2.0	13	14		1	98	50-150	11/17/2022 1844
PFDS	ND	14	13		1	92	50-150	11/17/2022 1844
PFHpS	ND	14	14		1	100	50-150	11/17/2022 1844
PFNS	ND	14	13		1	97	50-150	11/17/2022 1844
PFOSA	ND	14	16		1	113	50-150	11/17/2022 1844
PFPeS	ND	13	14		1	105	50-150	11/17/2022 1844
PFHxS	ND	13	13		1	97	50-150	11/17/2022 1844
PFBA	1.7	14	16		1	97	50-150	11/17/2022 1844
PFDA	ND	14	14		1	96	50-150	11/17/2022 1844
PFDoA	ND	14	14		1	100	50-150	11/17/2022 1844
PFHpA	ND	14	14		1	98	50-150	11/17/2022 1844
PFHxA	ND	14	15		1	103	50-150	11/17/2022 1844
PFNA	ND	14	15		1	102	50-150	11/17/2022 1844
PFOA	ND	14	15		1	102	50-150	11/17/2022 1844
PFPeA	ND	14	14		1	100	50-150	11/17/2022 1844
PFTeDA	ND	14	14		1	97	50-150	11/17/2022 1844
PFTrDA	ND	14	13		1	90	50-150	11/17/2022 1844
PFUdA	ND	14	14		1	98	50-150	11/17/2022 1844
PFOS	ND	13	14		1	102	50-150	11/17/2022 1844

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		120	25-150
13C2_6:2FTS		116	25-150
13C2_8:2FTS		119	25-150
13C2_PFDoA		108	25-150
13C2_PFTeDA		97	25-150
13C3_PFBS		110	25-150
13C3_PFHxS		112	25-150
13C3-HFPO-DA		111	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		111	25-150
13C5_PFHxA		115	25-150
13C5_PFPeA		108	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK11057-027MS
Batch: 60240
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		112	25-150
13C7_PFUdA		118	25-150
13C8_PFOA		118	25-150
13C8_PFOS		108	25-150
13C8_PFOSA		108	10-150
13C9_PFNA		115	25-150
d5-EtFOSAA		107	25-150
d3-MeFOSAA		111	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XK11057-027MD
Batch: 60240
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	13	13		1	100	6.0	50-150	30	11/17/2022 1857
11Cl-PF3OUdS	ND	13	12		1	91	8.6	50-150	30	11/17/2022 1857
8:2 FTS	ND	13	15		1	113	1.6	50-150	30	11/17/2022 1857
6:2 FTS	ND	13	15		1	116	0.61	50-150	30	11/17/2022 1857
4:2 FTS	ND	13	14		1	110	4.9	50-150	30	11/17/2022 1857
GenX	ND	28	28		1	102	2.9	50-150	30	11/17/2022 1857
ADONA	ND	13	13		1	101	4.8	50-150	30	11/17/2022 1857
EtFOSAA	ND	14	14		1	101	1.8	50-150	30	11/17/2022 1857
MeFOSAA	ND	14	14		1	101	0.82	50-150	30	11/17/2022 1857
PFBS	2.0	12	14		1	98	2.7	50-150	30	11/17/2022 1857
PFDS	ND	13	12		1	90	4.7	50-150	30	11/17/2022 1857
PFHpS	ND	13	13		1	101	2.1	50-150	30	11/17/2022 1857
PFNS	ND	13	13		1	95	5.7	50-150	30	11/17/2022 1857
PFOSA	ND	14	15		1	104	10	50-150	30	11/17/2022 1857
PFPeS	ND	13	14		1	105	2.8	50-150	30	11/17/2022 1857
PFHxS	ND	13	12		1	96	3.3	50-150	30	11/17/2022 1857
PFBA	1.7	14	15		1	99	0.23	50-150	30	11/17/2022 1857
PFDA	ND	14	14		1	99	0.29	50-150	30	11/17/2022 1857
PFDoA	ND	14	15		1	105	1.1	50-150	30	11/17/2022 1857
PFHpA	ND	14	14		1	103	2.0	50-150	30	11/17/2022 1857
PFHxA	ND	14	14		1	99	6.8	50-150	30	11/17/2022 1857
PFNA	ND	14	14		1	101	3.9	50-150	30	11/17/2022 1857
PFOA	ND	14	14		1	101	4.0	50-150	30	11/17/2022 1857
PFPeA	ND	14	14		1	99	3.8	50-150	30	11/17/2022 1857
PFTeDA	ND	14	14		1	98	1.9	50-150	30	11/17/2022 1857
PFTrDA	ND	14	14		1	102	9.4	50-150	30	11/17/2022 1857
PFUdA	ND	14	14		1	100	0.64	50-150	30	11/17/2022 1857
PFOS	ND	13	13		1	102	2.7	50-150	30	11/17/2022 1857

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		122	25-150
13C2_6:2FTS		121	25-150
13C2_8:2FTS		122	25-150
13C2_PFDoA		103	25-150
13C2_PFTeDA		97	25-150
13C3_PFBS		115	25-150
13C3_PFHxS		116	25-150
13C3-HFPO-DA		116	25-150
13C4_PFBA		88	25-150
13C4_PFHpA		113	25-150
13C5_PFHxA		120	25-150
13C5_PFPeA		113	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XK11057-027MD
Batch: 60240
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/16/2022 0952

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		115	25-150
13C7_PFUdA		119	25-150
13C8_PFOA		121	25-150
13C8_PFOS		114	25-150
13C8_PFOSA		111	10-150
13C9_PFNA		123	25-150
d5-EtFOSAA		106	25-150
d3-MeFOSAA		112	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

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106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 140225

ARCADIS — PLANT-6

Client	Report to Contact	Telephone No. / E-mail	Quote No.
ARCADIS	KAITLYN HUNT	248-994-2240 KAITLYN.HUNT@ARCADIS.COM	
Address: 28550 CABOT DR SUITE 500	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 1 of 3
City: NOVI / State: MI / Zip Code: 48377	Printed Name: BILLY J. COBERN		XK11057
Project Name: RACER LANSING			

Project No. 30112892	P.O. No.		Grab=G Composite=C	Matrix				No of Containers by Preservative Type							Analysis (Attach list if more space is needed)								
Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)		Aqueous	Soil	Non-Aqueous	Unpres.	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Zinc Acetate	PFAS METHOD 537.1 (modified) PFAS ANION (533) PFAS CATION (537.1)								Remarks / Cooler I.D.
EB-05_110922	11/9/22	8:00	G	X			2							X								
MW-12-12_110922	11/9/22	9:30	G	X			2							X								
MW-14-70_110922	11/9/22	10:25	G	X			2							X								
MW-12-13_110922	11/9/22	~~10~~ 11:15	G	X			2							X								
MW-14-67_110922	11/9/22	12:26	G	X			2							X								
MW-13-36R_110922	11/9/22	13:25	G	X			2							X								
MW-21-133_110922	11/9/22	14:15	G	X			2							X								
MW-21-134_110922	11/9/22	15:10	G	X			2							X								
MW-21-135_110922	11/9/22	16:00	G	X			2							X								
P6-SB-07_110922	11/9/22	17:00	G	X			2							X								

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by: Austin Westhuis / Arcadis	Date: 11/10/22	Time: 1600	1. Received by: FedEx	Date: 11/10/22	Time: 1600
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: fedex	Date: 11-11-22	Time: 1415	4. Laboratory received by	Date: 11-11-22	Time: 1415

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on ice (Circle) (Yes) No Ice Pack — Receipt Temp: 1.4 °C — Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s), PINK-Field/Client Copy

Document Number: ME003N2-01

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www.pacelabs.com

Number 140224

Client: ARCADIS	Report to Contact: KAITLIN HUNT	Telephone No. / E-mail: 248.994.2240 KAITLYN.HUNT@ARCADIS.COM	Quote No.
Address: 28550 CABOT DR. SUITE 500	Sampler's Signature: X	Analysis (Attach list if more space is needed)	Page 2 of 3
City: NOVI / State: MI / Zip Code: 48377	Printed Name: BILLY J. COGAN		XK11057
Project Name: RACER LANSING			

Project No. 30112892	P.O. No.			Matrix			No of Containers by Preservative Type							Please Circle Field Filtered Volume Required for Dissolved Analysis								
Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	G=Grab C=Composite	Aqueous	Solid	Non-Aqueous	Unpres.	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Field Filtered									Remarks / Cooler I.D.
DUP-08_110922	11/9/22	—	G	X			2							X								
MW-21-136_110922	11/10/22	9:10	G	X			2							X								
MW-21-137_111022	11/10/22	10:05	G	X			2							X								
MW-21-138_111022	11/10/22	10:45	G	X			2							X								
MW-22-143_111022	11/10/22	11:45	G	X			2							X								
MW-22-145_111022	11/10/22	12:50	G	X			2							X								
MW-22-144_111022	11/10/22	13:40	G	X			2							X								
MW-22-146_111022	11/10/22	14:30	G	X			2							X								
DUP-10_111022	11/10/22	—	G	X			2							X								

Turn Around Time Required (Prior lab approval required for expedited TAT.)	Sample Disposal	Possible Hazard Identification	QC Requirements (Specify)
☐ Standard ☐ Rush (Specify)	☐ Return to Client ☐ Disposal by Lab	☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown	

1. Relinquished by: Billy J. Cogan / ARCADIS	Date: 11/10/22	Time: 1500	1. Received by: Austin Westhuis / Arcadis	Date: 11/10/22	Time: 1500
2. Relinquished by: Austin Westhuis / Arcadis	Date: 11/10/22	Time: 1600	2. Received by: FedEx	Date: 11/10/22	Time: 1600
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: FedEx	Date: 11-11-22	Time: 1015	4. Laboratory received by	Date: 11-11-22	Time: 1415

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack — Receipt Temp: 1.4 °C — Temp Blank ☑ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: MEG0SN2-01

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Number 140223

Plant 6

Client: Arcadis	Report to Contact: Kaitlyn Hunt	Telephone No. / E-mail: 947-777-5215 Kaitlyn.Hunt@arcadis.com
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x	Analysis (Attach list if more space is needed)
City: Novi	State: MI	Zip Code: 48377
Project Name: RACER Lansing	Printed Name: Austin Westhuis	
Project No.: 30112892.0270A	P.O. No.	

Quote No.

Page 3 of 3

XK11057

KES1

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (military)	# Grab Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	HCl	HNO3	H2SO4	NaOH	ZnAc/NaOH	Methanol	PFAS method 537 mod. w/ SPE type dilution per QSM 5.1	Remarks / Cooler I.D.
MW-20-132_110922	11/9/22	1615	G	X			2							X	
Dup-09_111022	11/10/22	—	G	X			2							X	
MW-20-131_111022	11/10/22	0905	G	X			2							X	
MW-22-152_111022	11/10/22	1000	G	X			2							X	
MW-22-151_111022	11/10/22	1045	G	X			2							X	
MW-22-150_111022	11/10/22	1130	G	X			2							X	
MW-22-149_111022	11/10/22	1215	G	X			2							X	
MW-22-148_111022	11/10/22	1300	G	X			6							X	MS/MSD
MW-22-147_111022	11/10/22	1400	G	X			2							X	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Austin Westhuis / Arcadis	11/10/22	1600	1. Received by: FedEx	11/10/22	1600
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: fedex	11-11-22	1415	4. Laboratory received by	11-11-22	1415

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on ice (Circle) (Yes) No Ice Pack — Receipt Temp. 1.4 °C — Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N3-01

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: Arcadis Cooler Inspected by/date: KDRW / 11/11/2022 Lot #: XK11057

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:			
☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

1.4 / 1.4 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 8 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		11. Was adequate sample volume available?
☐ Yes	☑ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☐ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☑ Yes	☐ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Qualtrax ID: 56360 Pace® Analytical Services, LLC Page 1 of 1

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Kaitlyn Hunt

Project Name: RACER Lansing

Lot Number:**XL16048**

Date Completed:01/19/2023

Kathy Smith

01/19/2023 2:03 PM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XL16048

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Samples XL16048-001, XL16048-002 required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of MeOH. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <5mL and reconstituted to 5mL using MeOH by transfer pipet.

Re-extraction of the following samples was performed outside of the analytical holding time: XL16048-001, XL16048-002, XL16048-003, XL16048-004. During the first analytical run for these samples were associated with a method blank that had a PFBA contamination. The re-extracted method blank again had PFBA contamination. There is insufficient sample for another re-extract. All data has been reported.

Sample Summary
Arcadis U.S., Inc.
Lot Number: XL16048

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-22-160_121322	Aqueous	12/13/2022 1145	12/16/2022
002	Dup-01_121322	Aqueous	12/13/2022	12/16/2022
003	MW-22-158_121522	Aqueous	12/15/2022 1145	12/16/2022
004	EB-01_121522	Aqueous	12/15/2022 1200	12/16/2022

(4 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XL16048

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-22-160_121322	Aqueous	PFPeA	PFAS by ID	0.54	J	ng/L	5
001	MW-22-160_121322	Aqueous	PFBA	PFAS by ID	4.2	BH	ng/L	7
002	Dup-01_121322	Aqueous	PFPeA	PFAS by ID	0.49	J	ng/L	9
002	Dup-01_121322	Aqueous	PFBA	PFAS by ID	4.1	BH	ng/L	11
003	MW-22-158_121522	Aqueous	PFBS	PFAS by ID	1.4	J	ng/L	13
003	MW-22-158_121522	Aqueous	PFHpA	PFAS by ID	1.6	J	ng/L	13
003	MW-22-158_121522	Aqueous	PFHxA	PFAS by ID	3.9		ng/L	13
003	MW-22-158_121522	Aqueous	PFPeA	PFAS by ID	3.2	J	ng/L	13
003	MW-22-158_121522	Aqueous	PFBA	PFAS by ID	6.6	BH	ng/L	15
004	EB-01_121522	Aqueous	PFHxA	PFAS by ID	0.70	J	ng/L	17
004	EB-01_121522	Aqueous	PFBA	PFAS by ID	2.4	BHJ	ng/L	19

(11 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XL16048-001**

Description: **MW-22-160_121322** Matrix: **Aqueous**

Date Sampled: **12/13/2022 1145**

Date Received: **12/16/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/11/2023 1713	ALM	01/04/2023 1235	64087
2	SOP SPE	PFAS by ID SOP	1	01/17/2023 2306	BWS	01/16/2023 1340	64959

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.8	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.8	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.8	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.8	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.8	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.8	0.41	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.8	0.64	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.8	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.35	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**4.9**	**B**	**3.4**	**0.51**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.38	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.4	0.59	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.54**	**J**	**3.4**	**0.47**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		112	25-150	HN	153	25-150
13C2_6:2FTS		109	25-150	H	114	25-150
13C2_8:2FTS		79	25-150	H	99	25-150
13C2_PFDoA		71	25-150	H	83	25-150
13C2_PFTeDA		76	25-150	H	77	25-150
13C3_PFBS		88	25-150	H	99	25-150
13C3_PFHxS		89	25-150	H	105	25-150
13C3-HFPO-DA		81	25-150	H	93	25-150
13C4_PFBA		73	25-150	H	87	25-150
13C4_PFHpA		100	25-150	H	99	25-150
13C5_PFHxA		84	25-150	H	103	25-150
13C5_PFPeA		90	25-150	H	101	25-150
13C6_PFDA		81	25-150	H	93	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XL16048-001**
Description: **MW-22-160_121322**
Matrix: **Aqueous**
Date Sampled: **12/13/2022 1145**
Date Received: **12/16/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		68	25-150	H	84	25-150
13C8_PFOA		89	25-150	H	108	25-150
13C8_PFOS		90	25-150	H	96	25-150
13C8_PFOSA		78	10-150	H	94	10-150
13C9_PFNA		86	25-150	H	96	25-150
d5-EtFOSAA		73	25-150	H	84	25-150
d3-MeFOSAA		78	25-150	H	85	25-150

LOQ = Limit of Quantitation
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XL16048-001**

Description: **MW-22-160_121322** Matrix: **Aqueous**

Date Sampled: **12/13/2022 1145**

Date Received: **12/16/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/11/2023 1713	ALM	01/04/2023 1235	64087
2	SOP SPE	PFAS by ID SOP	1	01/17/2023 2306	BWS	01/16/2023 1340	64959

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	H	6.9	0.42	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	H	6.9	0.57	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	H	6.9	1.4	ng/L	2
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	H	6.9	1.7	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	HQ	6.9	0.76	ng/L	2
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	H	6.9	1.8	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	H	6.9	0.42	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	H	6.9	0.65	ng/L	2
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	H	6.9	0.81	ng/L	2
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND	H	3.5	0.36	ng/L	2
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	H	3.5	0.67	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	H	3.5	0.43	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	H	3.5	0.62	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	H	3.5	0.53	ng/L	2
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	H	3.5	0.51	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND	H	3.5	0.48	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**4.2**	**BH**	**3.5**	**0.52**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	H	3.5	0.45	ng/L	2
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	H	3.5	0.41	ng/L	2
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND	H	3.5	0.39	ng/L	2
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND	H	3.5	0.60	ng/L	2
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	H	3.5	0.40	ng/L	2
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND	H	3.5	0.72	ng/L	2
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND	H	3.5	0.47	ng/L	2
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	H	3.5	0.52	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	H	3.5	0.46	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	H	3.5	0.54	ng/L	2
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND	H	3.5	1.7	ng/L	2

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C2_4:2FTS		112	25-150	HN	153	25-150
13C2_6:2FTS		109	25-150	H	114	25-150
13C2_8:2FTS		79	25-150	H	99	25-150
13C2_PFDoA		71	25-150	H	83	25-150
13C2_PFTeDA		76	25-150	H	77	25-150
13C3_PFBS		88	25-150	H	99	25-150
13C3_PFHxS		89	25-150	H	105	25-150
13C3-HFPO-DA		81	25-150	H	93	25-150
13C4_PFBA		73	25-150	H	87	25-150
13C4_PFHpA		100	25-150	H	99	25-150
13C5_PFHxA		84	25-150	H	103	25-150
13C5_PFPeA		90	25-150	H	101	25-150
13C6_PFDA		81	25-150	H	93	25-150

LOQ = Limit of Quantitation
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Q = Surrogate failure
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N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XL16048-001**
Description: **MW-22-160_121322**
Matrix: **Aqueous**
Date Sampled: **12/13/2022 1145**
Date Received: **12/16/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		68	25-150	H	84	25-150
13C8_PFOA		89	25-150	H	108	25-150
13C8_PFOS		90	25-150	H	96	25-150
13C8_PFOSA		78	10-150	H	94	10-150
13C9_PFNA		86	25-150	H	96	25-150
d5-EtFOSAA		73	25-150	H	84	25-150
d3-MeFOSAA		78	25-150	H	85	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XL16048-002**

Description: **Dup-01_121322** Matrix: **Aqueous**

Date Sampled: **12/13/2022**

Date Received: **12/16/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/11/2023 1724	ALM	01/04/2023 1235	64087
2	SOP SPE	PFAS by ID SOP	1	01/17/2023 2317	BWS	01/16/2023 1340	64959

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.43	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.5	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.63	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.49	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.1**	**BJ**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.42	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.5	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.5	0.61	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.49**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.47	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		120	25-150	HN	154	25-150
13C2_6:2FTS		105	25-150	H	126	25-150
13C2_8:2FTS		83	25-150	H	106	25-150
13C2_PFDoA		72	25-150	H	88	25-150
13C2_PFTeDA		70	25-150	H	80	25-150
13C3_PFBS		85	25-150	H	111	25-150
13C3_PFHxS		89	25-150	H	105	25-150
13C3-HFPO-DA		84	25-150	H	97	25-150
13C4_PFBA		75	25-150	H	91	25-150
13C4_PFHpA		106	25-150	H	103	25-150
13C5_PFHxA		85	25-150	H	116	25-150
13C5_PFPeA		91	25-150	H	107	25-150
13C6_PFDA		84	25-150	H	99	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XL16048-002**
Description: **Dup-01_121322**
Matrix: **Aqueous**
Date Sampled: **12/13/2022**
Date Received: **12/16/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		71	25-150	H	88	25-150
13C8_PFOA		84	25-150	H	111	25-150
13C8_PFOS		94	25-150	H	103	25-150
13C8_PFOSA		84	10-150	H	95	10-150
13C9_PFNA		86	25-150	H	106	25-150
d5-EtFOSAA		72	25-150	H	90	25-150
d3-MeFOSAA		78	25-150	H	91	25-150

LOQ = Limit of Quantitation
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XL16048-002**

Description: **Dup-01_121322** Matrix: **Aqueous**

Date Sampled: **12/13/2022**

Date Received: **12/16/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/11/2023 1724	ALM	01/04/2023 1235	64087
2	SOP SPE	PFAS by ID SOP	1	01/17/2023 2317	BWS	01/16/2023 1340	64959

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	H	6.9	0.42	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	H	6.9	0.57	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	H	6.9	1.4	ng/L	2
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	H	6.9	1.7	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	HQ	6.9	0.76	ng/L	2
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	H	6.9	1.8	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	H	6.9	0.42	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	H	6.9	0.65	ng/L	2
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	H	6.9	0.81	ng/L	2
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND	H	3.5	0.36	ng/L	2
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	H	3.5	0.67	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	H	3.5	0.43	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	H	3.5	0.62	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	H	3.5	0.53	ng/L	2
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	H	3.5	0.52	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND	H	3.5	0.48	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**4.1**	**BH**	**3.5**	**0.52**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	H	3.5	0.46	ng/L	2
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	H	3.5	0.41	ng/L	2
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND	H	3.5	0.39	ng/L	2
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND	H	3.5	0.60	ng/L	2
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	H	3.5	0.40	ng/L	2
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND	H	3.5	0.72	ng/L	2
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**0.61**	**HJ**	**3.5**	**0.47**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	H	3.5	0.52	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	H	3.5	0.46	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	H	3.5	0.54	ng/L	2
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND	H	3.5	1.7	ng/L	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		120	25-150	HN	154	25-150
13C2_6:2FTS		105	25-150	H	126	25-150
13C2_8:2FTS		83	25-150	H	106	25-150
13C2_PFDoA		72	25-150	H	88	25-150
13C2_PFTeDA		70	25-150	H	80	25-150
13C3_PFBS		85	25-150	H	111	25-150
13C3_PFHxS		89	25-150	H	105	25-150
13C3-HFPO-DA		84	25-150	H	97	25-150
13C4_PFBA		75	25-150	H	91	25-150
13C4_PFHpA		106	25-150	H	103	25-150
13C5_PFHxA		85	25-150	H	116	25-150
13C5_PFPeA		91	25-150	H	107	25-150
13C6_PFDA		84	25-150	H	99	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
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S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XL16048-002**
Description: **Dup-01_121322**
Matrix: **Aqueous**
Date Sampled: **12/13/2022**
Date Received: **12/16/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		71	25-150	H	88	25-150
13C8_PFOA		84	25-150	H	111	25-150
13C8_PFOS		94	25-150	H	103	25-150
13C8_PFOSA		84	10-150	H	95	10-150
13C9_PFNA		86	25-150	H	106	25-150
d5-EtFOSAA		72	25-150	H	90	25-150
d3-MeFOSAA		78	25-150	H	91	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XL16048-003**

Description: **MW-22-158_121522** Matrix: **Aqueous**

Date Sampled: **12/15/2022 1145**

Date Received: **12/16/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/11/2023 1756	ALM	01/04/2023 1235	64087
2	SOP SPE	PFAS by ID SOP	1	01/17/2023 2350	BWS	01/16/2023 1340	64959

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.0	0.58	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.0	0.77	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.0	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.0	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.0	0.66	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.0	0.82	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.4**	**J**	**3.5**	**0.36**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.5	0.68	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.5	0.44	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.5	0.62	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.5	0.54	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.5	0.52	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.5	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**7.1**	**B**	**3.5**	**0.53**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.6**	**J**	**3.5**	**0.39**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.9**		**3.5**	**0.60**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.5	0.41	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.5	0.73	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.2**	**J**	**3.5**	**0.48**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.5	0.53	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.5	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.5	0.55	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.5	1.8	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		103	25-150	H	138	25-150
13C2_6:2FTS		99	25-150	H	106	25-150
13C2_8:2FTS		74	25-150	H	99	25-150
13C2_PFDoA		80	25-150	H	94	25-150
13C2_PFTeDA		86	25-150	H	95	25-150
13C3_PFBS		86	25-150	H	102	25-150
13C3_PFHxS		82	25-150	H	105	25-150
13C3-HFPO-DA		84	25-150	H	95	25-150
13C4_PFBA		76	25-150	H	89	25-150
13C4_PFHpA		90	25-150	H	101	25-150
13C5_PFHxA		86	25-150	H	106	25-150
13C5_PFPeA		85	25-150	H	103	25-150
13C6_PFDA		84	25-150	H	96	25-150

LOQ = Limit of Quantitation
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XL16048-003**
Description: **MW-22-158_121522**
Matrix: **Aqueous**
Date Sampled: **12/15/2022 1145**
Date Received: **12/16/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		85	25-150	H	92	25-150
13C8_PFOA		79	25-150	H	106	25-150
13C8_PFOS		86	25-150	H	102	25-150
13C8_PFOSA		86	10-150	H	98	10-150
13C9_PFNA		86	25-150	H	101	25-150
d5-EtFOSAA		78	25-150	H	94	25-150
d3-MeFOSAA		81	25-150	H	93	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XL16048-003**

Description: **MW-22-158_121522** Matrix: **Aqueous**

Date Sampled: **12/15/2022 1145**

Date Received: **12/16/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/11/2023 1756	ALM	01/04/2023 1235	64087
2	SOP SPE	PFAS by ID SOP	1	01/17/2023 2350	BWS	01/16/2023 1340	64959

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	H	6.9	0.41	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	H	6.9	0.57	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	H	6.9	1.4	ng/L	2
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	H	6.9	1.7	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	H	6.9	0.75	ng/L	2
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	H	6.9	1.8	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	H	6.9	0.42	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	H	6.9	0.65	ng/L	2
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	H	6.9	0.80	ng/L	2
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.3**	**HJ**	**3.4**	**0.36**	**ng/L**	**2**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	H	3.4	0.67	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	H	3.4	0.43	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	H	3.4	0.61	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	H	3.4	0.53	ng/L	2
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	H	3.4	0.51	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND	H	3.4	0.47	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**6.6**	**BH**	**3.4**	**0.52**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	H	3.4	0.45	ng/L	2
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	H	3.4	0.41	ng/L	2
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.6**	**HJ**	**3.4**	**0.38**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**3.5**	**H**	**3.4**	**0.59**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	H	3.4	0.40	ng/L	2
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND	H	3.4	0.71	ng/L	2
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**3.5**	**H**	**3.4**	**0.47**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	H	3.4	0.52	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	H	3.4	0.45	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	H	3.4	0.54	ng/L	2
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND	H	3.4	1.7	ng/L	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		103	25-150	H	138	25-150
13C2_6:2FTS		99	25-150	H	106	25-150
13C2_8:2FTS		74	25-150	H	99	25-150
13C2_PFDoA		80	25-150	H	94	25-150
13C2_PFTeDA		86	25-150	H	95	25-150
13C3_PFBS		86	25-150	H	102	25-150
13C3_PFHxS		82	25-150	H	105	25-150
13C3-HFPO-DA		84	25-150	H	95	25-150
13C4_PFBA		76	25-150	H	89	25-150
13C4_PFHpA		90	25-150	H	101	25-150
13C5_PFHxA		86	25-150	H	106	25-150
13C5_PFPeA		85	25-150	H	103	25-150
13C6_PFDA		84	25-150	H	96	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XL16048-003**
Description: **MW-22-158_121522**
Matrix: **Aqueous**
Date Sampled: **12/15/2022 1145**
Date Received: **12/16/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		85	25-150	H	92	25-150
13C8_PFOA		79	25-150	H	106	25-150
13C8_PFOS		86	25-150	H	102	25-150
13C8_PFOSA		86	10-150	H	98	10-150
13C9_PFNA		86	25-150	H	101	25-150
d5-EtFOSAA		78	25-150	H	94	25-150
d3-MeFOSAA		81	25-150	H	93	25-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XL16048-004**

Description: **EB-01_121522** Matrix: **Aqueous**

Date Sampled: **12/15/2022 1200**

Date Received: **12/16/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/11/2023 1806	ALM	01/04/2023 1235	64087
2	SOP SPE	PFAS by ID SOP	1	01/18/2023 0001	BWS	01/16/2023 1340	64959

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		6.9	0.57	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		6.9	1.4	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		6.9	1.7	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		6.9	0.75	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		6.9	1.8	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		6.9	0.42	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		6.9	0.65	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		6.9	0.80	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.4	0.36	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.4	0.67	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.4	0.43	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.4	0.61	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.4	0.53	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.4	0.51	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.4	0.48	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.5**	**BJ**	**3.4**	**0.52**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.4	0.45	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.4	0.41	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.4	0.39	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.70**	**J**	**3.4**	**0.59**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.4	0.40	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.4	0.71	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.4	0.47	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.4	0.52	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.4	0.46	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.4	0.54	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.4	1.7	ng/L	1

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		101	25-150	H	120	25-150
13C2_6:2FTS		106	25-150	H	113	25-150
13C2_8:2FTS		75	25-150	H	100	25-150
13C2_PFDoA		85	25-150	H	93	25-150
13C2_PFTeDA		83	25-150	H	93	25-150
13C3_PFBS		89	25-150	H	99	25-150
13C3_PFHxS		85	25-150	H	99	25-150
13C3-HFPO-DA		96	25-150	H	97	25-150
13C4_PFBA		87	25-150	H	100	25-150
13C4_PFHpA		91	25-150	H	98	25-150
13C5_PFHxA		93	25-150	H	105	25-150
13C5_PFPeA		91	25-150	H	99	25-150
13C6_PFDA		83	25-150	H	97	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XL16048-004**
Description: **EB-01_121522**
Matrix: **Aqueous**
Date Sampled: **12/15/2022 1200**
Date Received: **12/16/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		82	25-150	H	93	25-150
13C8_PFOA		97	25-150	H	109	25-150
13C8_PFOS		98	25-150	H	108	25-150
13C8_PFOSA		89	10-150	H	93	10-150
13C9_PFNA		100	25-150	H	110	25-150
d5-EtFOSAA		82	25-150	H	92	25-150
d3-MeFOSAA		81	25-150	H	88	25-150

LOQ = Limit of Quantitation
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XL16048-004**

Description: **EB-01_121522** Matrix: **Aqueous**

Date Sampled: **12/15/2022 1200**

Date Received: **12/16/2022**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP	1	01/11/2023 1806	ALM	01/04/2023 1235	64087
2	SOP SPE	PFAS by ID SOP	1	01/18/2023 0001	BWS	01/16/2023 1340	64959

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	H	7.0	0.42	ng/L	2
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	H	7.0	0.58	ng/L	2
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	H	7.0	1.4	ng/L	2
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	H	7.0	1.8	ng/L	2
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	H	7.0	0.77	ng/L	2
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	H	7.0	1.8	ng/L	2
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	H	7.0	0.43	ng/L	2
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	H	7.0	0.66	ng/L	2
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND	H	7.0	0.82	ng/L	2
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND	H	3.5	0.36	ng/L	2
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	H	3.5	0.68	ng/L	2
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND	H	3.5	0.44	ng/L	2
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	H	3.5	0.63	ng/L	2
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	H	3.5	0.54	ng/L	2
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND	H	3.5	0.52	ng/L	2
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND	H	3.5	0.48	ng/L	2
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**2.4**	**BHJ**	**3.5**	**0.53**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	H	3.5	0.46	ng/L	2
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	H	3.5	0.41	ng/L	2
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND	H	3.5	0.39	ng/L	2
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**0.76**	**HJ**	**3.5**	**0.60**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	H	3.5	0.41	ng/L	2
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND	H	3.5	0.73	ng/L	2
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND	H	3.5	0.48	ng/L	2
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	H	3.5	0.53	ng/L	2
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND	H	3.5	0.47	ng/L	2
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	H	3.5	0.55	ng/L	2
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND	H	3.5	1.8	ng/L	2

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS		101	25-150	H	120	25-150
13C2_6:2FTS		106	25-150	H	113	25-150
13C2_8:2FTS		75	25-150	H	100	25-150
13C2_PFDoA		85	25-150	H	93	25-150
13C2_PFTeDA		83	25-150	H	93	25-150
13C3_PFBS		89	25-150	H	99	25-150
13C3_PFHxS		85	25-150	H	99	25-150
13C3-HFPO-DA		96	25-150	H	97	25-150
13C4_PFBA		87	25-150	H	100	25-150
13C4_PFHpA		91	25-150	H	98	25-150
13C5_PFHxA		93	25-150	H	105	25-150
13C5_PFPeA		91	25-150	H	99	25-150
13C6_PFDA		83	25-150	H	97	25-150

LOQ = Limit of Quantitation
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XL16048-004**
Description: **EB-01_121522**
Matrix: **Aqueous**
Date Sampled: **12/15/2022 1200**
Date Received: **12/16/2022**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		82	25-150	H	93	25-150
13C8_PFOA		97	25-150	H	109	25-150
13C8_PFOS		98	25-150	H	108	25-150
13C8_PFOSA		89	10-150	H	93	10-150
13C9_PFNA		100	25-150	H	110	25-150
d5-EtFOSAA		82	25-150	H	92	25-150
d3-MeFOSAA		81	25-150	H	88	25-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
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L = LCS/LCSD failure
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S = MS/MSD failure

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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: YQ64087-001
Batch: 64087
Analytical Method: PFAS by ID SOP
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/04/2023 1235

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	01/11/2023 1652
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	01/11/2023 1652
8:2 FTS	ND		1	8.0	1.6	ng/L	01/11/2023 1652
6:2 FTS	ND		1	8.0	2.0	ng/L	01/11/2023 1652
4:2 FTS	ND		1	8.0	0.87	ng/L	01/11/2023 1652
GenX	ND		1	8.0	2.1	ng/L	01/11/2023 1652
ADONA	ND		1	8.0	0.48	ng/L	01/11/2023 1652
EtFOSAA	ND		1	8.0	0.75	ng/L	01/11/2023 1652
MeFOSAA	ND		1	8.0	0.93	ng/L	01/11/2023 1652
PFBS	ND		1	4.0	0.41	ng/L	01/11/2023 1652
PFDS	ND		1	4.0	0.78	ng/L	01/11/2023 1652
PFHpS	ND		1	4.0	0.50	ng/L	01/11/2023 1652
PFNS	ND		1	4.0	0.71	ng/L	01/11/2023 1652
PFOSA	ND		1	4.0	0.61	ng/L	01/11/2023 1652
PFPeS	ND		1	4.0	0.59	ng/L	01/11/2023 1652
PFHxS	ND		1	4.0	0.55	ng/L	01/11/2023 1652
PFBA	**2.0**	**J**	**1**	**4.0**	**0.60**	**ng/L**	**01/11/2023 1652**
PFDA	ND		1	4.0	0.52	ng/L	01/11/2023 1652
PFDoA	ND		1	4.0	0.47	ng/L	01/11/2023 1652
PFHpA	ND		1	4.0	0.45	ng/L	01/11/2023 1652
PFHxA	ND		1	4.0	0.69	ng/L	01/11/2023 1652
PFNA	ND		1	4.0	0.46	ng/L	01/11/2023 1652
PFOA	ND		1	4.0	0.83	ng/L	01/11/2023 1652
PFPeA	ND		1	4.0	0.54	ng/L	01/11/2023 1652
PFTeDA	ND		1	4.0	0.60	ng/L	01/11/2023 1652
PFTrDA	ND		1	4.0	0.53	ng/L	01/11/2023 1652
PFUdA	ND		1	4.0	0.63	ng/L	01/11/2023 1652
PFOS	ND		1	4.0	2.0	ng/L	01/11/2023 1652

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		82	25-150
13C2_6:2FTS		94	25-150
13C2_8:2FTS		73	25-150
13C2_PFDoA		81	25-150
13C2_PFTeDA		82	25-150
13C3_PFBS		82	25-150
13C3_PFHxS		90	25-150
13C3-HFPO-DA		93	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		94	25-150
13C5_PFHxA		80	25-150
13C5_PFPeA		88	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: YQ64087-001
Batch: 64087
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/04/2023 1235

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		82	25-150
13C7_PFUdA		97	25-150
13C8_PFOA		87	25-150
13C8_PFOS		89	25-150
13C8_PFOSA		87	10-150
13C9_PFNA		87	25-150
d5-EtFOSAA		84	25-150
d3-MeFOSAA		87	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS - LCS

Sample ID: YQ64087-002
Batch: 64087
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/04/2023 1235

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	16		1	105	50-150	01/11/2023 1702
11Cl-PF3OUdS	15	16		1	107	50-150	01/11/2023 1702
8:2 FTS	15	16		1	107	50-150	01/11/2023 1702
6:2 FTS	15	17		1	112	50-150	01/11/2023 1702
4:2 FTS	15	18		1	120	50-150	01/11/2023 1702
GenX	32	32		1	99	50-150	01/11/2023 1702
ADONA	15	17		1	114	50-150	01/11/2023 1702
EtFOSAA	16	19		1	120	50-150	01/11/2023 1702
MeFOSAA	16	18		1	115	50-150	01/11/2023 1702
PFBS	14	15		1	106	50-150	01/11/2023 1702
PFDS	15	15		1	97	50-150	01/11/2023 1702
PFHpS	15	16		1	102	50-150	01/11/2023 1702
PFNS	15	16		1	101	50-150	01/11/2023 1702
PFOSA	16	19		1	118	50-150	01/11/2023 1702
PFPeS	15	14		1	95	50-150	01/11/2023 1702
PFHxS	15	14		1	96	50-150	01/11/2023 1702
PFBA	16	20		1	123	50-150	01/11/2023 1702
PFDA	16	18		1	115	50-150	01/11/2023 1702
PFDoA	16	18		1	114	50-150	01/11/2023 1702
PFHpA	16	17		1	108	50-150	01/11/2023 1702
PFHxA	16	18		1	113	50-150	01/11/2023 1702
PFNA	16	17		1	108	50-150	01/11/2023 1702
PFOA	16	17		1	108	50-150	01/11/2023 1702
PFPeA	16	18		1	109	50-150	01/11/2023 1702
PFTeDA	16	18		1	110	50-150	01/11/2023 1702
PFTrDA	16	18		1	113	50-150	01/11/2023 1702
PFUdA	16	18		1	112	50-150	01/11/2023 1702
PFOS	15	15		1	98	50-150	01/11/2023 1702

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		82	25-150
13C2_6:2FTS		95	25-150
13C2_8:2FTS		77	25-150
13C2_PFDoA		79	25-150
13C2_PFTeDA		84	25-150
13C3_PFBS		89	25-150
13C3_PFHxS		87	25-150
13C3-HFPO-DA		88	25-150
13C4_PFBA		87	25-150
13C4_PFHpA		98	25-150
13C5_PFHxA		86	25-150
13C5_PFPeA		88	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: YQ64087-002
Batch: 64087
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/04/2023 1235

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		84	25-150
13C7_PFUdA		81	25-150
13C8_PFOA		83	25-150
13C8_PFOS		101	25-150
13C8_PFOSA		85	10-150
13C9_PFNA		91	25-150
d5-EtFOSAA		82	25-150
d3-MeFOSAA		86	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: YQ64959-001
Batch: 64959
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/16/2023 1340

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	0.48	ng/L	01/17/2023 2117
11Cl-PF3OUdS	ND		1	8.0	0.66	ng/L	01/17/2023 2117
8:2 FTS	ND		1	8.0	1.6	ng/L	01/17/2023 2117
6:2 FTS	ND		1	8.0	2.0	ng/L	01/17/2023 2117
4:2 FTS	ND		1	8.0	0.87	ng/L	01/17/2023 2117
GenX	ND		1	8.0	2.1	ng/L	01/17/2023 2117
ADONA	ND		1	8.0	0.48	ng/L	01/17/2023 2117
EtFOSAA	ND		1	8.0	0.75	ng/L	01/17/2023 2117
MeFOSAA	ND		1	8.0	0.93	ng/L	01/17/2023 2117
PFBS	ND		1	4.0	0.41	ng/L	01/17/2023 2117
PFDS	ND		1	4.0	0.78	ng/L	01/17/2023 2117
PFHpS	ND		1	4.0	0.50	ng/L	01/17/2023 2117
PFNS	ND		1	4.0	0.71	ng/L	01/17/2023 2117
PFOSA	ND		1	4.0	0.61	ng/L	01/17/2023 2117
PFPeS	ND		1	4.0	0.59	ng/L	01/17/2023 2117
PFHxS	ND		1	4.0	0.55	ng/L	01/17/2023 2117
PFBA	**2.6**	**J**	**1**	**4.0**	**0.60**	**ng/L**	**01/17/2023 2117**
PFDA	ND		1	4.0	0.52	ng/L	01/17/2023 2117
PFDoA	ND		1	4.0	0.47	ng/L	01/17/2023 2117
PFHpA	ND		1	4.0	0.45	ng/L	01/17/2023 2117
PFHxA	ND		1	4.0	0.69	ng/L	01/17/2023 2117
PFNA	ND		1	4.0	0.46	ng/L	01/17/2023 2117
PFOA	ND		1	4.0	0.83	ng/L	01/17/2023 2117
PFPeA	ND		1	4.0	0.54	ng/L	01/17/2023 2117
PFTeDA	ND		1	4.0	0.60	ng/L	01/17/2023 2117
PFTrDA	ND		1	4.0	0.53	ng/L	01/17/2023 2117
PFUdA	ND		1	4.0	0.63	ng/L	01/17/2023 2117
PFOS	ND		1	4.0	2.0	ng/L	01/17/2023 2117

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		102	25-150
13C2_6:2FTS		95	25-150
13C2_8:2FTS		104	25-150
13C2_PFDoA		95	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		98	25-150
13C3_PFHxS		97	25-150
13C3-HFPO-DA		96	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		96	25-150
13C5_PFHxA		96	25-150
13C5_PFPeA		100	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: YQ64959-001
Batch: 64959
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/16/2023 1340

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		99	25-150
13C7_PFUdA		91	25-150
13C8_PFOA		101	25-150
13C8_PFOS		102	25-150
13C8_PFOSA		96	10-150
13C9_PFNA		99	25-150
d5-EtFOSAA		92	25-150
d3-MeFOSAA		92	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: YQ64959-002
Batch: 64959
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/16/2023 1340

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	16		1	106	50-150	01/17/2023 2128
11Cl-PF3OUdS	15	15		1	99	50-150	01/17/2023 2128
8:2 FTS	15	17		1	113	50-150	01/17/2023 2128
6:2 FTS	15	15		1	98	50-150	01/17/2023 2128
4:2 FTS	15	17		1	112	50-150	01/17/2023 2128
GenX	32	37		1	114	50-150	01/17/2023 2128
ADONA	15	16		1	109	50-150	01/17/2023 2128
EtFOSAA	16	18		1	110	50-150	01/17/2023 2128
MeFOSAA	16	18		1	112	50-150	01/17/2023 2128
PFBS	14	14		1	101	50-150	01/17/2023 2128
PFDS	15	16		1	101	50-150	01/17/2023 2128
PFHpS	15	17		1	113	50-150	01/17/2023 2128
PFNS	15	17		1	109	50-150	01/17/2023 2128
PFOSA	16	18		1	112	50-150	01/17/2023 2128
PFPeS	15	15		1	101	50-150	01/17/2023 2128
PFHxS	15	15		1	103	50-150	01/17/2023 2128
PFBA	16	20		1	124	50-150	01/17/2023 2128
PFDA	16	17		1	108	50-150	01/17/2023 2128
PFDoA	16	17		1	109	50-150	01/17/2023 2128
PFHpA	16	18		1	113	50-150	01/17/2023 2128
PFHxA	16	18		1	111	50-150	01/17/2023 2128
PFNA	16	18		1	113	50-150	01/17/2023 2128
PFOA	16	17		1	109	50-150	01/17/2023 2128
PFPeA	16	18		1	115	50-150	01/17/2023 2128
PFTeDA	16	17		1	109	50-150	01/17/2023 2128
PFTrDA	16	15		1	95	50-150	01/17/2023 2128
PFUdA	16	18		1	113	50-150	01/17/2023 2128
PFOS	15	16		1	106	50-150	01/17/2023 2128

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		99	25-150
13C2_6:2FTS		103	25-150
13C2_8:2FTS		99	25-150
13C2_PFDoA		101	25-150
13C2_PFTeDA		93	25-150
13C3_PFBS		104	25-150
13C3_PFHxS		101	25-150
13C3-HFPO-DA		94	25-150
13C4_PFBA		98	25-150
13C4_PFHpA		93	25-150
13C5_PFHxA		103	25-150
13C5_PFPeA		98	25-150

LOQ = Limit of Quantitation
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Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: YQ64959-002
Batch: 64959
Analytical Method: PFAS by ID SOP

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 01/16/2023 1340

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		99	25-150
13C7_PFUdA		94	25-150
13C8_PFOA		101	25-150
13C8_PFOS		104	25-150
13C8_PFOSA		94	10-150
13C9_PFNA		99	25-150
d5-EtFOSAA		93	25-150
d3-MeFOSAA		94	25-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
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+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

Plant 6

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 141212

Client: Arcadis	Report to Contact: Kaitlyn Hunt	Telephone No. / E-mail: 947-777-5215 Kaitlyn.Hunt@arcadis.com	Quote No.
Address: 28550 Cabot Drive, Suite 500	Sampler's Signature: x [signature]	Analysis (Attach list if more space is needed)	Page 1 of 1
City: Novi / State: MI / Zip Code: 48377	Printed Name: Austin Westhuis		
Project Name: RACER Lansing			
Project No.: 30112892.037019	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	G=Grab C=Composite	Matrix: Aqueous	Solid	Non-Aqueous	No. of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	Other	Pres. Used	PFAS (Method 537 mod. w/ Isotope Dilution per QSM 5.1)	Remarks / Cooler I.D.
MW-22-160_121322	12/13/22	1145	G	X			2							X	
Dup-01_121322	12/13/22	—	G	X			2							X	
MW-22-158_121522	12/15/22	1145	G	X			2							X	
EB-01_121522	12/15/22	1200	G	X			2							X	

XL16048

KE52

Turn Around Time Required (Prior lab approval required for expedited TAT): X Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client X Disposal by Lab

Possible Hazard Identification: X Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

1. Relinquished by: [signature] / Austin Westhuis / Arcadis	Date: 12/15/22	Time: 1300	1. Received by: Fed Ex	Date: 12/15/22	Time: 1300
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: Fedex	Date: 12/16/22	Time: 1605	4. Laboratory received by: [signature]	Date: 12/16/22	Time: 1605

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY: Received on ice (Circle) (Yes) No Ice Pack — Receipt Temp: 3.0 °C — Temp Blank ☒Y ☐N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: Arcadis Cooler Inspected by/date: KDRW / 12/16/2022 Lot #: XL16048

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.0 / 3.0 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 8 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		11. Was adequate sample volume available?
☐ Yes	☑ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☑ Yes	☐ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote # 25329

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H2SO4, HNO3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L. (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Qualtrax ID: 56360

Pace® Analytical Services, LLC

Page 1 of 1

Report of Analysis

Arcadis U.S., Inc.
630 Plaza Drive
Suite 600
Highlands Ranch, CO 80129
Attention: Marina Samp

Project Name: RACER Lansing PFAS Delineation

Project Number: 30112892.0370B

Lot Number:**XK04068**

Date Completed:11/28/2022

11/28/2022 11:30 AM
Approved and released by:
Project Manager II: **Kathy E. Smith**

The electronic signature above is the equivalent of a handwritten signature.
This report shall not be reproduced, except in its entirety, without the written approval of Pace Analytical Services, LLC.

Pace Analytical Services, LLC (*formerly Shealy Environmental Services, Inc.*)
106 Vantage Point Drive West Columbia, SC 29172
Tel: 803-791-9700 Fax: 803-791-9111 www.pacelabs.com

Case Narrative
Arcadis U.S., Inc.
Lot Number: XK04068

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the Pace Quality Assurance Management Plan (QAMP), applicable Shealy standard operating procedures (SOPs), the 2003 NELAC standard, and Shealy policies. Additionally, the DoD QSM version 5.3 has been followed for these samples, and specifically Table B-15 was followed for all PFAS samples. Any exceptions to the QAMP, SOPs, NELAC standards, the DoD QSM, or policies are qualified on the results page or discussed below.

All QC associated with these samples were compliant with DOD QSM 5.3 table B-15 and our PFAS SOP.

Correction factors (CF) are used to calculate the original sample concentration. The CF is the inverse of the concentration factor (sample volume / extract final volume) times the dilution factor (DF). The CF is calculated as follows:

CF = DF * FV / Vo

FV is volume of extract (mL)
Vo is initial sample volume (mL)
DF is dilution factor. For undiluted analysis, DF = 1.

Sample concentration for aqueous samples:
Concentration (ng/L) = Cs*CF,

$$C_s = \frac{\left(\frac{(A_s x C_{is})}{A_{is}}\right) - B}{M1}$$

Where

C_s is on column concentration of target analyte in the sample (ng/L)
C_{is} is concentration of internal standard in the sample (ng/L)
A_s is peak response of target analyte in the sample
A_{is} is peak response of internal standard in the sample
M1 is the average RF from ICAL or the slope from linear regression ICAL
B is the y-intercept from the ICAL

Pace is a DoD/DOE accredited laboratory; however, the following analyses are currently not listed on our DoD/DOE scope of accreditation: Drinking Water: pH EPA 150.1, Turbidity EPA 18.01, Metals EPA 200.7 & 200.8, Mercury EPA 245.1, Anions EPA 300.0, Cyanide EPA 335.4, Nitrates EPA 353.2, Orthophosphate & Phosphorus EPA 365.1, EDB/DBCP EPA 504.1, HPC SIMPLATE, Color SM 2120 B-2011, Alkalinity SM 2320 B-2011, Specific Conductance SM 2510 B-2011, Residue-filterable (TDS) SM 2540 C, Calcium Hardness (CaCO2) SM 3500-Ca B-2011, TRC SM 4500 Cl G-2011, pH SM 4500 H=B-2011, E.Coli, Total Coliform; Non-Potable Water: Metals EPA 200.7, Strontium EPA 200.8, Chlorate EPA 300.0, Cyanide EPA 335.4, Phenolics EPA 420.4, 2-Methyl-4,6-Dinitrophenol EPA 625.1, Propane RSK-175, Specific Conductance SM 2510 B-2011, Salinity SM250 B, Residue- total SM 2540 B, Sulfite SM 4500 SO32- B-2011, Amenable Cyanide SM 4500-CN- G-2011, BOD & CBOD SM 5210 B, MBAS SM 5540 C-2011; Solid and Chemical Materials: Boron & Titanium SW-846 6010D, Boron, Molybdenum, & Titanium SW-846 6020B, Alcohols & Glycols SW-846 8015C, Pentachlorophenol SW-846 8151A, Ethyl Acetate, Hexane, & n-Hexane SW-846 8260D, SVOC 1,4-Dioxane, 3&4-Methylphenols, 4-Dimethyl aminoazobenzene, 1,4-Naphthoquinone, 3,5-Dinitroaniline, PETN SW-846 8270E, Amenable Cyanide SW-846 9012B; Boron & Titanium SW-846 6010D, Molybdenum SW-846 6020B, Ethylene Glycol SW-846 8015B, Pentachlorophenol SW-846 8151A, Chloroprene SW-846 8260B, SVOC 1,3,5-Trinitrobenzene, 1,4-Dioxane, 1,4-Naphthoquinone, 1,4-Phenylenediamine, 2,5-Dinitrotoluene, 2,6-Dinitrotoluene, 3-Methylcholanthrene, 4- Aminobiphenyl, 4-Dimethyl aminoazobenzene, 4-Nitroquinoline-1-oxide, 7,12- Dimethylbenzo(a)anthracene, Chlorobenzilate, Diallate, Ethyl methanesulfonate, Isodrin, Isosafrole, Methyl methanesulfonate, n-Nitrosomethylethylamine, n-Nitrosomorpholine, n-Nitrosopiperidine, Piperonyl butoxide, Pronamide, Safrole, 3,5-Dinitroaniline, PETN SW-846 8270E, Oil & Grease SW-846 9071B.

Pace is a TNI accredited laboratory; however, the following analyses are currently not listed on our TNI scope of accreditation: Drinking Water: VOC (excluding BTEX, MTBE, Naphthalene, & 1,2-dichloroethane) EPA 524.2, E. coli and Total coliforms SM 9223 B-2004, Solid Chemical Material: TOC Walkley-Black, Biological Tissue: All, Non-Potable Water: SGT-HEM EPA 1664B, Silica EPA 200.7, Boron, Calcium, Silicon, Strontium EPA 200.8, Bicarbonate, Carbonate, and Hydroxide Alkalinity SM 2320 B-2011, SM 9221 C E-2006 & SM 9222D-2006, Strontium SW-846 6010D, VOC SM 6200 B-2011, Fecal Coliform Colilert-18.

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Samples XK04068-001, XK04068-002, XK04068-004, XK04068-006, XK04068-007, XK04068-011, XK04068-012, XK04068-015, XK04068-016 required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of MeOH. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <5mL and reconstituted to 5mL using MeOH by transfer pipet.

Surrogate recovery for the following samples was outside the upper control limit: XK04068-003, XK04068-005, XK04068-006, XK04068-007, XK04068-010, XK04068-011, XK04068-012, XK04068-013, XK04068-014, XK04068-017, XK04068-018.. This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Surrogate recovery for the following samples was outside control limits: XK04068-001, XK04068-002, XK04068-004, XK04068-015, XK04068-016. Evidence of matrix interference is present and the data has been reported.

The method blank associated with batch 59545 had 6:2 FTS, PFNA, PFOA detected at a concentration that was above the MDL. All samples associated with this method blank that have detections for 6:2 FTS, PFNA, PFOA have been flagged with a "B".

Manual Integration Summary

Arcadis U.S., Inc.

Lot Number: XK04068

Project Name: RACER Lansing PFAS Delineation

Project Number: 30112892.0370B

Where applicable, analytes for which manual integration occurred have been flagged with the following:

Qualifier	Technical Justification	Qualifier	Technical Justification	Qualifier	Technical Justification
M-01	Split peak	M-07	Low fit	M-13	Error
M-02	Peak tailing	M-08	Peak not found	M-14	Baseline
M-03	Incorrect auto integration	M-09	Analyte not Identified by the Data System	M-15	Other
M-04	Poor chromatography	M-10	Analyte misidentified by the Data System	M-16	Retention time shift
M-05	Manually assigned peak	M-11	Invalid integration	M-17	Shouldering
M-06	Wrong isomer	M-12	Wrong peak		

A summary of instances where manual integration occurred is included below:

Method	Sample	Run Number	Parameter	Qualifier
PFAS by ID SOP	XK04068-001	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-001	2	Perfluoro-n-butanoic acid (PFBA)	M-03
PFAS by ID SOP	XK04068-001	2	Perfluoro-n-heptanoic acid (PFHpA)	M-03
PFAS by ID SOP	XK04068-001	2	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-001	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-001	2	Perfluoro-n-pentanoic acid (PFPeA)	M-03
PFAS by ID SOP	XK04068-001	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-002	1	4,8-dioxa-3H-perfluorononanoic acid	M-03
PFAS by ID SOP	XK04068-002	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-002	2	Perfluoro-n-butanoic acid (PFBA)	M-03
PFAS by ID SOP	XK04068-002	1	Perfluoro-n-decanoic acid (PFDA)	M-03
PFAS by ID SOP	XK04068-002	2	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-002	1	Perfluoro-n-nonanoic acid (PFNA)	M-03
PFAS by ID SOP	XK04068-002	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-003	1	1H, 1H, 2H, 2H-perfluorooctane sulfonic	M-03
PFAS by ID SOP	XK04068-003	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-003	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-003	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-003	1	Perfluoro-n-nonanoic acid (PFNA)	M-03
PFAS by ID SOP	XK04068-003	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-003	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-004	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-004	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-004	1	Perfluoro-n-decanoic acid (PFDA)	M-03
PFAS by ID SOP	XK04068-004	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-004	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-004	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-005	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-005	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-005	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-005	1	Perfluoro-n-nonanoic acid (PFNA)	M-03
PFAS by ID SOP	XK04068-005	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-005	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-006	1	N-ethylperfluoro-1-	M-03
PFAS by ID SOP	XK04068-006	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-006	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-006	1	Perfluoro-n-decanoic acid (PFDA)	M-03

Manual Integration Summary

Arcadis U.S., Inc.

Lot Number: XK04068

Project Name: RACER Lansing PFAS Delineation

Project Number: 30112892.0370B

Where applicable, analytes for which manual integration occurred have been flagged with the following:

Qualifier	Technical Justification	Qualifier	Technical Justification	Qualifier	Technical Justification
M-01	Split peak	M-07	Low fit	M-13	Error
M-02	Peak tailing	M-08	Peak not found	M-14	Baseline
M-03	Incorrect auto integration	M-09	Analyte not Identified by the Data System	M-15	Other
M-04	Poor chromatography	M-10	Analyte misidentified by the Data System	M-16	Retention time shift
M-05	Manually assigned peak	M-11	Invalid integration	M-17	Shouldering
M-06	Wrong isomer	M-12	Wrong peak		

A summary of instances where manual integration occurred is included below:

Method	Sample	Run Number	Parameter	Qualifier
PFAS by ID SOP	XK04068-006	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-006	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-006	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-006	1	13C2_PFTeDA	M-03
PFAS by ID SOP	XK04068-006	1	13C7_PFUdA	M-03
PFAS by ID SOP	XK04068-007	1	N-ethylperfluoro-1-	M-03
PFAS by ID SOP	XK04068-007	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-007	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-007	1	Perfluoro-n-butanoic acid (PFBA)	M-03
PFAS by ID SOP	XK04068-007	1	Perfluoro-n-decanoic acid (PFDA)	M-03
PFAS by ID SOP	XK04068-007	1	Perfluoro-n-nonanoic acid (PFNA)	M-03
PFAS by ID SOP	XK04068-007	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-007	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-010	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-010	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-010	1	Perfluoro-n-heptanoic acid (PFHpA)	M-03
PFAS by ID SOP	XK04068-010	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-010	1	Perfluoro-n-nonanoic acid (PFNA)	M-03
PFAS by ID SOP	XK04068-010	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-010	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-010	1	13C2_PFTeDA	M-03
PFAS by ID SOP	XK04068-011	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-011	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-011	1	Perfluoro-n-butanoic acid (PFBA)	M-03
PFAS by ID SOP	XK04068-011	1	Perfluoro-n-decanoic acid (PFDA)	M-03
PFAS by ID SOP	XK04068-011	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-011	1	Perfluoro-n-nonanoic acid (PFNA)	M-03
PFAS by ID SOP	XK04068-011	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-011	1	Perfluoro-n-pentanoic acid (PFPeA)	M-03
PFAS by ID SOP	XK04068-011	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-011	1	13C2_4:2FTS	M-03
PFAS by ID SOP	XK04068-011	1	13C3_PFBS	M-03
PFAS by ID SOP	XK04068-011	1	13C5_PFHxA	M-03
PFAS by ID SOP	XK04068-012	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-012	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-012	1	Perfluoro-n-butanoic acid (PFBA)	M-03
PFAS by ID SOP	XK04068-012	1	Perfluoro-n-heptanoic acid (PFHpA)	M-03

Manual Integration Summary

Arcadis U.S., Inc.

Lot Number: XK04068

Project Name: RACER Lansing PFAS Delineation

Project Number: 30112892.0370B

Where applicable, analytes for which manual integration occurred have been flagged with the following:

Qualifier	Technical Justification	Qualifier	Technical Justification	Qualifier	Technical Justification
M-01	Split peak	M-07	Low fit	M-13	Error
M-02	Peak tailing	M-08	Peak not found	M-14	Baseline
M-03	Incorrect auto integration	M-09	Analyte not Identified by the Data System	M-15	Other
M-04	Poor chromatography	M-10	Analyte misidentified by the Data System	M-16	Retention time shift
M-05	Manually assigned peak	M-11	Invalid integration	M-17	Shouldering
M-06	Wrong isomer	M-12	Wrong peak		

A summary of instances where manual integration occurred is included below:

Method	Sample	Run Number	Parameter	Qualifier
PFAS by ID SOP	XK04068-012	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-012	1	Perfluoro-n-nonanoic acid (PFNA)	M-03
PFAS by ID SOP	XK04068-012	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-012	1	Perfluoro-n-pentanoic acid (PFPeA)	M-03
PFAS by ID SOP	XK04068-012	1	Perfluoro-n-undecanoic acid (PFUdA)	M-03
PFAS by ID SOP	XK04068-012	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-012	1	13C2_PFTeDA	M-03
PFAS by ID SOP	XK04068-012	1	13C5_PFPeA	M-03
PFAS by ID SOP	XK04068-013	1	Perfluoro-n-decanoic acid (PFDA)	M-03
PFAS by ID SOP	XK04068-013	1	Perfluoro-n-heptanoic acid (PFHpA)	M-03
PFAS by ID SOP	XK04068-013	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-013	1	Perfluoro-n-nonanoic acid (PFNA)	M-03
PFAS by ID SOP	XK04068-013	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-013	1	Perfluoro-n-pentanoic acid (PFPeA)	M-03
PFAS by ID SOP	XK04068-013	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-013	1	13C2_6:2FTS	M-03
PFAS by ID SOP	XK04068-013	1	13C2_8:2FTS	M-03
PFAS by ID SOP	XK04068-013	1	13C3_PFBS	M-03
PFAS by ID SOP	XK04068-014	1	Perfluoro-1-octanesulfonamide (PFOSA)	M-03
PFAS by ID SOP	XK04068-014	1	Perfluoro-n-butanoic acid (PFBA)	M-03
PFAS by ID SOP	XK04068-014	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-015	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-015	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-015	1	Perfluoro-n-butanoic acid (PFBA)	M-03
PFAS by ID SOP	XK04068-015	1	Perfluoro-n-decanoic acid (PFDA)	M-03
PFAS by ID SOP	XK04068-015	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-015	1	Perfluoro-n-pentanoic acid (PFPeA)	M-03
PFAS by ID SOP	XK04068-015	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-015	1	13C2_6:2FTS	M-03
PFAS by ID SOP	XK04068-016	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-016	1	Perfluoro-n-heptanoic acid (PFHpA)	M-03
PFAS by ID SOP	XK04068-016	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-016	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-016	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-017	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-017	1	Perfluoro-n-decanoic acid (PFDA)	M-03
PFAS by ID SOP	XK04068-017	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03

Manual Integration Summary

Arcadis U.S., Inc.

Lot Number: XK04068

Project Name: RACER Lansing PFAS Delineation

Project Number: 30112892.0370B

Where applicable, analytes for which manual integration occurred have been flagged with the following:

Qualifier	Technical Justification	Qualifier	Technical Justification	Qualifier	Technical Justification
M-01	Split peak	M-07	Low fit	M-13	Error
M-02	Peak tailing	M-08	Peak not found	M-14	Baseline
M-03	Incorrect auto integration	M-09	Analyte not Identified by the Data System	M-15	Other
M-04	Poor chromatography	M-10	Analyte misidentified by the Data System	M-16	Retention time shift
M-05	Manually assigned peak	M-11	Invalid integration	M-17	Shouldering
M-06	Wrong isomer	M-12	Wrong peak		

A summary of instances where manual integration occurred is included below:

Method	Sample	Run Number	Parameter	Qualifier
PFAS by ID SOP	XK04068-017	1	Perfluoro-n-nonanoic acid (PFNA)	M-03
PFAS by ID SOP	XK04068-017	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-017	1	Perfluoro-n-pentanoic acid (PFPeA)	M-03
PFAS by ID SOP	XK04068-017	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-017	1	13C4_PFBA	M-03
PFAS by ID SOP	XK04068-018	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-018	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-018	1	Perfluoro-n-heptanoic acid (PFHpA)	M-03
PFAS by ID SOP	XK04068-018	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-018	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-018	1	Perfluoro-n-tetradecanoic acid	M-03
PFAS by ID SOP	XK04068-018	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-001MS	1	11-chloroeicosafluoro-3-oxaundecane-	M-03
PFAS by ID SOP	XQ59545-002	1	1H, 1H, 2H, 2H-perfluorodecane	M-03
PFAS by ID SOP	XQ59545-001	1	1H, 1H, 2H, 2H-perfluorooctane sulfonic	M-03
PFAS by ID SOP	XQ59545-002	1	N-ethylperfluoro-1-	M-03
PFAS by ID SOP	XQ59545-002	1	N-methylperfluoro-1-	M-03
PFAS by ID SOP	XK04068-001MS	1	N-methylperfluoro-1-	M-03
PFAS by ID SOP	XK04068-001MD	1	N-methylperfluoro-1-	M-03
PFAS by ID SOP	XQ59545-002	1	Perfluoro-1-decanesulfonic acid (PFDS)	M-03
PFAS by ID SOP	XQ59545-002	1	Perfluoro-1-heptanesulfonic acid	M-03
PFAS by ID SOP	XK04068-001MS	1	Perfluoro-1-octanesulfonamide (PFOSA)	M-03
PFAS by ID SOP	XK04068-001MD	1	Perfluoro-1-octanesulfonamide (PFOSA)	M-03
PFAS by ID SOP	XQ59545-002	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XQ60670-002	1	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-001MS	2	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XK04068-001MD	2	Perfluoro-n-hexanoic acid (PFHxA)	M-03
PFAS by ID SOP	XQ59545-001	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-001MS	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XQ59545-002	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-001MS	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-001MD	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-001MD	1	13C8_PFOSA	M-03
PFAS by ID SOP	XQ59774-002	1	11-chloroeicosafluoro-3-oxaundecane-	M-03
PFAS by ID SOP	XQ59774-002	1	1H, 1H, 2H, 2H-perfluorodecane	M-03
PFAS by ID SOP	XK04068-014MS	1	1H, 1H, 2H, 2H-perfluorodecane	M-03
PFAS by ID SOP	XK04068-014MS	1	1H, 1H, 2H, 2H-perfluorooctane sulfonic	M-03

Manual Integration Summary

Arcadis U.S., Inc.

Lot Number: XK04068

Project Name: RACER Lansing PFAS Delineation

Project Number: 30112892.0370B

Where applicable, analytes for which manual integration occurred have been flagged with the following:

Qualifier	Technical Justification	Qualifier	Technical Justification	Qualifier	Technical Justification
M-01	Split peak	M-07	Low fit	M-13	Error
M-02	Peak tailing	M-08	Peak not found	M-14	Baseline
M-03	Incorrect auto integration	M-09	Analyte not Identified by the Data System	M-15	Other
M-04	Poor chromatography	M-10	Analyte misidentified by the Data System	M-16	Retention time shift
M-05	Manually assigned peak	M-11	Invalid integration	M-17	Shouldering
M-06	Wrong isomer	M-12	Wrong peak		

A summary of instances where manual integration occurred is included below:

Method	Sample	Run Number	Parameter	Qualifier
PFAS by ID SOP	XQ59774-002	1	1H,1H,2H,2H-perfluorohexane sulfonic	M-03
PFAS by ID SOP	XQ59774-002	1	N-ethylperfluoro-1-	M-03
PFAS by ID SOP	XK04068-014MS	1	N-ethylperfluoro-1-	M-03
PFAS by ID SOP	XQ59774-002	1	N-methylperfluoro-1-	M-03
PFAS by ID SOP	XK04068-014MS	1	N-methylperfluoro-1-	M-03
PFAS by ID SOP	XQ59774-002	1	Perfluoro-1-butanesulfonic acid (PFBS)	M-03
PFAS by ID SOP	XK04068-014MS	1	Perfluoro-1-decanesulfonic acid (PFDS)	M-03
PFAS by ID SOP	XQ59774-002	1	Perfluoro-1-heptanesulfonic acid	M-03
PFAS by ID SOP	XQ59774-002	1	Perfluoro-1-octanesulfonamide (PFOSA)	M-03
PFAS by ID SOP	XK04068-014MS	1	Perfluoro-1-octanesulfonamide (PFOSA)	M-03
PFAS by ID SOP	XK04068-014MS	1	Perfluoro-1-pentanesulfonic acid	M-03
PFAS by ID SOP	XQ59774-002	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-014MS	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-018DU	1	Perfluorohexanesulfonic acid (PFHxS)	M-03
PFAS by ID SOP	XK04068-018DU	1	Perfluoro-n-octanoic acid (PFOA)	M-03
PFAS by ID SOP	XK04068-014MS	1	Perfluoro-n-pentanoic acid (PFPeA)	M-03
PFAS by ID SOP	XQ59774-002	1	Perfluoro-n-tetradecanoic acid	M-03
PFAS by ID SOP	XK04068-014MS	1	Perfluoro-n-tetradecanoic acid	M-03
PFAS by ID SOP	XK04068-014MS	1	Perfluoro-n-undecanoic acid (PFUdA)	M-03
PFAS by ID SOP	XQ59774-002	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-014MS	1	Perfluorooctanesulfonic acid (PFOS)	M-03
PFAS by ID SOP	XK04068-018DU	1	Perfluorooctanesulfonic acid (PFOS)	M-03

If you have any questions regarding this report, please contact the Pace Project Manager listed on the cover page.

Sample Summary

Arcadis U.S., Inc.

Lot Number: XK04068

Project Name: RACER Lansing PFAS Delineation

Project Number: 30112892.0370B

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MichAve-MH-3_110322	Aqueous	11/03/2022 0850	11/04/2022
002	MichAve-MH-4_110322	Aqueous	11/03/2022 0915	11/04/2022
003	Verlinden-MH-5_110322	Aqueous	11/03/2022 0935	11/04/2022
004	Verlinden-MH-4_110322	Aqueous	11/03/2022 0950	11/04/2022
005	Verlinden-MH-3_110322	Aqueous	11/03/2022 1010	11/04/2022
006	Dup-01_110322	Aqueous	11/03/2022	11/04/2022
007	Verlinden-MH-2_110322	Aqueous	11/03/2022 1025	11/04/2022
008	EB-01_110322	Aqueous	11/03/2022 1535	11/04/2022
009	FB-01_110322	Aqueous	11/03/2022 1540	11/04/2022
010	Stanley-MH-2_110322	Aqueous	11/03/2022 1120	11/04/2022
011	Stanley-MH-3_110322	Aqueous	11/03/2022 1140	11/04/2022
012	Osborn-MH-1_110322	Aqueous	11/03/2022 1200	11/04/2022
013	Osborn-CB-2_110322	Aqueous	11/03/2022 1210	11/04/2022
014	P3-MH-284_110322	Aqueous	11/03/2022 1340	11/04/2022
015	P2-MH-30_110322	Aqueous	11/03/2022 1420	11/04/2022
016	P2-MH-30-W_110322	Aqueous	11/03/2022 1430	11/04/2022
017	P2-MH-2_110322	Aqueous	11/03/2022 1445	11/04/2022
018	P2-MH-W_110322	Aqueous	11/03/2022 1520	11/04/2022

(18 samples)

Detection Summary

Arcadis U.S., Inc.

Lot Number: XK04068

Project Name: RACER Lansing PFAS Delineation

Project Number: 30112892.0370B

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MichAve-MH-3_110322	Aqueous	6:2 FTS	PFAS by ID	2.1	BJQ	ng/L	12
001	MichAve-MH-3_110322	Aqueous	PFBS	PFAS by ID	2.2	J	ng/L	12
001	MichAve-MH-3_110322	Aqueous	PFHxS	PFAS by ID	1.7	JM-03	ng/L	12
001	MichAve-MH-3_110322	Aqueous	PFBA	PFAS by ID	5.2	M-03	ng/L	12
001	MichAve-MH-3_110322	Aqueous	PFHpA	PFAS by ID	1.4	JM-03	ng/L	12
001	MichAve-MH-3_110322	Aqueous	PFHxA	PFAS by ID	1.5	JM-03	ng/L	12
001	MichAve-MH-3_110322	Aqueous	PFNA	PFAS by ID	1.1	BJ	ng/L	12
001	MichAve-MH-3_110322	Aqueous	PFOA	PFAS by ID	4.2	BM-03	ng/L	12
001	MichAve-MH-3_110322	Aqueous	PFPeA	PFAS by ID	2.5	JM-03	ng/L	12
001	MichAve-MH-3_110322	Aqueous	PFOS	PFAS by ID	2.6	JM-03	ng/L	12
002	MichAve-MH-4_110322	Aqueous	6:2 FTS	PFAS by ID	3.2	BJQ	ng/L	14
002	MichAve-MH-4_110322	Aqueous	PFBS	PFAS by ID	1.9	J	ng/L	14
002	MichAve-MH-4_110322	Aqueous	PFHxS	PFAS by ID	1.1	JM-03	ng/L	14
002	MichAve-MH-4_110322	Aqueous	PFBA	PFAS by ID	6.0	M-03	ng/L	14
002	MichAve-MH-4_110322	Aqueous	PFHpA	PFAS by ID	4.0		ng/L	14
002	MichAve-MH-4_110322	Aqueous	PFHxA	PFAS by ID	5.7	M-03	ng/L	14
002	MichAve-MH-4_110322	Aqueous	PFNA	PFAS by ID	2.1	BJM-03	ng/L	14
002	MichAve-MH-4_110322	Aqueous	PFOA	PFAS by ID	8.3	B	ng/L	14
002	MichAve-MH-4_110322	Aqueous	PFPeA	PFAS by ID	5.2		ng/L	14
002	MichAve-MH-4_110322	Aqueous	PFOS	PFAS by ID	7.2	M-03	ng/L	14
003	Verlinden-MH-5_110322	Aqueous	6:2 FTS	PFAS by ID	3.1	JM-03	ng/L	16
003	Verlinden-MH-5_110322	Aqueous	PFBS	PFAS by ID	2.4	JM-03	ng/L	16
003	Verlinden-MH-5_110322	Aqueous	PFHxS	PFAS by ID	1.0	JM-03	ng/L	16
003	Verlinden-MH-5_110322	Aqueous	PFBA	PFAS by ID	11		ng/L	16
003	Verlinden-MH-5_110322	Aqueous	PFHpA	PFAS by ID	15		ng/L	16
003	Verlinden-MH-5_110322	Aqueous	PFHxA	PFAS by ID	22	M-03	ng/L	16
003	Verlinden-MH-5_110322	Aqueous	PFNA	PFAS by ID	2.1	JM-03	ng/L	16
003	Verlinden-MH-5_110322	Aqueous	PFOA	PFAS by ID	23	M-03	ng/L	16
003	Verlinden-MH-5_110322	Aqueous	PFPeA	PFAS by ID	26		ng/L	16
003	Verlinden-MH-5_110322	Aqueous	PFOS	PFAS by ID	8.0	M-03	ng/L	16
004	Verlinden-MH-4_110322	Aqueous	PFBS	PFAS by ID	5.1	M-03	ng/L	18
004	Verlinden-MH-4_110322	Aqueous	PFHxS	PFAS by ID	2.0	JM-03	ng/L	18
004	Verlinden-MH-4_110322	Aqueous	PFBA	PFAS by ID	20		ng/L	18
004	Verlinden-MH-4_110322	Aqueous	PFDA	PFAS by ID	1.3	JM-03	ng/L	18
004	Verlinden-MH-4_110322	Aqueous	PFHpA	PFAS by ID	14		ng/L	18
004	Verlinden-MH-4_110322	Aqueous	PFHxA	PFAS by ID	33	M-03	ng/L	18
004	Verlinden-MH-4_110322	Aqueous	PFNA	PFAS by ID	1.5	J	ng/L	18
004	Verlinden-MH-4_110322	Aqueous	PFOA	PFAS by ID	17	M-03	ng/L	18
004	Verlinden-MH-4_110322	Aqueous	PFPeA	PFAS by ID	45		ng/L	18
004	Verlinden-MH-4_110322	Aqueous	PFOS	PFAS by ID	11	M-03	ng/L	18
005	Verlinden-MH-3_110322	Aqueous	PFBS	PFAS by ID	6.6	M-03	ng/L	20
005	Verlinden-MH-3_110322	Aqueous	PFHxS	PFAS by ID	2.1	JM-03	ng/L	20
005	Verlinden-MH-3_110322	Aqueous	PFBA	PFAS by ID	17		ng/L	20

Detection Summary (Continued)

Lot Number: XK04068

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
005	Verlinden-MH-3_110322	Aqueous	PFHpA	PFAS by ID	16		ng/L	20
005	Verlinden-MH-3_110322	Aqueous	PFHxA	PFAS by ID	30	M-03	ng/L	20
005	Verlinden-MH-3_110322	Aqueous	PFNA	PFAS by ID	1.8	JM-03	ng/L	20
005	Verlinden-MH-3_110322	Aqueous	PFOA	PFAS by ID	18	M-03	ng/L	20
005	Verlinden-MH-3_110322	Aqueous	PFPeA	PFAS by ID	42		ng/L	20
005	Verlinden-MH-3_110322	Aqueous	PFOS	PFAS by ID	7.7	M-03	ng/L	20
006	Dup-01_110322	Aqueous	PFBS	PFAS by ID	6.9	M-03	ng/L	22
006	Dup-01_110322	Aqueous	PFHxS	PFAS by ID	2.4	JM-03	ng/L	22
006	Dup-01_110322	Aqueous	PFBA	PFAS by ID	17		ng/L	22
006	Dup-01_110322	Aqueous	PFHpA	PFAS by ID	16		ng/L	22
006	Dup-01_110322	Aqueous	PFHxA	PFAS by ID	32	M-03	ng/L	22
006	Dup-01_110322	Aqueous	PFNA	PFAS by ID	1.6	J	ng/L	22
006	Dup-01_110322	Aqueous	PFOA	PFAS by ID	19	M-03	ng/L	22
006	Dup-01_110322	Aqueous	PFPeA	PFAS by ID	43		ng/L	22
006	Dup-01_110322	Aqueous	PFOS	PFAS by ID	7.1	M-03	ng/L	22
007	Verlinden-MH-2_110322	Aqueous	PFBS	PFAS by ID	2.1	JM-03	ng/L	24
007	Verlinden-MH-2_110322	Aqueous	PFHxS	PFAS by ID	1.6	JM-03	ng/L	24
007	Verlinden-MH-2_110322	Aqueous	PFBA	PFAS by ID	14	M-03	ng/L	24
007	Verlinden-MH-2_110322	Aqueous	PFDA	PFAS by ID	1.5	JM-03	ng/L	24
007	Verlinden-MH-2_110322	Aqueous	PFHpA	PFAS by ID	14		ng/L	24
007	Verlinden-MH-2_110322	Aqueous	PFHxA	PFAS by ID	45		ng/L	24
007	Verlinden-MH-2_110322	Aqueous	PFNA	PFAS by ID	2.8	JM-03	ng/L	24
007	Verlinden-MH-2_110322	Aqueous	PFOA	PFAS by ID	21	M-03	ng/L	24
007	Verlinden-MH-2_110322	Aqueous	PFPeA	PFAS by ID	34		ng/L	24
007	Verlinden-MH-2_110322	Aqueous	PFOS	PFAS by ID	11	M-03	ng/L	24
010	Stanley-MH-2_110322	Aqueous	PFBS	PFAS by ID	1.5	JM-03	ng/L	30
010	Stanley-MH-2_110322	Aqueous	PFBA	PFAS by ID	11		ng/L	30
010	Stanley-MH-2_110322	Aqueous	PFDA	PFAS by ID	4.2		ng/L	30
010	Stanley-MH-2_110322	Aqueous	PFHpA	PFAS by ID	11	M-03	ng/L	30
010	Stanley-MH-2_110322	Aqueous	PFHxA	PFAS by ID	12	M-03	ng/L	30
010	Stanley-MH-2_110322	Aqueous	PFNA	PFAS by ID	3.8	JM-03	ng/L	30
010	Stanley-MH-2_110322	Aqueous	PFOA	PFAS by ID	26	M-03	ng/L	30
010	Stanley-MH-2_110322	Aqueous	PFPeA	PFAS by ID	12		ng/L	30
010	Stanley-MH-2_110322	Aqueous	PFOS	PFAS by ID	17	M-03	ng/L	30
011	Stanley-MH-3_110322	Aqueous	PFBS	PFAS by ID	1.8	JM-03	ng/L	32
011	Stanley-MH-3_110322	Aqueous	PFHxS	PFAS by ID	1.5	JM-03	ng/L	32
011	Stanley-MH-3_110322	Aqueous	PFBA	PFAS by ID	12	M-03	ng/L	32
011	Stanley-MH-3_110322	Aqueous	PFDA	PFAS by ID	2.4	JM-03	ng/L	32
011	Stanley-MH-3_110322	Aqueous	PFHpA	PFAS by ID	11		ng/L	32
011	Stanley-MH-3_110322	Aqueous	PFHxA	PFAS by ID	12	M-03	ng/L	32
011	Stanley-MH-3_110322	Aqueous	PFNA	PFAS by ID	3.0	JM-03	ng/L	32
011	Stanley-MH-3_110322	Aqueous	PFOA	PFAS by ID	21	M-03	ng/L	32
011	Stanley-MH-3_110322	Aqueous	PFPeA	PFAS by ID	13	M-03	ng/L	32
011	Stanley-MH-3_110322	Aqueous	PFOS	PFAS by ID	14	M-03	ng/L	32
012	Osborn-MH-1_110322	Aqueous	PFBS	PFAS by ID	1.4	JM-03	ng/L	34
012	Osborn-MH-1_110322	Aqueous	PFHxS	PFAS by ID	1.9	JM-03	ng/L	34
012	Osborn-MH-1_110322	Aqueous	PFBA	PFAS by ID	13	M-03	ng/L	34
012	Osborn-MH-1_110322	Aqueous	PFDA	PFAS by ID	4.4		ng/L	34

Detection Summary (Continued)

Lot Number: XK04068

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
012	Osborn-MH-1_110322	Aqueous	PFHpA	PFAS by ID	13	M-03	ng/L	34
012	Osborn-MH-1_110322	Aqueous	PFHxA	PFAS by ID	13	M-03	ng/L	34
012	Osborn-MH-1_110322	Aqueous	PFNA	PFAS by ID	4.0	JM-03	ng/L	34
012	Osborn-MH-1_110322	Aqueous	PFOA	PFAS by ID	26	M-03	ng/L	34
012	Osborn-MH-1_110322	Aqueous	PFPeA	PFAS by ID	13	M-03	ng/L	34
012	Osborn-MH-1_110322	Aqueous	PFOS	PFAS by ID	14	M-03	ng/L	34
013	Osborn-CB-2_110322	Aqueous	PFBA	PFAS by ID	10		ng/L	36
013	Osborn-CB-2_110322	Aqueous	PFHpA	PFAS by ID	5.1	M-03	ng/L	36
013	Osborn-CB-2_110322	Aqueous	PFHxA	PFAS by ID	7.5	M-03	ng/L	36
013	Osborn-CB-2_110322	Aqueous	PFNA	PFAS by ID	2.2	JM-03	ng/L	36
013	Osborn-CB-2_110322	Aqueous	PFOA	PFAS by ID	15	M-03	ng/L	36
013	Osborn-CB-2_110322	Aqueous	PFPeA	PFAS by ID	5.4	M-03	ng/L	36
013	Osborn-CB-2_110322	Aqueous	PFOS	PFAS by ID	12	M-03	ng/L	36
014	P3-MH-284_110322	Aqueous	PFBA	PFAS by ID	1.3	JM-03	ng/L	38
014	P3-MH-284_110322	Aqueous	PFOS	PFAS by ID	5.1	M-03	ng/L	38
015	P2-MH-30_110322	Aqueous	PFBS	PFAS by ID	3.8	JM-03	ng/L	40
015	P2-MH-30_110322	Aqueous	PFHxS	PFAS by ID	2.9	JM-03	ng/L	40
015	P2-MH-30_110322	Aqueous	PFBA	PFAS by ID	8.9	QM-03	ng/L	40
015	P2-MH-30_110322	Aqueous	PFHpA	PFAS by ID	7.0		ng/L	40
015	P2-MH-30_110322	Aqueous	PFHxA	PFAS by ID	8.8		ng/L	40
015	P2-MH-30_110322	Aqueous	PFNA	PFAS by ID	1.7	J	ng/L	40
015	P2-MH-30_110322	Aqueous	PFOA	PFAS by ID	17	M-03	ng/L	40
015	P2-MH-30_110322	Aqueous	PFPeA	PFAS by ID	7.1	M-03	ng/L	40
015	P2-MH-30_110322	Aqueous	PFOS	PFAS by ID	12	M-03	ng/L	40
016	P2-MH-30-W_110322	Aqueous	PFBS	PFAS by ID	9.3	M-03	ng/L	42
016	P2-MH-30-W_110322	Aqueous	PFHpA	PFAS by ID	1.4	JM-03	ng/L	42
016	P2-MH-30-W_110322	Aqueous	PFHxA	PFAS by ID	2.9	JM-03	ng/L	42
016	P2-MH-30-W_110322	Aqueous	PFOA	PFAS by ID	3.8	JM-03	ng/L	42
016	P2-MH-30-W_110322	Aqueous	PFOS	PFAS by ID	1.4	JM-03	ng/L	42
017	P2-MH-2_110322	Aqueous	PFBS	PFAS by ID	3.7	J	ng/L	44
017	P2-MH-2_110322	Aqueous	PFHxS	PFAS by ID	2.7	JM-03	ng/L	44
017	P2-MH-2_110322	Aqueous	PFBA	PFAS by ID	8.1		ng/L	44
017	P2-MH-2_110322	Aqueous	PFHpA	PFAS by ID	6.6		ng/L	44
017	P2-MH-2_110322	Aqueous	PFHxA	PFAS by ID	8.8	M-03	ng/L	44
017	P2-MH-2_110322	Aqueous	PFNA	PFAS by ID	1.5	JM-03	ng/L	44
017	P2-MH-2_110322	Aqueous	PFOA	PFAS by ID	15	M-03	ng/L	44
017	P2-MH-2_110322	Aqueous	PFPeA	PFAS by ID	6.1	M-03	ng/L	44
017	P2-MH-2_110322	Aqueous	PFOS	PFAS by ID	10	M-03	ng/L	44
018	P2-MH-W_110322	Aqueous	PFBS	PFAS by ID	1.1	JM-03	ng/L	46
018	P2-MH-W_110322	Aqueous	PFBA	PFAS by ID	3.7	J	ng/L	46
018	P2-MH-W_110322	Aqueous	PFOA	PFAS by ID	1.8	JM-03	ng/L	46

(132 detections)

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-001**

Description: **MichAve-MH-3_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 0850** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/16/2022 0038	BWS	11/09/2022 0908	59545
2	SOP SPE	PFAS by ID SOP QSM B-15	1	11/22/2022 2253	ALM	11/21/2022 1421	60670

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**2.1**	**BJQ**	**8.0**	**2.0**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.2**	**J**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.7**	**JM-03**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.2**	**M-03**	**4.0**	**1.0**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.4**	**JM-03**	**4.0**	**1.0**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**1.5**	**JM-03**	**4.0**	**1.0**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.1**	**BJ**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**4.2**	**BM-03**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**2.5**	**JM-03**	**4.0**	**1.0**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**2.6**	**JM-03**	**4.0**	**0.99**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	264	50-150	N	214	50-150
13C2_6:2FTS	N	195	50-150		131	50-150
13C2_8:2FTS	N	160	50-150		115	50-150
13C2_PFDoA		116	50-150		89	50-150
13C2_PFTeDA		110	50-150		62	50-150
13C3_PFBS		119	50-150		96	50-150
13C3_PFHxS		121	50-150		110	50-150
13C3-HFPO-DA		116	50-150		95	50-150
13C4_PFBA		67	50-150		72	50-150
13C4_PFHpA		131	50-150		90	50-150
13C5_PFHxA		129	50-150		108	50-150
13C5_PFPeA		121	50-150		93	50-150
13C6_PFDA		119	50-150		94	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-001**

Description: **MichAve-MH-3_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 0850** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		119	50-150		94	50-150
13C8_PFOA		132	50-150		104	50-150
13C8_PFOS		130	50-150		108	50-150
13C8_PFOSA		121	50-150		107	50-150
13C9_PFNA		138	50-150		111	50-150
d5-EtFOSAA		133	50-150		87	50-150
d3-MeFOSAA		123	50-150		95	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-002**

Description: **MichAve-MH-4_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 0915** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/16/2022 0110	BWS	11/09/2022 0908	59545
2	SOP SPE	PFAS by ID SOP QSM B-15	1	11/22/2022 2326	ALM	11/21/2022 1421	60670

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**3.2**	**BJQ**	**8.0**	**2.0**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	M-03	8.0	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.9**	**J**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.1**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**6.0**	**M-03**	**3.9**	**0.97**	**ng/L**	**2**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	M-03	4.0	1.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**4.0**		**3.9**	**0.97**	**ng/L**	**2**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**5.7**	**M-03**	**3.9**	**0.97**	**ng/L**	**2**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.1**	**BJM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**8.3**	**B**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.2**		**3.9**	**0.97**	**ng/L**	**2**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**7.2**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_4:2FTS	N	241	50-150	N	197	50-150
13C2_6:2FTS	N	167	50-150		138	50-150
13C2_8:2FTS		148	50-150		110	50-150
13C2_PFDoA		118	50-150		85	50-150
13C2_PFTeDA		108	50-150		83	50-150
13C3_PFBS		127	50-150		96	50-150
13C3_PFHxS		118	50-150		99	50-150
13C3-HFPO-DA		104	50-150		94	50-150
13C4_PFBA		71	50-150		66	50-150
13C4_PFHpA		141	50-150		87	50-150
13C5_PFHxA		126	50-150		101	50-150
13C5_PFPeA		115	50-150		93	50-150
13C6_PFDA		101	50-150		97	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-002**

Description: **MichAve-MH-4_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 0915** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits	Q	Run 2 % Recovery	Acceptance Limits
13C7_PFUdA		113	50-150		90	50-150
13C8_PFOA		137	50-150		110	50-150
13C8_PFOS		127	50-150		111	50-150
13C8_PFOSA		108	50-150		101	50-150
13C9_PFNA		145	50-150		108	50-150
d5-EtFOSAA		112	50-150		84	50-150
d3-MeFOSAA		127	50-150		90	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-003**

Description: **Verlinden-MH-5_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 0935** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2117	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**3.1**	**JM-03**	**7.9**	**2.0**	**ng/L**	**1**
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.9	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.4**	**JM-03**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.0**	**JM-03**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**15**		**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**22**	**M-03**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.1**	**JM-03**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**23**	**M-03**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**26**		**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**8.0**	**M-03**	**4.0**	**0.99**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	222	50-150
13C2_6:2FTS		146	50-150
13C2_8:2FTS		114	50-150
13C2_PFDoA		84	50-150
13C2_PFTeDA		74	50-150
13C3_PFBS		94	50-150
13C3_PFHxS		103	50-150
13C3-HFPO-DA		90	50-150
13C4_PFBA		54	50-150
13C4_PFHpA		106	50-150
13C5_PFHxA		91	50-150
13C5_PFPeA		82	50-150
13C6_PFDA		95	50-150
13C7_PFUdA		90	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-003**

Description: **Verlinden-MH-5_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 0935** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		91	50-150
13C8_PFOS		93	50-150
13C8_PFOSA		102	50-150
13C9_PFNA		90	50-150
d5-EtFOSAA		96	50-150
d3-MeFOSAA		100	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
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W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-004**

Description: **Verlinden-MH-4_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 0950** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2150	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.6	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.6	1.9	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.6	1.9	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**5.1**	**M-03**	**3.8**	**0.95**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.8	0.95	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.8	0.95	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.8	0.95	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.8	0.95	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.8	0.95	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.0**	**JM-03**	**3.8**	**0.95**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**20**		**3.8**	**0.95**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.3**	**JM-03**	**3.8**	**0.95**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.8	0.95	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**14**		**3.8**	**0.95**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**33**	**M-03**	**3.8**	**0.95**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.5**	**J**	**3.8**	**0.95**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**17**	**M-03**	**3.8**	**0.95**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**45**		**3.8**	**0.95**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	Q	3.8	0.95	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.8	0.95	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.8	0.95	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**11**	**M-03**	**3.8**	**0.95**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	226	50-150
13C2_6:2FTS	N	156	50-150
13C2_8:2FTS		129	50-150
13C2_PFDoA		74	50-150
13C2_PFTeDA	N	24	50-150
13C3_PFBS		91	50-150
13C3_PFHxS		101	50-150
13C3-HFPO-DA		86	50-150
13C4_PFBA		62	50-150
13C4_PFHpA		103	50-150
13C5_PFHxA		91	50-150
13C5_PFPeA		83	50-150
13C6_PFDA		97	50-150
13C7_PFUdA		87	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-004**

Description: **Verlinden-MH-4_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 0950** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		92	50-150
13C8_PFOS		93	50-150
13C8_PFOSA		96	50-150
13C9_PFNA		92	50-150
d5-EtFOSAA		93	50-150
d3-MeFOSAA		101	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-005**

Description: **Verlinden-MH-3_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1010** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2201	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.4	2.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.4	2.1	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**6.6**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.1**	**JM-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**17**		**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**16**		**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**30**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.8**	**JM-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**18**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**42**		**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**7.7**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	228	50-150
13C2_6:2FTS	N	163	50-150
13C2_8:2FTS		126	50-150
13C2_PFDoA		87	50-150
13C2_PFTeDA		78	50-150
13C3_PFBS		95	50-150
13C3_PFHxS		107	50-150
13C3-HFPO-DA		92	50-150
13C4_PFBA		65	50-150
13C4_PFHpA		108	50-150
13C5_PFHxA		95	50-150
13C5_PFPeA		86	50-150
13C6_PFDA		101	50-150
13C7_PFUdA		96	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-005**

Description: **Verlinden-MH-3_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1010** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	50-150
13C8_PFOS		99	50-150
13C8_PFOSA		111	50-150
13C9_PFNA		94	50-150
d5-EtFOSAA		102	50-150
d3-MeFOSAA		106	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-006**

Description: **Dup-01_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2212	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.4	2.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.4	2.1	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	M-03	8.4	2.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**6.9**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.4**	**JM-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**17**		**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	M-03	4.2	1.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**16**		**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**32**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.6**	**J**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**19**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**43**		**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**7.1**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	210	50-150
13C2_6:2FTS	N	156	50-150
13C2_8:2FTS		118	50-150
13C2_PFDoA		82	50-150
13C2_PFTeDA	M-03	62	50-150
13C3_PFBS		93	50-150
13C3_PFHxS		96	50-150
13C3-HFPO-DA		85	50-150
13C4_PFBA		59	50-150
13C4_PFHpA		104	50-150
13C5_PFHxA		89	50-150
13C5_PFPeA		83	50-150
13C6_PFDA		103	50-150
13C7_PFUdA	M-03	95	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-006**

Description: **Dup-01_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		94	50-150
13C8_PFOS		96	50-150
13C8_PFOSA		104	50-150
13C9_PFNA		90	50-150
d5-EtFOSAA		96	50-150
d3-MeFOSAA		103	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-007**

Description: **Verlinden-MH-2_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1025** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2223	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND	M-03	8.0	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**2.1**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.6**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**14**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**1.5**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**14**		**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**45**		**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.8**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**21**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**34**		**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**11**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	242	50-150
13C2_6:2FTS	N	161	50-150
13C2_8:2FTS		138	50-150
13C2_PFDoA		90	50-150
13C2_PFTeDA		51	50-150
13C3_PFBS		100	50-150
13C3_PFHxS		108	50-150
13C3-HFPO-DA		93	50-150
13C4_PFBA		61	50-150
13C4_PFHpA		114	50-150
13C5_PFHxA		97	50-150
13C5_PFPeA		86	50-150
13C6_PFDA		106	50-150
13C7_PFUdA		96	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-007**

Description: **Verlinden-MH-2_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1025** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		98	50-150
13C8_PFOS		100	50-150
13C8_PFOSA		110	50-150
13C9_PFNA		97	50-150
d5-EtFOSAA		105	50-150
d3-MeFOSAA		110	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-008**

Description: **EB-01_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1535** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2234	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.5	1.9	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		3.7	0.94	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		3.7	0.94	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		106	50-150
13C2_6:2FTS		115	50-150
13C2_8:2FTS		104	50-150
13C2_PFDoA		86	50-150
13C2_PFTeDA		77	50-150
13C3_PFBS		100	50-150
13C3_PFHxS		100	50-150
13C3-HFPO-DA		100	50-150
13C4_PFBA		72	50-150
13C4_PFHpA		100	50-150
13C5_PFHxA		91	50-150
13C5_PFPeA		99	50-150
13C6_PFDA		96	50-150
13C7_PFUdA		94	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-008**

Description: **EB-01_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1535** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		96	50-150
13C8_PFOS		93	50-150
13C8_PFOSA		97	50-150
13C9_PFNA		85	50-150
d5-EtFOSAA		101	50-150
d3-MeFOSAA		101	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
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Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-009**

Description: **FB-01_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1540** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2245	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.3	2.1	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.3	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.3	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.3	2.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.3	2.1	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.3	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.3	2.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.3	2.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.3	2.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		100	50-150
13C2_6:2FTS		127	50-150
13C2_8:2FTS		106	50-150
13C2_PFDoA		87	50-150
13C2_PFTeDA		76	50-150
13C3_PFBS		96	50-150
13C3_PFHxS		98	50-150
13C3-HFPO-DA		97	50-150
13C4_PFBA		93	50-150
13C4_PFHpA		100	50-150
13C5_PFHxA		89	50-150
13C5_PFPeA		96	50-150
13C6_PFDA		96	50-150
13C7_PFUdA		86	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
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Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
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W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-009**

Description: **FB-01_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1540** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		96	50-150
13C8_PFOS		89	50-150
13C8_PFOSA		100	50-150
13C9_PFNA		85	50-150
d5-EtFOSAA		97	50-150
d3-MeFOSAA		97	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-010**

Description: **Stanley-MH-2_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1120** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2256	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.5**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND	M-03	4.0	1.0	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**11**		**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**4.2**		**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**11**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**12**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**3.8**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**26**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**12**		**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**17**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	276	50-150
13C2_6:2FTS	N	217	50-150
13C2_8:2FTS	N	152	50-150
13C2_PFDoA		97	50-150
13C2_PFTeDA	M-03	86	50-150
13C3_PFBS		99	50-150
13C3_PFHxS		108	50-150
13C3-HFPO-DA		89	50-150
13C4_PFBA		58	50-150
13C4_PFHpA		114	50-150
13C5_PFHxA		97	50-150
13C5_PFPeA		81	50-150
13C6_PFDA		111	50-150
13C7_PFUdA		107	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-010**

Description: **Stanley-MH-2_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1120** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		101	50-150
13C8_PFOS		103	50-150
13C8_PFOSA		117	50-150
13C9_PFNA		102	50-150
d5-EtFOSAA		119	50-150
d3-MeFOSAA		118	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
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106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-011**

Description: **Stanley-MH-3_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1140** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2307	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.4	2.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.4	2.1	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.8**	**JM-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.5**	**JM-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**12**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**2.4**	**JM-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**11**		**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**12**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**3.0**	**JM-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**21**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**13**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**14**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	M-03N	267	50-150
13C2_6:2FTS	N	196	50-150
13C2_8:2FTS		146	50-150
13C2_PFDoA		84	50-150
13C2_PFTeDA		56	50-150
13C3_PFBS	M-03	95	50-150
13C3_PFHxS		97	50-150
13C3-HFPO-DA		87	50-150
13C4_PFBA		54	50-150
13C4_PFHpA		107	50-150
13C5_PFHxA	M-03	90	50-150
13C5_PFPeA		78	50-150
13C6_PFDA		105	50-150
13C7_PFUdA		96	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-011**

Description: **Stanley-MH-3_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1140** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		98	50-150
13C8_PFOS		98	50-150
13C8_PFOSA		102	50-150
13C9_PFNA		93	50-150
d5-EtFOSAA		103	50-150
d3-MeFOSAA		109	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
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ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-012**

Description: **Osborn-MH-1_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1200** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2318	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	8.1	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.1	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.1	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.4**	**JM-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**1.9**	**JM-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**13**	**M-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**4.4**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**13**	**M-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**13**	**M-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**4.0**	**JM-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**26**	**M-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**13**	**M-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND	M-03	4.1	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**14**	**M-03**	**4.1**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	276	50-150
13C2_6:2FTS	N	213	50-150
13C2_8:2FTS	N	163	50-150
13C2_PFDoA		96	50-150
13C2_PFTeDA	M-03	73	50-150
13C3_PFBS		95	50-150
13C3_PFHxS		104	50-150
13C3-HFPO-DA		86	50-150
13C4_PFBA		52	50-150
13C4_PFHpA		107	50-150
13C5_PFHxA		93	50-150
13C5_PFPeA	M-03	81	50-150
13C6_PFDA		112	50-150
13C7_PFUdA		99	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
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ND = Not detected at or above the DL
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-012**

Description: **Osborn-MH-1_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1200** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		101	50-150
13C8_PFOS		102	50-150
13C8_PFOSA		116	50-150
13C9_PFNA		101	50-150
d5-EtFOSAA		118	50-150
d3-MeFOSAA		118	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-013**

Description: **Osborn-CB-2_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1210** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/14/2022 2329	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.4	2.1	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.4	2.1	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**10**		**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	M-03	4.2	1.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**5.1**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**7.5**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**2.2**	**JM-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**15**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**5.4**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.2	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**12**	**M-03**	**4.2**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	164	50-150
13C2_6:2FTS	M-03	123	50-150
13C2_8:2FTS	M-03	105	50-150
13C2_PFDoA		86	50-150
13C2_PFTeDA		78	50-150
13C3_PFBS	M-03	100	50-150
13C3_PFHxS		99	50-150
13C3-HFPO-DA		99	50-150
13C4_PFBA		76	50-150
13C4_PFHpA		102	50-150
13C5_PFHxA		93	50-150
13C5_PFPeA		96	50-150
13C6_PFDA		97	50-150
13C7_PFUdA		93	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-013**

Description: **Osborn-CB-2_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1210** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		95	50-150
13C8_PFOS		93	50-150
13C8_PFOSA		106	50-150
13C9_PFNA		88	50-150
d5-EtFOSAA		96	50-150
d3-MeFOSAA		105	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-014**

Description: **P3-MH-284_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1340** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/15/2022 0003	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.9	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	M-03	4.0	0.99	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**1.3**	**JM-03**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	335-67-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**5.1**	**M-03**	**4.0**	**0.99**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	243	50-150
13C2_6:2FTS	N	156	50-150
13C2_8:2FTS		109	50-150
13C2_PFDoA		86	50-150
13C2_PFTeDA		82	50-150
13C3_PFBS		93	50-150
13C3_PFHxS		96	50-150
13C3-HFPO-DA		88	50-150
13C4_PFBA		56	50-150
13C4_PFHpA		103	50-150
13C5_PFHxA		92	50-150
13C5_PFPeA		82	50-150
13C6_PFDA		96	50-150
13C7_PFUdA		94	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-014**

Description: **P3-MH-284_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1340** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		91	50-150
13C8_PFOS		92	50-150
13C8_PFOSA		101	50-150
13C9_PFNA		89	50-150
d5-EtFOSAA		98	50-150
d3-MeFOSAA		95	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-015**

Description: **P2-MH-30_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1420** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/15/2022 0025	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	8.1	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.1	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.1	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.1	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.8**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.9**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.9**	**QM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	M-03	4.0	1.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**7.0**		**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**8.8**		**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.7**	**J**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**17**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**7.1**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**12**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	275	50-150
13C2_6:2FTS	M-03N	239	50-150
13C2_8:2FTS	N	170	50-150
13C2_PFDoA		92	50-150
13C2_PFTeDA		75	50-150
13C3_PFBS		88	50-150
13C3_PFHxS		97	50-150
13C3-HFPO-DA		79	50-150
13C4_PFBA	N	46	50-150
13C4_PFHpA		102	50-150
13C5_PFHxA		83	50-150
13C5_PFPeA		69	50-150
13C6_PFDA		110	50-150
13C7_PFUdA		102	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-015**

Description: **P2-MH-30_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1420** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		97	50-150
13C8_PFOS		96	50-150
13C8_PFOSA		109	50-150
13C9_PFNA		97	50-150
d5-EtFOSAA		107	50-150
d3-MeFOSAA		114	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-016**

Description: **P2-MH-30-W_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1430** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/15/2022 0036	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.0	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.0	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**9.3**	**M-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND	Q	4.0	1.0	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**1.4**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**2.9**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**3.8**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**1.4**	**JM-03**	**4.0**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	277	50-150
13C2_6:2FTS	N	304	50-150
13C2_8:2FTS	N	245	50-150
13C2_PFDoA		92	50-150
13C2_PFTeDA		53	50-150
13C3_PFBS		84	50-150
13C3_PFHxS		93	50-150
13C3-HFPO-DA		76	50-150
13C4_PFBA	N	35	50-150
13C4_PFHpA		100	50-150
13C5_PFHxA		79	50-150
13C5_PFPeA		63	50-150
13C6_PFDA		121	50-150
13C7_PFUdA		110	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-016**

Description: **P2-MH-30-W_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1430** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		102	50-150
13C8_PFOS		99	50-150
13C8_PFOSA		106	50-150
13C9_PFNA		101	50-150
d5-EtFOSAA		124	50-150
d3-MeFOSAA		125	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-017**

Description: **P2-MH-2_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1445** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/15/2022 0047	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.2	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.2	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND	Q	8.2	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND	Q	8.2	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	8.2	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		8.2	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		8.2	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		8.2	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		8.2	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**3.7**	**J**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**2.7**	**JM-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**8.1**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND	M-03	4.1	1.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**6.6**		**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**8.8**	**M-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**1.5**	**JM-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**15**	**M-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**6.1**	**M-03**	**4.1**	**1.0**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.1	1.0	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**10**	**M-03**	**4.1**	**1.0**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	294	50-150
13C2_6:2FTS	N	238	50-150
13C2_8:2FTS	N	168	50-150
13C2_PFDoA		98	50-150
13C2_PFTeDA		87	50-150
13C3_PFBS		99	50-150
13C3_PFHxS		106	50-150
13C3-HFPO-DA		86	50-150
13C4_PFBA	M-03	51	50-150
13C4_PFHpA		106	50-150
13C5_PFHxA		90	50-150
13C5_PFPeA		78	50-150
13C6_PFDA		114	50-150
13C7_PFUdA		104	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.**
Laboratory ID: **XK04068-017**
Description: **P2-MH-2_110322**
Matrix: **Aqueous**
Date Sampled: **11/03/2022 1445**
Project Name: **RACER Lansing PFAS**
Date Received: **11/04/2022**
Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		105	50-150
13C8_PFOS		102	50-150
13C8_PFOSA		118	50-150
13C9_PFNA		105	50-150
d5-EtFOSAA		114	50-150
d3-MeFOSAA		124	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
J = Estimated result < LOQ and ≥ DL
Q = Surrogate failure
L = LCS/LCSD failure
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PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-018**

Description: **P2-MH-W_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1520** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	11/15/2022 0058	ALM	11/11/2022 0752	59774

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	DL	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.9	2.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	ND		7.9	2.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**1.1**	**JM-03**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-heptanesulfonic acid (PFHpS)	375-92-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-1-pentanesulfonic acid (PFPeS)	2706-91-4	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND	M-03	4.0	0.99	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**3.7**	**J**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND	M-03	4.0	0.99	ng/L	1
Perfluoro-n-hexanoic acid (PFHxA)	307-24-4	PFAS by ID SOP	ND	M-03	4.0	0.99	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**1.8**	**JM-03**	**4.0**	**0.99**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	ND	M-03	4.0	0.99	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	ND		4.0	0.99	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	PFAS by ID SOP	ND	M-03	4.0	0.99	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	177	50-150
13C2_6:2FTS		132	50-150
13C2_8:2FTS		109	50-150
13C2_PFDoA		87	50-150
13C2_PFTeDA		87	50-150
13C3_PFBS		102	50-150
13C3_PFHxS		108	50-150
13C3-HFPO-DA		99	50-150
13C4_PFBA		52	50-150
13C4_PFHpA		104	50-150
13C5_PFHxA		94	50-150
13C5_PFPeA		88	50-150
13C6_PFDA		96	50-150
13C7_PFUdA		95	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
ND = Not detected at or above the DL
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **XK04068-018**

Description: **P2-MH-W_110322** Matrix: **Aqueous**

Date Sampled: **11/03/2022 1520** Project Name: **RACER Lansing PFAS**

Date Received: **11/04/2022** Project Number: **30112892.0370B**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C8_PFOA		100	50-150
13C8_PFOS		93	50-150
13C8_PFOSA		103	50-150
13C9_PFNA		87	50-150
d5-EtFOSAA		95	50-150
d3-MeFOSAA		98	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the DL
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
DL = Detection Limit
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QC Summary

PFAS by LC/MS/MS - MB

Sample ID: XQ59545-001
Batch: 59545
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/09/2022 0908

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	2.0	ng/L	11/16/2022 1350
11Cl-PF3OUdS	ND		1	8.0	2.0	ng/L	11/16/2022 1350
8:2 FTS	ND		1	8.0	2.0	ng/L	11/16/2022 1350
6:2 FTS	**38**	**M-03**	**1**	**8.0**	**2.0**	**ng/L**	**11/16/2022 1350**
4:2 FTS	ND		1	8.0	2.0	ng/L	11/16/2022 1350
GenX	ND		1	8.0	2.0	ng/L	11/16/2022 1350
ADONA	ND		1	8.0	2.0	ng/L	11/16/2022 1350
EtFOSAA	ND		1	8.0	2.0	ng/L	11/16/2022 1350
MeFOSAA	ND		1	8.0	2.0	ng/L	11/16/2022 1350
PFBS	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFDS	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFHpS	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFNS	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFOSA	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFPeS	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFHxS	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFDA	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFDoA	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFNA	**1.1**	**J**	**1**	**4.0**	**1.0**	**ng/L**	**11/16/2022 1350**
PFOA	**1.6**	**JM-03**	**1**	**4.0**	**1.0**	**ng/L**	**11/16/2022 1350**
PFTeDA	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFTrDA	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFUdA	ND		1	4.0	1.0	ng/L	11/16/2022 1350
PFOS	ND		1	4.0	1.0	ng/L	11/16/2022 1350

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		113	50-150
13C2_6:2FTS		101	50-150
13C2_8:2FTS		75	50-150
13C2_PFDoA		94	50-150
13C2_PFTeDA		94	50-150
13C3_PFBS		97	50-150
13C3_PFHxS		89	50-150
13C3-HFPO-DA		97	50-150
13C4_PFBA		99	50-150
13C4_PFHpA		100	50-150
13C5_PFHxA		102	50-150
13C5_PFPeA		93	50-150
13C6_PFDA		96	50-150
13C7_PFUdA		109	50-150
13C8_PFOA		100	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ59545-001
Batch: 59545
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/09/2022 0908

Surrogate	Q	% Rec	Acceptance Limit
13C8_PFOS		96	50-150
13C8_PFOSA		104	50-150
13C9_PFNA		107	50-150
d5-EtFOSAA		95	50-150
d3-MeFOSAA		95	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59545-002
Batch: 59545
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/09/2022 0908

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	13		1	89	50-150	11/15/2022 2302
11Cl-PF3OUdS	15	13		1	88	50-150	11/15/2022 2302
8:2 FTS	15	13	M-03	1	88	67-138	11/15/2022 2302
6:2 FTS	15	19		1	123	64-140	11/15/2022 2302
4:2 FTS	15	17		1	111	63-143	11/15/2022 2302
GenX	32	36		1	113	50-150	11/15/2022 2302
ADONA	15	14		1	90	50-150	11/15/2022 2302
EtFOSAA	16	17	M-03	1	103	61-135	11/15/2022 2302
MeFOSAA	16	14	M-03	1	88	65-136	11/15/2022 2302
PFBS	14	16		1	112	72-130	11/15/2022 2302
PFDS	15	14	M-03	1	90	53-142	11/15/2022 2302
PFHpS	15	13	M-03	1	87	69-134	11/15/2022 2302
PFNS	15	13		1	87	69-127	11/15/2022 2302
PFOSA	16	16		1	100	67-137	11/15/2022 2302
PFPeS	15	14		1	95	71-127	11/15/2022 2302
PFHxS	15	14	M-03	1	93	68-131	11/15/2022 2302
PFDA	16	15		1	94	71-129	11/15/2022 2302
PFDoA	16	16		1	101	72-134	11/15/2022 2302
PFNA	16	15		1	94	69-130	11/15/2022 2302
PFOA	16	16		1	101	71-133	11/15/2022 2302
PFTeDA	16	15		1	96	71-132	11/15/2022 2302
PFTrDA	16	14		1	90	65-144	11/15/2022 2302
PFUdA	16	15		1	95	69-133	11/15/2022 2302
PFOS	15	13	M-03	1	91	65-140	11/15/2022 2302

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		103	50-150
13C2_6:2FTS		119	50-150
13C2_8:2FTS		130	50-150
13C2_PFDoA		110	50-150
13C2_PFTeDA		111	50-150
13C3_PFBS		114	50-150
13C3_PFHxS		123	50-150
13C3-HFPO-DA		115	50-150
13C4_PFBA		120	50-150
13C4_PFHpA		147	50-150
13C5_PFHxA		121	50-150
13C5_PFPeA		120	50-150
13C6_PFDA		97	50-150
13C7_PFUdA		106	50-150
13C8_PFOA		140	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59545-002
Batch: 59545
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/09/2022 0908

Surrogate	Q	% Rec	Acceptance Limit
13C8_PFOS		119	50-150
13C8_PFOSA		108	50-150
13C9_PFNA		128	50-150
d5-EtFOSAA		107	50-150
d3-MeFOSAA		113	50-150

LOQ = Limit of Quantitation
DL = Detection Limit

ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria

N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK04068-001MS
Batch: 59545
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/09/2022 0908

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	14	14		1	97	50-150	11/16/2022 0048
11Cl-PF3OUdS	ND	15	13	M-03	1	91	50-150	11/16/2022 0048
8:2 FTS	ND	15	15		1	100	67-138	11/16/2022 0048
6:2 FTS	2.1	15	15		1	90	64-140	11/16/2022 0048
4:2 FTS	ND	15	15		1	103	63-143	11/16/2022 0048
GenX	ND	31	40		1	127	50-150	11/16/2022 0048
ADONA	ND	15	15		1	103	50-150	11/16/2022 0048
EtFOSAA	ND	16	15		1	97	61-135	11/16/2022 0048
MeFOSAA	ND	16	12	M-03	1	78	65-136	11/16/2022 0048
PFBS	2.2	14	16		1	99	72-130	11/16/2022 0048
PFDS	ND	15	14		1	95	53-142	11/16/2022 0048
PFHpS	ND	15	15		1	99	69-134	11/16/2022 0048
PFNS	ND	15	14		1	96	69-127	11/16/2022 0048
PFOSA	ND	16	18	M-03	1	118	67-137	11/16/2022 0048
PFPeS	ND	15	15		1	103	71-127	11/16/2022 0048
PFHxS	1.7	14	15		1	95	68-131	11/16/2022 0048
PFDA	ND	16	16		1	101	71-129	11/16/2022 0048
PFDoA	ND	16	16		1	104	72-134	11/16/2022 0048
PFNA	1.1	16	15		1	89	69-130	11/16/2022 0048
PFOA	4.2	16	18	M-03	1	88	71-133	11/16/2022 0048
PFTeDA	ND	16	16		1	100	71-132	11/16/2022 0048
PFTrDA	ND	16	14		1	88	65-144	11/16/2022 0048
PFUdA	ND	16	15		1	95	69-133	11/16/2022 0048
PFOS	2.6	14	17	M-03	1	99	65-140	11/16/2022 0048

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	224	50-150
13C2_6:2FTS	N	173	50-150
13C2_8:2FTS		142	50-150
13C2_PFDoA		124	50-150
13C2_PFTeDA		105	50-150
13C3_PFBS		110	50-150
13C3_PFHxS		114	50-150
13C3-HFPO-DA		91	50-150
13C4_PFBA		61	50-150
13C4_PFHpA		121	50-150
13C5_PFHxA		114	50-150
13C5_PFPeA		97	50-150
13C6_PFDA		101	50-150
13C7_PFUdA		118	50-150
13C8_PFOA		135	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK04068-001MS
Batch: 59545
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/09/2022 0908

Surrogate	Q	% Rec	Acceptance Limit
13C8_PFOS		120	50-150
13C8_PFOSA		103	50-150
13C9_PFNA		130	50-150
d5-EtFOSAA		107	50-150
d3-MeFOSAA		136	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XK04068-001MD
Batch: 59545
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/09/2022 0908

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
9Cl-PF3ONS	ND	15	15		1	97	5.0	50-150	30	11/16/2022 0059
11Cl-PF3OUdS	ND	15	12		1	79	8.9	50-150	30	11/16/2022 0059
8:2 FTS	ND	16	14		1	89	6.7	67-138	30	11/16/2022 0059
6:2 FTS	2.1	15	18		1	105	17	64-140	30	11/16/2022 0059
4:2 FTS	ND	15	16		1	102	4.2	63-143	30	11/16/2022 0059
GenX	ND	33	38		1	117	4.1	50-150	30	11/16/2022 0059
ADONA	ND	15	18		1	119	19	50-150	30	11/16/2022 0059
EtFOSAA	ND	16	15		1	94	1.5	61-135	30	11/16/2022 0059
MeFOSAA	ND	16	14	M-03	1	87	16	65-136	30	11/16/2022 0059
PFBS	2.2	14	16		1	96	1.1	72-130	30	11/16/2022 0059
PFDS	ND	16	13		1	80	13	53-142	30	11/16/2022 0059
PFHpS	ND	16	14		1	93	1.3	69-134	30	11/16/2022 0059
PFNS	ND	16	15		1	95	4.4	69-127	30	11/16/2022 0059
PFOSA	ND	16	16	M-03	1	97	15	67-137	30	11/16/2022 0059
PFPeS	ND	15	15		1	99	0.84	71-127	30	11/16/2022 0059
PFHxS	1.7	15	16		1	95	4.9	68-131	30	11/16/2022 0059
PFDA	ND	16	14		1	84	15	71-129	30	11/16/2022 0059
PFDoA	ND	16	15		1	91	8.6	72-134	30	11/16/2022 0059
PFNA	1.1	16	13		1	75	12	69-130	30	11/16/2022 0059
PFOA	4.2	16	19		1	91	5.5	71-133	30	11/16/2022 0059
PFTeDA	ND	16	16		1	97	1.7	71-132	30	11/16/2022 0059
PFTrDA	ND	16	14		1	88	3.5	65-144	30	11/16/2022 0059
PFUdA	ND	16	15		1	93	2.8	69-133	30	11/16/2022 0059
PFOS	2.6	15	19	M-03	1	110	13	65-140	30	11/16/2022 0059

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	229	50-150
13C2_6:2FTS	N	175	50-150
13C2_8:2FTS		139	50-150
13C2_PFDoA		105	50-150
13C2_PFTeDA		93	50-150
13C3_PFBS		108	50-150
13C3_PFHxS		117	50-150
13C3-HFPO-DA		102	50-150
13C4_PFBA		68	50-150
13C4_PFHpA		131	50-150
13C5_PFHxA		117	50-150
13C5_PFPeA		105	50-150
13C6_PFDA		99	50-150
13C7_PFUdA		106	50-150
13C8_PFOA		124	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XK04068-001MD
Batch: 59545
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/09/2022 0908

Surrogate	Q	% Rec	Acceptance Limit
13C8_PFOS		112	50-150
13C8_PFOSA	M-03	115	50-150
13C9_PFNA		143	50-150
d5-EtFOSAA		101	50-150
d3-MeFOSAA		115	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ59774-001
Batch: 59774
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0752

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	2.0	ng/L	11/14/2022 2010
11Cl-PF3OUdS	ND		1	8.0	2.0	ng/L	11/14/2022 2010
8:2 FTS	ND		1	8.0	2.0	ng/L	11/14/2022 2010
6:2 FTS	ND		1	8.0	2.0	ng/L	11/14/2022 2010
4:2 FTS	ND		1	8.0	2.0	ng/L	11/14/2022 2010
GenX	ND		1	8.0	2.0	ng/L	11/14/2022 2010
ADONA	ND		1	8.0	2.0	ng/L	11/14/2022 2010
EtFOSAA	ND		1	8.0	2.0	ng/L	11/14/2022 2010
MeFOSAA	ND		1	8.0	2.0	ng/L	11/14/2022 2010
PFBS	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFDS	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFHpS	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFNS	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFOSA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFPeS	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFHxS	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFBA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFDA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFDoA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFHpA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFHxA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFNA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFOA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFPeA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFTeDA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFTrDA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFUdA	ND		1	4.0	1.0	ng/L	11/14/2022 2010
PFOS	ND		1	4.0	1.0	ng/L	11/14/2022 2010

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		102	50-150
13C2_6:2FTS		100	50-150
13C2_8:2FTS		102	50-150
13C2_PFDoA		85	50-150
13C2_PFTeDA		82	50-150
13C3_PFBS		93	50-150
13C3_PFHxS		96	50-150
13C3-HFPO-DA		94	50-150
13C4_PFBA		92	50-150
13C4_PFHpA		97	50-150
13C5_PFHxA		88	50-150
13C5_PFPeA		91	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ59774-001
Batch: 59774
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0752

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		93	50-150
13C7_PFUdA		89	50-150
13C8_PFOA		91	50-150
13C8_PFOS		92	50-150
13C8_PFOSA		97	50-150
13C9_PFNA		84	50-150
d5-EtFOSAA		92	50-150
d3-MeFOSAA		92	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59774-002
Batch: 59774
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0752

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	15	15		1	103	50-150	11/14/2022 2021
11Cl-PF3OUdS	15	15	M-03	1	97	50-150	11/14/2022 2021
8:2 FTS	15	17	M-03	1	109	67-138	11/14/2022 2021
6:2 FTS	15	17		1	112	64-140	11/14/2022 2021
4:2 FTS	15	15	M-03	1	102	63-143	11/14/2022 2021
GenX	32	32		1	99	50-150	11/14/2022 2021
ADONA	15	17		1	112	50-150	11/14/2022 2021
EtFOSAA	16	16	M-03	1	99	61-135	11/14/2022 2021
MeFOSAA	16	16	M-03	1	99	65-136	11/14/2022 2021
PFBS	14	15	M-03	1	103	72-130	11/14/2022 2021
PFDS	15	15		1	95	53-142	11/14/2022 2021
PFHpS	15	16	M-03	1	103	69-134	11/14/2022 2021
PFNS	15	14		1	88	69-127	11/14/2022 2021
PFOSA	16	16	M-03	1	99	67-137	11/14/2022 2021
PFPeS	15	16		1	108	71-127	11/14/2022 2021
PFHxS	15	15	M-03	1	103	68-131	11/14/2022 2021
PFBA	16	16		1	101	73-129	11/14/2022 2021
PFDA	16	16		1	102	71-129	11/14/2022 2021
PFDoA	16	16		1	100	72-134	11/14/2022 2021
PFHpA	16	15		1	96	72-130	11/14/2022 2021
PFHxA	16	16		1	98	72-129	11/14/2022 2021
PFNA	16	16		1	98	69-130	11/14/2022 2021
PFOA	16	16		1	98	71-133	11/14/2022 2021
PFPeA	16	17		1	105	72-129	11/14/2022 2021
PFTeDA	16	16	M-03	1	102	71-132	11/14/2022 2021
PFTrDA	16	15		1	93	65-144	11/14/2022 2021
PFUdA	16	17		1	105	69-133	11/14/2022 2021
PFOS	15	15	M-03	1	103	65-140	11/14/2022 2021

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		99	50-150
13C2_6:2FTS		97	50-150
13C2_8:2FTS		102	50-150
13C2_PFDoA		86	50-150
13C2_PFTeDA		84	50-150
13C3_PFBS		94	50-150
13C3_PFHxS		92	50-150
13C3-HFPO-DA		96	50-150
13C4_PFBA		92	50-150
13C4_PFHpA		96	50-150
13C5_PFHxA		89	50-150
13C5_PFPeA		92	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ59774-002
Batch: 59774
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0752

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		92	50-150
13C7_PFUdA		88	50-150
13C8_PFOA		89	50-150
13C8_PFOS		91	50-150
13C8_PFOSA		102	50-150
13C9_PFNA		83	50-150
d5-EtFOSAA		93	50-150
d3-MeFOSAA		96	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK04068-014MS
Batch: 59774
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0752

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	ND	15	15		1	102	50-150	11/15/2022 0014
11Cl-PF3OUdS	ND	15	13		1	86	50-150	11/15/2022 0014
8:2 FTS	ND	15	16	M-03	1	104	67-138	11/15/2022 0014
6:2 FTS	ND	15	16	M-03	1	108	64-140	11/15/2022 0014
4:2 FTS	ND	15	15		1	99	63-143	11/15/2022 0014
GenX	ND	32	32		1	101	50-150	11/15/2022 0014
ADONA	ND	15	16		1	106	50-150	11/15/2022 0014
EtFOSAA	ND	16	16	M-03	1	101	61-135	11/15/2022 0014
MeFOSAA	ND	16	16	M-03	1	103	65-136	11/15/2022 0014
PFBS	ND	14	15		1	104	72-130	11/15/2022 0014
PFDS	ND	15	13	M-03	1	87	53-142	11/15/2022 0014
PFHpS	ND	15	14		1	90	69-134	11/15/2022 0014
PFNS	ND	15	14		1	93	69-127	11/15/2022 0014
PFOSA	ND	16	16	M-03	1	99	67-137	11/15/2022 0014
PFPeS	ND	15	17	M-03	1	112	71-127	11/15/2022 0014
PFHxS	ND	14	14	M-03	1	98	68-131	11/15/2022 0014
PFBA	1.3	16	17		1	98	73-129	11/15/2022 0014
PFDA	ND	16	16		1	100	71-129	11/15/2022 0014
PFDoA	ND	16	16		1	101	72-134	11/15/2022 0014
PFHpA	ND	16	16		1	99	72-130	11/15/2022 0014
PFHxA	ND	16	16		1	103	72-129	11/15/2022 0014
PFNA	ND	16	15		1	95	69-130	11/15/2022 0014
PFOA	ND	16	16		1	102	71-133	11/15/2022 0014
PFPeA	ND	16	16	M-03	1	101	72-129	11/15/2022 0014
PFTeDA	ND	16	16	M-03	1	103	71-132	11/15/2022 0014
PFTrDA	ND	16	14		1	90	65-144	11/15/2022 0014
PFUdA	ND	16	15	M-03	1	98	69-133	11/15/2022 0014
PFOS	5.1	15	20	M-03	1	101	65-140	11/15/2022 0014

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	257	50-150
13C2_6:2FTS		150	50-150
13C2_8:2FTS		116	50-150
13C2_PFDoA		85	50-150
13C2_PFTeDA		76	50-150
13C3_PFBS		92	50-150
13C3_PFHxS		99	50-150
13C3-HFPO-DA		90	50-150
13C4_PFBA		54	50-150
13C4_PFHpA		107	50-150
13C5_PFHxA		93	50-150
13C5_PFPeA		83	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK04068-014MS
Batch: 59774
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0752

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		100	50-150
13C7_PFUdA		92	50-150
13C8_PFOA		92	50-150
13C8_PFOS		92	50-150
13C8_PFOSA		103	50-150
13C9_PFNA		90	50-150
d5-EtFOSAA		98	50-150
d3-MeFOSAA		100	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XK04068-018DU
Batch: 59774
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0752

Parameter	Sample Amount (ng/L)	Result (ng/L)	Q	Dil	% RPD	%RPD Limit	Analysis Date
9Cl-PF3ONS	ND	ND		1	0.00	20	11/15/2022 0109
11Cl-PF3OUdS	ND	ND		1	0.00	20	11/15/2022 0109
8:2 FTS	ND	ND		1	0.00	20	11/15/2022 0109
6:2 FTS	ND	ND		1	0.00	20	11/15/2022 0109
4:2 FTS	ND	ND		1	0.00	20	11/15/2022 0109
GenX	ND	ND		1	0.00	20	11/15/2022 0109
ADONA	ND	ND		1	0.00	20	11/15/2022 0109
EtFOSAA	ND	ND		1	0.00	20	11/15/2022 0109
MeFOSAA	ND	ND		1	0.00	20	11/15/2022 0109
PFBS	1.1	ND		1	0.00	20	11/15/2022 0109
PFDS	ND	ND		1	0.00	20	11/15/2022 0109
PFHpS	ND	ND		1	0.00	20	11/15/2022 0109
PFNS	ND	ND		1	0.00	20	11/15/2022 0109
PFOSA	ND	ND		1	0.00	20	11/15/2022 0109
PFPeS	ND	ND		1	0.00	20	11/15/2022 0109
PFHxS	ND	0.96	JM-03	1	0.28	20	11/15/2022 0109
PFBA	3.7	3.8		1	2.1	20	11/15/2022 0109
PFDA	ND	ND		1	0.00	20	11/15/2022 0109
PFDoA	ND	ND		1	0.00	20	11/15/2022 0109
PFHpA	ND	ND		1	0.00	20	11/15/2022 0109
PFHxA	ND	ND		1	0.00	20	11/15/2022 0109
PFNA	ND	ND		1	0.00	20	11/15/2022 0109
PFOA	1.8	1.7	JM-03	1	8.3	20	11/15/2022 0109
PFPeA	ND	ND		1	0.00	20	11/15/2022 0109
PFTeDA	ND	ND		1	0.00	20	11/15/2022 0109
PFTrDA	ND	ND		1	0.00	20	11/15/2022 0109
PFUdA	ND	ND		1	0.00	20	11/15/2022 0109
PFOS	ND	0.95	JM-03	1	9.4	20	11/15/2022 0109

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	178	50-150
13C2_6:2FTS		129	50-150
13C2_8:2FTS		102	50-150
13C2_PFDoA		87	50-150
13C2_PFTeDA		83	50-150
13C3_PFBS		96	50-150
13C3_PFHxS		101	50-150
13C3-HFPO-DA		95	50-150
13C4_PFBA		63	50-150
13C4_PFHpA		105	50-150
13C5_PFHxA		94	50-150
13C5_PFPeA		87	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - Duplicate

Sample ID: XK04068-018DU
Batch: 59774
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/11/2022 0752

Surrogate	Q	% Rec	Acceptance Limit
13C6_PFDA		96	50-150
13C7_PFUdA		90	50-150
13C8_PFOA		94	50-150
13C8_PFOS		87	50-150
13C8_PFOSA		102	50-150
13C9_PFNA		85	50-150
d5-EtFOSAA		93	50-150
d3-MeFOSAA		95	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: XQ60670-001
Batch: 60670
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/21/2022 1421

Parameter	Result	Q	Dil	LOQ	DL	Units	Analysis Date
PFBA	ND		1	4.0	1.0	ng/L	11/22/2022 2051
PFHpA	ND		1	4.0	1.0	ng/L	11/22/2022 2051
PFHxA	ND		1	4.0	1.0	ng/L	11/22/2022 2051
PFPeA	ND		1	4.0	1.0	ng/L	11/22/2022 2051

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		84	50-150
13C2_6:2FTS		100	50-150
13C2_8:2FTS		96	50-150
13C2_PFDoA		94	50-150
13C2_PFTeDA		93	50-150
13C3_PFBS		94	50-150
13C3_PFHxS		100	50-150
13C3-HFPO-DA		91	50-150
13C4_PFBA		99	50-150
13C4_PFHpA		86	50-150
13C5_PFHxA		101	50-150
13C5_PFPeA		98	50-150
13C6_PFDA		98	50-150
13C7_PFUdA		91	50-150
13C8_PFOA		105	50-150
13C8_PFOS		97	50-150
13C8_PFOSA		93	50-150
13C9_PFNA		103	50-150
d5-EtFOSAA		87	50-150
d3-MeFOSAA		93	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: XQ60670-002
Batch: 60670
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/21/2022 1421

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
PFBA	16	17		1	105	73-129	11/22/2022 2102
PFHpA	16	15		1	92	72-130	11/22/2022 2102
PFHxA	16	17	M-03	1	108	72-129	11/22/2022 2102
PFPeA	16	17		1	107	72-129	11/22/2022 2102

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		90	50-150
13C2_6:2FTS		104	50-150
13C2_8:2FTS		98	50-150
13C2_PFDoA		100	50-150
13C2_PFTeDA		95	50-150
13C3_PFBS		99	50-150
13C3_PFHxS		105	50-150
13C3-HFPO-DA		95	50-150
13C4_PFBA		102	50-150
13C4_PFHpA		89	50-150
13C5_PFHxA		102	50-150
13C5_PFPeA		100	50-150
13C6_PFDA		100	50-150
13C7_PFUdA		94	50-150
13C8_PFOA		103	50-150
13C8_PFOS		105	50-150
13C8_PFOSA		101	50-150
13C9_PFNA		103	50-150
d5-EtFOSAA		94	50-150
d3-MeFOSAA		96	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MS

Sample ID: XK04068-001MS
Batch: 60670
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/21/2022 1421

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
PFBA	5.2	16	21		1	100	73-129	11/22/2022 2304
PFHpA	1.4	16	18		1	102	72-130	11/22/2022 2304
PFHxA	1.5	16	17	M-03	1	100	72-129	11/22/2022 2304
PFPeA	2.5	16	19		1	103	72-129	11/22/2022 2304

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	190	50-150
13C2_6:2FTS		121	50-150
13C2_8:2FTS		104	50-150
13C2_PFDoA		88	50-150
13C2_PFTeDA		81	50-150
13C3_PFBS		97	50-150
13C3_PFHxS		113	50-150
13C3-HFPO-DA		92	50-150
13C4_PFBA		62	50-150
13C4_PFHpA		94	50-150
13C5_PFHxA		110	50-150
13C5_PFPeA		94	50-150
13C6_PFDA		95	50-150
13C7_PFUdA		87	50-150
13C8_PFOA		103	50-150
13C8_PFOS		106	50-150
13C8_PFOSA		100	50-150
13C9_PFNA		110	50-150
d5-EtFOSAA		82	50-150
d3-MeFOSAA		95	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MSD

Sample ID: XK04068-001MD
Batch: 60670
Analytical Method: PFAS by ID SOP QSM B-15

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 11/21/2022 1421

Parameter	Sample Amount (ng/L)	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RPD	%Rec Limit	% RPD Limit	Analysis Date
PFBA	5.2	16	21		1	102	0.62	73-129	30	11/22/2022 2315
PFHpA	1.4	16	17		1	102	1.6	72-130	30	11/22/2022 2315
PFHxA	1.5	16	18	M-03	1	102	0.51	72-129	30	11/22/2022 2315
PFPeA	2.5	16	19		1	107	2.6	72-129	30	11/22/2022 2315

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS	N	209	50-150
13C2_6:2FTS		127	50-150
13C2_8:2FTS		100	50-150
13C2_PFDoA		89	50-150
13C2_PFTeDA		87	50-150
13C3_PFBS		94	50-150
13C3_PFHxS		105	50-150
13C3-HFPO-DA		91	50-150
13C4_PFBA		63	50-150
13C4_PFHpA		90	50-150
13C5_PFHxA		99	50-150
13C5_PFPeA		85	50-150
13C6_PFDA		93	50-150
13C7_PFUdA		86	50-150
13C8_PFOA		102	50-150
13C8_PFOS		103	50-150
13C8_PFOSA		104	50-150
13C9_PFNA		102	50-150
d5-EtFOSAA		85	50-150
d3-MeFOSAA		93	50-150

LOQ = Limit of Quantitation
DL = Detection Limit
ND = Not detected at or above the DL
J = Estimated result < LOQ and ≥ DL
* = RSD is out of criteria
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Pace Analytical®

PACE ANALYTICAL SERVICES, LLC
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.pacelabs.com

Number 138981

Client: Arcadis	Report to Contact: Marina Sump	Telephone No. / E-mail: 248-994-2318 Marina.Sump@arcadis.com	Quote No.
Address: 28550 Cabot Dr, Ste. 500	Sampler's Signature: x Anyssa Mandich	Analysis (Attach list if more space is needed)	Page 1 of 2
City: Novi	State: MI	Zip Code: 48377	Printed Name: Anyssa Mandich		
Project Name: RACER Lansing PFAS Delineation			
Project No.: 30112612 0370B	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	Sample Type (G=Grab C=Composite)	Matrix: Aqueous	Soil	Other Aqueous	No. of Containers by Preservative Type: Unpres.	HNO3	H2SO4	NaOH	Na2S2O3	ZnAc / NaOH	PFAS 537.1 Modified	Remarks / Cooler I.D.
Michigan-MW-3_110322	11/3/2022	0850	G	X			6						6	MS/MSD
MichAve-MW-4_110322	11/3/2022	0915	G	X			2						2	
Verlinden-MW-5_110322	11/3/2022	0935	G	X			2						2	
Verlinden-MW-4_110322	11/3/2022	0950	G	X			2						2	Please provide results & QC along w/ EDD for all samples
Kleinder-MW-3_110322	11/3/22	1010	G	X			2						2	
DUP-01_110322	11/3/2022	—	G	X			2						2	
Kleinder-MW-2_110322	11/3/2022	1025	G	X			2						2	
~~Verlinden-MW-1_110322~~	~~11/3/2022~~	cancelled 11/03/2022												
EB-01_110322	11/3/2022	1535	G	X			2						2	
FB-01_110322	11/3/2022	1540	G	X			2						2	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Anyssa Mandich/Arcadis	11/3/22	1645	1. Received by: FedEx	11/3/22	1645
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: fedex	11.4.22	1003	4. Laboratory received by: Kaylan Meems	11.4.22	1603

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) ☒ Yes No Ice Pack
Receipt Temp. 2.3 °C
Temp Blank ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: MEDGENS-01

XK04068

KES2

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www.pacelabs.com

Number 138983

Client: Arcadis	Report to Contact: Marina Samp	Telephone No. / E-mail: 248-994-2318 marina.samp@arcadis.com
Address: 28550 Cabot Dr. Ste 500	Sampler's Signature: x Amyssa Mandich	Quote No.
City: Novi	State: MI Zip Code: 48377	Page 2 of 2
Project Name: LAQER Lansing PFAS Delineation	Printed Name: Amyssa Mandich	XK04068
Project No.: 30112392.D310B	P.O. No.	KESz

Sample ID / Description (Containers for each sample may be combined on one line.)	Collection Date(s)	Collection Time (Military)	# of Containers	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No. of Containers by Preservative Type: Unpres.	Methanol	HNO3	H2SO4	NaOH	Na2S2O3	Field Filtered	PFAS TTOA EPA 537M (List of 18)	Remarks / Cooler I.D.
Stanley-MH-2_110322	11/3/2022	1120	6	X			2							2	Please provide results + QC along w/ EDD for all samples
Stanley-MH-3_110322	11/3/2022	1140	6	X			2							2	
Osborn-MH-1_110322	11/3/2022	1200	6	X			2							2	
Osborn-CB-2_110322	11/3/2022	1210	6	X			2							2	
P3-MH-284_110322	11/3/2022	1340	6	X			2							2	
P2-MH-30_110322	11/3/2022	1420	6	X			2							2	
P2-MH-30-W_110322	11/3/2022	1430	6	X			2							2	
P2-MH-2_110322	11/3/2022	1445	6	X			2							2	
P2-MH-W_110322	11/3/2022	1520	6	X			2							2	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Dispose by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Amyssa Mandich/Arcadis	11/3/22	1645	1. Received by: FedEx	11/3/22	1645
2. Relinquished by	Date	Time	2. Received by	Date	Time
3. Relinquished by	Date	Time	3. Received by	Date	Time
4. Relinquished by: Fedex	11.4.22	0903	4. Laboratory received by: [signature]	11/4/22	0903

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on ice (Circle): (Yes) No Ice Pack — Receipt Temp: 1.4 °C — Temp Blank: ☒ Y ☐ N

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: ME003N2-01

PACE ANALYTICAL SERVICES, LLC

DC#_Title: ENV-FRM-WCOL-0286 v02_Samples Receipt Checklist (SRC)
Effective Date: 8/2/2022

Sample Receipt Checklist (SRC)

Client: Arcadis Cooler Inspected by/date: BRB / 11/04/2022 Lot #: XK04068

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☑ Yes	☐ No		1. Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

2.3 / 2.3 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 8 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☑ Yes	☐ No	☐ NA	3. Were all coolers received at or below 6.0°C? If no, was Project Manager notified? PM was Notified by: phone / email / face-to-face (circle one).
☑ Yes	☐ No	☐ NA	4. Is the commercial courier's packing slip attached to this form?
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC and all sample containers?
☑ Yes	☐ No		7. Was collection date & time listed on the COC and all sample containers?
☑ Yes	☐ No		8. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		9. Were tests to be performed listed on the COC?
☑ Yes	☐ No		10. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		11. Was adequate sample volume available?
☑ Yes	☐ No		12. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☑ Yes	☐ No		13. Were all samples containers accounted for? (No missing/excess)
☐ Yes	☐ No	☑ NA	14. Were VOA, 8015C and RSK-175 samples free of bubbles >"pea-size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	15. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	16. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	17. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☑ Yes	☐ No	☐ NA	18. Was the quote number listed on the container label? If yes, Quote # 25015

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # NA. ☐
Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (If #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Unique ID: NA.

Comments:

Qualtrax ID: 56360

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Appendix C

Low-Flow Groundwater Sampling Logs

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-12-10R			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	25.0 degrees F and Clear. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	10.84	**Total Depth (ft-bmp)**	17.96	**Water Column (ft)**	7.12	**Gallons in Well**	1.16
Purge Start	09:05	**Pump Intake (ft-bmp)**	15.46	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	09:45	**Volumes Purged**	1.82	**Sample ID**	MW-12-10R_030222	**Sampled by**	Austin Westhuis
Sample Time	09:40	**Gallons Purged**	2.11	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:10	0	0	200	11.28	0.26	6.91	2.99	8.94	0.75	4.6	163	--	--
09:15	5	5	200	11.28	0.53	6.91	3.03	3.7	0.71	4.5	206.3	--	--
09:20	5	10	200	11.28	0.79	6.91	3.08	1.89	0.66	5.1	126.3	--	--
09:25	5	15	200	11.28	1.06	6.9	3.13	1.61	0.62	5.5	141	--	--
09:30	5	20	200	11.28	1.32	6.9	3.18	1.29	0.59	5.7	82.1	--	--
09:35	5	25	200	11.28	1.59	6.9	3.19	1.2	0.58	5.8	81.2	--	--
09:40	5	30	200	11.28	1.85	6.9	3.23	1.09	0.57	5.8	79.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-12-12			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	46.0 degrees F and Cloudy. The wind is blowing W at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.48	**Total Depth (ft-bmp)**	17.2	**Water Column (ft)**	10.72	**Gallons in Well**	1.74
Purge Start	14:55	**Pump Intake (ft-bmp)**	14.7	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:25	**Volumes Purged**	0.91	**Sample ID**	MW-12-12_030122	**Sampled by**	Austin Westhuis
Sample Time	15:20	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:00	0	0	200	7.57	0.26	8.02	0.38	17.6	0.42	9.4	48.2	--	--
15:05	5	5	200	8.06	0.53	8.03	0.371	4.09	0.45	9.3	86.2	--	--
15:10	5	10	200	8.26	0.79	8.01	0.375	2.51	0.48	9.3	108.1	--	--
15:15	5	15	200	8.31	1.06	7.99	0.383	2.14	0.48	9.2	111.5	--	--
15:20	5	20	200	8.34	1.32	7.97	0.386	1.9	0.49	9.2	113.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-12-13			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	42.1 degrees F and Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.01	**Total Depth (ft-bmp)**	25.43	**Water Column (ft)**	16.42	**Gallons in Well**	2.67
Purge Start	10:55	**Pump Intake (ft-bmp)**	22.93	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:40	**Volumes Purged**	0.89	**Sample ID**	MW-12-13_030122	**Sampled by**	Austin Westhuis
Sample Time	11:35	**Gallons Purged**	2.38	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:00	0	0	200	9.01	0.26	7.49	0.71	4.12	2.66	9.7	311.2	--	--
11:05	5	5	200	9.01	0.53	7.51	0.71	2.21	2.06	9.9	261.5	--	--
11:10	5	10	200	9.01	0.79	7.51	0.71	1.79	2	10	254.4	--	--
11:15	5	15	200	9.01	1.06	7.5	0.71	1.61	1.62	10	209	--	--
11:20	5	20	200	9.01	1.32	7.48	0.69	1.24	1.55	10.2	149	--	--
11:25	5	25	200	9.01	1.59	7.47	0.69	1.2	1	10.02	84.1	--	--
11:30	5	30	200	9.01	1.85	7.48	0.68	1.11	0.95	10.02	81.1	--	--
11:35	5	35	200	9.01	2.11	7.48	0.67	1.03	0.93	10.01	79.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-13-22			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	67.59	**Total Depth (ft-bmp)**	96.13	**Water Column (ft)**	28.54	**Gallons in Well**	4.64
Purge Start	13:10	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:40	**Volumes Purged**		**Sample ID**	MW-13-22_030222	**Sampled by**	Donald Richmond
Sample Time	13:40	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:20	0	0	200	67.59	--	7	1.54	10.3	0.44	11	-49.6	--	--
13:25	5	5	200	67.59	--	6.97	1.55	3.72	0.4	11.5	-52.8	--	--
13:30	5	10	200	67.59	--	6.96	1.52	8.61	0.35	10.4	-54.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40ml glass	9	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47; 1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-34			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	43.0 degrees F and Cloudy. The wind is blowing SW at 12.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.01	**Total Depth (ft-bmp)**	79.9	**Water Column (ft)**	15.89	**Gallons in Well**	2.58
Purge Start	14:00	**Pump Intake (ft-bmp)**	77.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:55	**Volumes Purged**	0.51	**Sample ID**	MW-13-34_030222	**Sampled by**	Billy Cobern
Sample Time	14:50	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:05	0	0	100	64.21	0.13	7.53	2.03	87.5	6.71	10.3	-32	--	--
14:10	5	5	100	64.21	0.26	7.17	2.11	147	4.31	10.5	-44.1	--	--
14:15	5	10	100	64.21	0.40	7.13	2.11	124	2.05	10.6	-59.6	--	--
14:20	5	15	100	64.21	0.53	7.11	2.12	104	1.26	10.8	-76.6	--	--
14:25	5	20	100	64.21	0.66	7.1	2.15	89.7	1.93	10.7	-79.1	--	--
14:30	5	25	100	64.21	0.79	7.08	2.17	83.7	1.28	10.6	-84.6	--	--
14:35	5	30	100	64.21	0.92	7.07	2.19	77.8	0.99	10.5	-88.9	--	--
14:40	5	35	100	64.21	1.06	7.06	2.21	72.7	0.95	10.4	-93.3	--	--
14:45	5	40	100	64.21	1.19	7.05	2.23	72.6	0.88	10.3	-95.7	--	--
14:50	5	45	100	64.21	1.32	7.05	2.24	70.3	0.86	10.3	-96.1	Brown	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-36R			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	43.0 degrees F and Cloudy. The wind is blowing W/NW at 12.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.34	**Total Depth (ft-bmp)**	12.65	**Water Column (ft)**	8.31	**Gallons in Well**	1.35
Purge Start	12:55	**Pump Intake (ft-bmp)**	10.15	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:30	**Volumes Purged**	1.37	**Sample ID**	MW-13-36R_030122	**Sampled by**	Austin Westhuis
Sample Time	13:25	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:00	0	0	200	4.34	0.26	12.2	1.11	11.8	2.75	5.8	157.3	--	--
13:05	5	5	200	4.34	0.53	12.22	1.12	4.12	2.93	5.9	130.1	--	--
13:10	5	10	200	4.34	0.79	12.25	1.13	2.14	2.16	5.9	104.9	--	--
13:15	5	15	200	4.34	1.06	12.26	1.13	1.81	2.1	5.9	95.1	--	--
13:20	5	20	200	4.34	1.32	12.23	1.14	1.61	2.04	5.9	91.1	--	--
13:25	5	25	200	4.34	1.59	12.22	1.14	1.29	2.02	5.9	90.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-14-58R			**Date**	02/10/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	30.0 degrees F and Haze. The wind is blowing W/SW at 12.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	13.84	**Total Depth (ft-bmp)**	29.6	**Water Column (ft)**	15.76	**Gallons in Well**	2.56
Purge Start	10:50	**Pump Intake (ft-bmp)**	27.1	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:25	**Volumes Purged**	0.72	**Sample ID**	MW-14-58R_021022	**Sampled by**	Austin Westhuis
Sample Time	11:20	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:55	0	0	200	13.84	0.26	7.03	1.48	24.6	0.31	7	-35.2	--	--
11:00	5	5	200	13.84	0.53	7.03	1.48	10.6	0.22	7.2	-42.8	--	--
11:05	5	10	200	13.84	0.79	7.03	1.46	3.63	0.2	7.1	-47.8	--	--
11:10	5	15	200	13.84	1.06	7.03	1.48	2.21	0.19	7.2	-51.8	--	--
11:15	5	20	200	13.84	1.32	7.03	1.47	2.01	0.19	7.2	-54.8	--	--
11:20	5	25	200	13.84	1.59	7.04	1.46	1.77	0.19	7.1	-55.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIMS	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure	Well Locked at Arrival:	yes
Condition of Well:	Good condition	Well Locked at Departure:	yes
Well Completion:	Stick-up	Key Number To Well:	6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-67			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	45.0 degrees F and Cloudy. The wind is blowing W at 15.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.22	**Total Depth (ft-bmp)**	20.83	**Water Column (ft)**	16.61	**Gallons in Well**	2.7
Purge Start	11:55	**Pump Intake (ft-bmp)**	18.33	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:35	**Volumes Purged**	0.78	**Sample ID**	MW-14-67_030122	**Sampled by**	Austin Westhuis
Sample Time	12:30	**Gallons Purged**	2.11	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:00	0	0	200	4.22	0.26	7.42	0.9	11.9	0.72	7.5	214.2	--	--
12:05	5	5	200	4.22	0.53	7.41	0.91	3.44	0.35	7.9	214.1	--	--
12:10	5	10	200	4.22	0.79	7.41	0.92	2.14	0.26	8	214.8	--	--
12:15	5	15	200	4.22	1.06	7.4	0.94	1.76	0.24	8.1	209	--	--
12:20	5	20	200	4.22	1.32	7.39	0.95	1.51	0.23	8.2	189.9	--	--
12:25	5	25	200	4.22	1.59	7.38	0.96	1.42	0.22	8.2	189.6	--	--
12:30	5	30	200	4.22	1.85	7.38	0.96	1.28	0.22	8.2	185.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Well Locked at Arrival: yes

Condition of Well: Good condition

Well Locked at Departure: yes

Well Completion: Stick-up

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-70			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	45.0 degrees F and Mostly Cloudy. The wind is blowing W at 12.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.43	**Total Depth (ft-bmp)**	23.1	**Water Column (ft)**	13.67	**Gallons in Well**	2.22
Purge Start	14:00	**Pump Intake (ft-bmp)**	20.6	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:35	**Volumes Purged**	0.83	**Sample ID**	MW-14-70_030122	**Sampled by**	Austin Westhuis
Sample Time	14:30	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:05	0	0	200	10.1	0.26	7.46	0.96	26.6	0.77	9.4	165.2	--	--
14:10	5	5	200	10.1	0.53	7.45	0.97	11.8	0.57	9.4	171.3	--	--
14:15	5	10	200	10.1	0.79	7.44	0.97	5.61	0.58	9.4	171.6	--	--
14:20	5	15	200	10.1	1.06	7.44	0.97	3.18	0.47	9.5	174.5	--	--
14:25	5	20	200	10.1	1.32	7.43	0.96	2.81	0.46	9.5	176.7	--	--
14:30	5	25	200	10.1	1.59	7.43	0.96	2.66	0.44	9.6	177.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-88			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	25.0 degrees F and Clear. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	3.8	**Total Depth (ft-bmp)**	15	**Water Column (ft)**	11.2	**Gallons in Well**	1.82
Purge Start	09:00	**Pump Intake (ft-bmp)**	12.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	09:45	**Volumes Purged**	0.58	**Sample ID**	MW-18-88_030222	**Sampled by**	Billy Cobern
Sample Time	09:40	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:05	0	0	100	3.92	0.13	7.18	0.64	10.2	0.95	4.1	136.4	--	--
09:10	5	5	100	3.92	0.26	7.13	0.641	8.78	0.77	3.9	123.9	--	--
09:15	5	10	100	3.92	0.40	7.18	0.64	8.49	0.75	4	115.2	--	--
09:20	5	15	100	3.92	0.53	7.19	0.64	7.78	0.71	3.8	107.6	--	--
09:25	5	20	100	3.92	0.66	7.19	0.64	7.37	0.69	3.9	104.6	--	--
09:30	5	25	100	3.92	0.79	7.18	0.641	7.07	0.69	4.1	97.4	--	--
09:35	5	30	100	3.92	0.92	7.18	0.642	7.18	0.64	4	96.1	--	--
09:40	5	35	100	3.92	1.06	7.18	0.64	7.49	0.63	4	95	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-89			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	It is Clear. The wind is blowing S at 6.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.73	**Total Depth (ft-bmp)**	15.6	**Water Column (ft)**	9.87	**Gallons in Well**	1.6
Purge Start	10:00	**Pump Intake (ft-bmp)**	13	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:35	**Volumes Purged**	0.50	**Sample ID**	MW-18-89_030222	**Sampled by**	Billy Cobern
Sample Time	10:30	**Gallons Purged**	0.79	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:05	0	0	100	6.91	0.13	7.74	0.91	8.16	0.61	5.3	147.8	--	--
10:10	5	5	100	7.82	0.26	7.71	0.91	7.89	0.56	5.7	135.6	--	--
10:15	5	10	100	8.45	0.40	7.72	0.91	6.52	0.55	5.4	128.8	--	--
10:20	5	15	100	9.12	0.53	7.71	0.91	6.82	0.54	5.7	122.5	--	--
10:25	5	20	100	9.85	0.66	7.71	0.91	6.45	0.53	5.8	122.2	--	--
10:30	5	25	100	10.24	0.79	7.71	0.91	6.2	0.51	5.8	121.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-90			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	It is Clear. The wind is blowing S at 6.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.63	**Total Depth (ft-bmp)**	23.15	**Water Column (ft)**	14.52	**Gallons in Well**	2.36
Purge Start	11:10	**Pump Intake (ft-bmp)**	21	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:15	**Volumes Purged**	0.67	**Sample ID**	MW-18-90_030222	**Sampled by**	Billy Cobern
Sample Time	12:10	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:15	0	0	100	8.64	0.13	12.15	1.95	5.1	0.84	8.8	43.6	--	--
11:20	5	5	100	8.64	0.26	12.2	2	3.79	0.72	8.6	29.5	--	--
11:25	5	10	100	8.64	0.40	12.21	2.02	1.43	0.69	8.7	5.8	--	--
11:30	5	15	100	8.64	0.53	12.25	2.06	0.02	1.49	8.8	-26	--	--
11:35	5	20	100	8.64	0.66	12.28	2.1	0.02	1.39	8.8	-62.6	--	--
11:40	5	25	100	8.64	0.79	12.31	2.12	0.02	1.24	9.1	-96.4	--	--
11:45	5	30	100	8.64	0.92	12.32	2.15	0.02	0.81	8.9	-107.4	--	--
11:50	5	35	100	8.64	1.06	12.31	2.14	0.02	1	8.9	-117.4	--	--
11:55	5	40	100	8.64	1.19	12.31	2.14	0.02	1.07	9.6	-134.5	--	--
12:00	5	45	100	8.64	1.32	12.31	2.15	0.02	1.09	9.9	-142.3	--	--
12:05	5	50	100	8.64	1.45	12.31	2.16	0.02	1.14	10	-147.6	--	--
12:10	5	55	100	8.64	1.59	12.31	2.16	0.02	1.17	9.8	-150.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-91			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	46.0 degrees F and Cloudy. The wind is blowing W at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.3	**Total Depth (ft-bmp)**	14.5	**Water Column (ft)**	9.2	**Gallons in Well**	1.49
Purge Start	14:25	**Pump Intake (ft-bmp)**	12	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:15	**Volumes Purged**	0.80	**Sample ID**	MW-18-91_030122	**Sampled by**	Billy Cobern
Sample Time	15:10	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:30	0	0	100	5.86	0.13	7.97	0.77	8.93	1.91	7.6	23.2	--	--
14:35	5	5	100	6.4	0.26	7.84	0.726	7.73	0.87	7.7	27.4	--	--
14:40	5	10	100	6.73	0.40	7.82	0.717	7.81	0.9	7.5	25.7	--	--
14:45	5	15	100	7.11	0.53	7.81	0.709	7.28	0.89	7.5	15	--	--
14:50	5	20	100	7.34	0.66	7.81	0.708	7.07	0.86	7.5	10.7	--	--
14:55	5	25	100	7.5	0.79	7.8	0.707	6.88	0.84	7.4	4.7	--	--
15:00	5	30	100	7.69	0.92	7.8	0.706	6.89	0.67	7.5	1.8	--	--
15:05	5	35	100	7.85	1.06	7.8	0.706	6.52	0.65	7.6	1.5	--	--
15:10	5	40	100	7.98	1.19	7.8	0.705	6.41	0.63	7.7	1.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-95			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	23.0 degrees F and Clear. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.44	**Total Depth (ft-bmp)**	12.45	**Water Column (ft)**	6.01	**Gallons in Well**	0.98
Purge Start	08:00	**Pump Intake (ft-bmp)**	10	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	08:45	**Volumes Purged**	0.94	**Sample ID**	MW-18-95_030222	**Sampled by**	Billy Cobern
Sample Time	08:35	**Gallons Purged**	0.92	**Replicate/ Code No.**	DUP-02_030222	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:05	0	0	100	6.6	0.13	7.97	0.518	18.7	7.56	2.4	151.9	--	--
08:10	5	5	100	6.58	0.26	7.8	0.519	15.4	6.53	2.3	153	--	--
08:15	5	10	100	6.58	0.40	7.74	0.517	11.3	5.42	2.3	149.3	--	--
08:20	5	15	100	6.58	0.53	7.72	0.516	10.1	4.21	2.5	146.2	--	--
08:25	5	20	100	6.58	0.66	7.71	0.514	9.45	4.03	2.6	143.5	--	--
08:30	5	25	100	6.58	0.79	7.71	0.514	9.12	3.89	2.6	143.1	--	--
08:35	5	30	100	6.58	0.92	7.71	0.513	8.89	3.74	2.6	142.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	4	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-98			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	45.0 degrees F and Mostly Cloudy. The wind is blowing W at 12.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.42	**Total Depth (ft-bmp)**	14.5	**Water Column (ft)**	9.08	**Gallons in Well**	1.48
Purge Start	13:10	**Pump Intake (ft-bmp)**	12	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:50	**Volumes Purged**	0.71	**Sample ID**	MW-18-98_030122	**Sampled by**	Billy Cobern
Sample Time	13:50	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:15	0	0	100	5.95	0.13	7.99	2.45	12.9	3.85	6.6	3.4	--	--
13:20	5	5	100	6.39	0.26	7.81	2.48	8.79	1.23	6	-2.1	--	--
13:25	5	10	100	6.88	0.40	7.78	2.48	6.62	2.15	5.6	-10.1	--	--
13:30	5	15	100	7.29	0.53	7.77	2.48	5.78	0.97	5.6	-18.1	--	--
13:35	5	20	100	7.66	0.66	7.75	2.47	5.57	0.88	5.7	-20.8	--	--
13:40	5	25	100	7.98	0.79	7.74	2.45	5.11	0.83	6.1	-22	--	--
13:45	5	30	100	8.31	0.92	7.73	2.45	5.28	0.81	6.2	-21.9	--	--
13:50	5	35	100	8.62	1.06	7.72	2.46	5.02	0.8	6.2	-21.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-99			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	45.0 degrees F and Cloudy. The wind is blowing W at 15.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.09	**Total Depth (ft-bmp)**	16.85	**Water Column (ft)**	12.76	**Gallons in Well**	2.07
Purge Start	12:05	**Pump Intake (ft-bmp)**	14	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:55	**Volumes Purged**	0.57	**Sample ID**	MW-18-99_030122	**Sampled by**	Billy Cobern
Sample Time	12:50	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:10	0	0	100	4.86	0.13	8.11	1.96	8.74	1.12	7.1	89.1	--	--
12:15	5	5	100	5.32	0.26	8.12	1.99	7.75	0.83	6.9	67	--	--
12:20	5	10	100	5.64	0.40	8.13	1.97	7.05	0.63	7	49.5	--	--
12:25	5	15	100	5.82	0.53	8.14	1.95	7.39	0.62	7	34.6	--	--
12:30	5	20	100	5.96	0.66	8.16	1.94	6.79	0.61	7.1	22.8	--	--
12:35	5	25	100	6.11	0.79	8.21	1.91	6.62	0.6	7.2	4.2	--	--
12:40	5	30	100	6.21	0.92	8.18	1.93	6.41	0.59	7.5	-5.4	--	--
12:45	5	35	100	6.29	1.06	8.18	1.93	6.34	0.57	7.6	-7.3	--	--
12:50	5	40	100	6.35	1.19	8.14	1.92	6.16	0.58	7.6	-9.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-103			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	42.1 degrees F and Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	0.74	**Total Depth (ft-bmp)**	10	**Water Column (ft)**	9.26	**Gallons in Well**	1.5
Purge Start	10:50	**Pump Intake (ft-bmp)**	7.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:30	**Volumes Purged**	0.62	**Sample ID**	MW-18-103_030122	**Sampled by**	Billy Cobern
Sample Time	11:25	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:55	0	0	100	1.05	0.13	7.07	0.8	14.4	2.51	6.2	43.3	--	--
11:00	5	5	100	1.11	0.26	7.01	0.81	12.4	1.9	6.2	44.6	--	--
11:05	5	10	100	1.15	0.40	7.01	0.81	10.9	1.43	6.2	44.7	--	--
11:10	5	15	100	1.19	0.53	7.02	0.81	9.9	1.21	6.2	44.4	--	--
11:15	5	20	100	1.22	0.66	7.02	0.81	9.41	0.99	6.3	43.9	--	--
11:20	5	25	100	1.24	0.79	7.02	0.81	9.22	0.92	6.2	43.5	--	--
11:25	5	30	100	1.25	0.92	7.02	0.81	9.15	0.93	6.2	43.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-105			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	39.0 degrees F and Mostly Cloudy. The wind is blowing W at 6.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	0.01	**Total Depth (ft-bmp)**	11	**Water Column (ft)**	10.99	**Gallons in Well**	1.79
Purge Start	09:40	**Pump Intake (ft-bmp)**	8.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:25	**Volumes Purged**	0.52	**Sample ID**	MW-18-105_030122	**Sampled by**	Billy Cobern
Sample Time	10:15	**Gallons Purged**	0.92	**Replicate/ Code No.**	MW-18-105_030122	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:45	0	0	100	0.35	0.13	6.83	0.84	17.3	3.61	4.8	45.4	--	--
09:50	5	5	100	0.69	0.26	6.9	0.82	12.6	2.34	4.9	26.7	--	--
09:55	5	10	100	1.02	0.40	6.91	0.81	10.3	1.83	4.9	17.9	--	--
10:00	5	15	100	1.29	0.53	6.93	0.793	9.63	1.21	5	2.9	--	--
10:05	5	20	100	1.5	0.66	6.94	0.782	8.93	1.1	4.9	-2.9	--	--
10:10	5	25	100	1.71	0.79	6.95	0.779	8.73	1.07	4.9	-3.7	--	--
10:15	5	30	100	1.89	0.92	6.95	0.776	8.57	1.01	5	-4.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	6	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-121			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.64	**Total Depth (ft-bmp)**	73.6	**Water Column (ft)**	9.96	**Gallons in Well**	1.62
Purge Start	10:40	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:40	**Volumes Purged**		**Sample ID**	MW-19-121_030122	**Sampled by**	Donald Richmond
Sample Time	11:40	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:55	0	0	200	63.64	--	7.15	1.58	0.24	3.48	10.9	296	--	--
11:00	5	5	200	63.72	--	7.17	1.59	0.56	3.26	10.6	285.6	--	--
11:05	5	10	200	63.72	--	7.17	1.57	0.2	3.34	10.5	282.8	--	--
11:10	5	15	200	63.72	--	7.13	1.58	0.02	3.16	10.8	271.3	--	--
11:15	5	20	200	63.72	--	7.12	1.57	0.02	2.66	10.3	257.7	--	--
11:20	5	25	200	63.72	--	7.14	1.56	0.02	2.49	10	251.3	--	--
11:25	5	30	200	63.72	--	7.13	1.57	0.02	2.2	10.6	242.3	--	--
11:30	5	35	200	63.72	--	7.15	1.57	0.02	2.09	10.4	234.8	--	--
11:35	5	40	200	63.72	--	7.12	1.56	0.02	1.89	10.5	230	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40ml glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:		Well Locked at Arrival:	yes
Condition of Well:	Good condition	Well Locked at Departure:	yes
Well Completion:	Stick-up	Key Number To Well:	NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-126			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	62.8	**Total Depth (ft-bmp)**	75.45	**Water Column (ft)**	12.65	**Gallons in Well**	2.06
Purge Start	12:30	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:30	**Volumes Purged**		**Sample ID**	MW-20-126_030122	**Sampled by**	Donald Richmond
Sample Time	13:30	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:50	0	0	200	62.8	--	7.29	2.67	240	10.74	9.1	249.7	--	--
12:55	5	5	200	62.8	--	7.33	2.72	186	10.44	10.2	217.3	--	--
13:00	5	10	200	62.8	--	7.33	2.72	200	10.79	9.7	208.2	--	--
13:05	5	15	200	62.8	--	7.31	2.64	194	11.3	8.8	199.2	--	--
13:10	5	20	200	62.8	--	7.28	2.79	148	9.7	11.5	189.6	--	--
13:15	5	25	200	62.8	--	7.27	2.81	132	10.1	11.5	151	--	--
13:20	5	30	200	62.8	--	7.24	2.81	109	10.61	11.4	122.8	--	--
13:25	5	35	200	62.8	--	7.24	2.81	71.4	10.04	11.4	119.5	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40ml glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-127			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.62	**Total Depth (ft-bmp)**	78.65	**Water Column (ft)**	14.03	**Gallons in Well**	2.28
Purge Start	14:20	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:15	**Volumes Purged**		**Sample ID**	MW-20-127_030122	**Sampled by**	Donald Richmond
Sample Time	15:15	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:30	0	0	200	64.62	--	7.25	1.98	10.3	2.98	11.6	219	--	--
14:35	5	5	200	64.62	--	7.15	2.21	2	1.74	11.5	109	--	--
14:40	5	10	200	64.62	--	6.99	2.27	0.5	1.45	11.6	52.8	--	--
14:45	5	15	200	64.62	--	6.96	2.3	0.02	1.26	11.5	21.9	--	--
14:50	5	20	200	64.62	--	6.95	2.33	0.02	1.09	11.5	12.5	--	--
14:55	5	25	200	64.62	--	6.92	2.35	0.02	0.87	11.4	8.3	--	--
15:00	5	30	200	64.62	--	6.92	2.35	0.02	0.73	11.3	5.3	--	--
15:05	5	35	200	64.62	--	6.92	2.36	0.02	0.72	11.3	4	--	--
15:10	5	40	200	64.62	--	6.92	2.34	0.02	0.78	11.2	4.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40ml glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	P6-SB-07			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	It is Clear. The wind is blowing S at 6.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.58	**Total Depth (ft-bmp)**	23.65	**Water Column (ft)**	18.07	**Gallons in Well**	2.94
Purge Start	10:20	**Pump Intake (ft-bmp)**	21.15	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:05	**Volumes Purged**	0.81	**Sample ID**	P6-SB-07_030222	**Sampled by**	Austin Westhuis
Sample Time	11:00	**Gallons Purged**	2.38	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:25	0	0	200	5.77	0.26	7.72	0.5	12.3	4.08	8	103.5	--	--
10:30	5	5	200	5.77	0.53	7.56	0.56	7.44	2.75	8.3	-30.5	--	--
10:35	5	10	200	5.77	0.79	7.49	0.61	3.4	1.58	8.5	-121	--	--
10:40	5	15	200	5.77	1.06	7.48	0.62	2.58	1.41	8.4	-133	--	--
10:45	5	20	200	5.77	1.32	7.47	0.62	2.31	1.12	8.5	-76.9	--	--
10:50	5	25	200	5.77	1.59	7.47	0.62	2.22	1.11	8.6	-92	--	--
10:55	5	30	200	5.77	1.85	7.46	0.63	1.91	1.09	8.6	-94.7	--	--
11:00	5	35	200	5.77	2.11	7.46	0.63	1.82	1.03	8.7	-97	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	PW-14-02			**Date**	03/01/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	6	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.36	**Total Depth (ft-bmp)**	71.74	**Water Column (ft)**	7.38	**Gallons in Well**	10.79
Purge Start	15:40	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:20	**Volumes Purged**		**Sample ID**	PW-14-02_030122	**Sampled by**	Donald Richmond
Sample Time	16:20	**Gallons Purged**		**Replicate/ Code No.**	Dup-01	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:55	0	0	200	64.36	--	7.82	1.52	0.02	10.55	6.9	232	--	--
16:00	5	5	200	64.36	--	7.81	1.51	0.02	10.74	6.7	226.4	--	--
16:05	5	10	200	64.36	--	7.84	1.53	0.02	10.55	7.1	215.6	--	--
16:10	5	15	200	64.36	--	7.84	1.53	0.02	10.67	7	214.5	--	--
16:15	5	20	200	64.36	--	7.84	1.53	0.02	10.81	7.1	209.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40ml glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	PW-14-03			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	6	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	70.3	**Total Depth (ft-bmp)**	94.3	**Water Column (ft)**	24	**Gallons in Well**	35.1
Purge Start	14:20	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:05	**Volumes Purged**		**Sample ID**	PW-14-03_030222	**Sampled by**	Donald Richmond
Sample Time	15:05	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:35	0	0	200	70.3	--	7.31	2.69	1.62	10.47	10.5	156.5	--	--
14:40	5	5	200	70.3	--	7.27	2.71	1.9	10.68	10.5	161.9	--	--
14:45	5	10	200	70.3	--	7.24	2.69	1.72	10.66	10.3	168.5	--	--
14:50	5	15	200	70.3	--	7.21	2.68	1.42	10.15	10.2	182.4	--	--
14:55	5	20	200	70.3	--	7.2	2.68	1.25	10.43	10.1	186.2	--	--
15:00	5	25	200	70.3	--	7.2	2.68	1.11	10.37	10.2	190.6	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40ml glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-14-02			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	57.65	**Total Depth (ft-bmp)**	71.74	**Water Column (ft)**	14.09	**Gallons in Well**	2.29
Purge Start	10:40	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:40	**Volumes Purged**		**Sample ID**	TW-14-02_030222	**Sampled by**	Donald Richmond
Sample Time	11:40	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:50	0	0	200	57.65	--	8.05	3.55	239	10.28	9.9	185.1	--	--
10:55	5	5	200	57.65	--	8.01	3.62	197	10.29	10.9	181.2	--	--
11:00	5	10	200	57.65	--	7.95	3.61	129	11.14	10.8	178	--	--
11:05	5	15	200	57.65	--	7.91	3.59	145	10.54	10.4	173.6	--	--
11:10	5	20	200	57.65	--	7.9	3.56	138	10.77	10.1	172.3	--	--
11:15	5	25	200	57.65	--	7.85	3.47	159	11.6	9.2	170.9	--	--
11:20	5	30	200	57.65	--	7.82	3.39	179	11.57	7.8	169.3	--	--
11:25	5	35	200	57.65	--	7.79	3.33	220	10.64	7.4	167.8	--	--
11:30	5	40	200	57.65	--	7.71	3.32	246	9.49	7.3	165	--	--
11:35	5	45	200	57.65	--	7.69	3.31	237	9.32	7	162.6	--	--
11:40	5	50	200	57.65	--	7.67	3.29	270	9.44	6.3	160.9	Brown	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40ml glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-14-06			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	42.1 degrees F and Cloudy. The wind is blowing W/SW at 11.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	59.6	**Total Depth (ft-bmp)**	86.5	**Water Column (ft)**	26.9	**Gallons in Well**	4.37
Purge Start	15:15	**Pump Intake (ft-bmp)**	84	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	16:25	**Volumes Purged**	0.85	**Sample ID**	TW-14-06_030222	**Sampled by**	Austin Westhuis
Sample Time	16:20	**Gallons Purged**	3.70	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:20	0	0	200	59.6	0.26	7.42	2.65	1000	10.49	13.2	242	--	--
15:25	5	5	200	59.6	0.53	7.41	2.62	1000	10.32	13.5	257.7	--	--
15:30	5	10	200	59.6	0.79	7.4	2.64	1000	10.23	13.4	264.3	--	--
15:35	5	15	200	59.6	1.06	7.41	2.56	1000	10.16	12.8	276.5	--	--
15:40	5	20	200	59.6	1.32	7.41	2.55	1000	11.38	12.7	277.6	--	--
15:45	5	25	200	59.6	1.59	7.43	2.6	1000	12.33	11.8	282.3	--	--
15:50	5	30	200	59.6	1.85	7.42	2.59	1000	12.66	12.2	292.5	--	--
15:55	5	35	200	59.6	2.11	7.44	2.6	1000	13.16	11.9	298.5	--	--
16:00	5	40	200	59.6	2.38	7.43	2.48	1000	12.85	12.6	302.9	--	--
16:05	5	45	200	59.6	2.64	7.41	2.5	1000	12.72	11	312.5	--	--
16:10	5	50	200	59.6	2.91	7.41	2.5	1000	12.49	11.4	312.8	--	--
16:15	5	55	200	59.6	3.17	7.41	1.34	1000	12.64	11.5	314.9	--	--
16:20	5	60	200	59.6	3.43	7.41	2.55	1000	12.34	10.6	315.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL Glass	3	HCL

Comments: Well under pressure and influenced by the nearby biosparge treatment. Turbidity remained above range. Purge water brown.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-15-11			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	43.0 degrees F and Cloudy. The wind is blowing SW at 11.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	66.5	**Total Depth (ft-bmp)**	87.02	**Water Column (ft)**	20.52	**Gallons in Well**	3.33
Purge Start	13:55	**Pump Intake (ft-bmp)**	84.52	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:50	**Volumes Purged**	0.87	**Sample ID**	TW-15-11_030222	**Sampled by**	Austin Westhuis
Sample Time	14:45	**Gallons Purged**	2.91	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:00	0	0	200	66.5	0.26	7.05	2.87	86.6	11.4	11.7	314.7	--	--
14:05	5	5	200	66.5	0.53	7.05	2.82	71.1	9.73	13.5	308.6	--	--
14:10	5	10	200	66.5	0.79	7.02	3.02	65.9	8.42	13.5	205	--	--
14:15	5	15	200	66.5	1.06	7.02	3.01	74.9	0.14	13.5	156.1	--	--
14:20	5	20	200	66.5	1.32	7.02	3.03	63.3	2.39	13.5	149.8	--	--
14:25	5	25	200	66.5	1.59	7.03	2.9	55.2	0.17	13.5	134.1	--	--
14:30	5	30	200	66.5	1.85	7.02	2.86	92.2	0.04	13.6	131.2	--	--
14:35	5	35	200	66.5	2.11	7.01	3.03	86.6	0.02	13.4	126.6	--	--
14:40	5	40	200	66.5	2.38	7.01	3.03	82.3	0.02	13.6	120.5	--	--
14:45	5	45	200	66.5	2.64	7.01	3.01	78.4	0.02	13.5	120.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIMS	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-15-12			**Date**	03/02/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.16	**Total Depth (ft-bmp)**	76.7	**Water Column (ft)**	13.54	**Gallons in Well**	8.8
Purge Start	09:00	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	10:00	**Volumes Purged**		**Sample ID**	TW-15-12_030222	**Sampled by**	Donald Richmond
Sample Time	10:00	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:15	0	0	200	63.16	--	7.5	1.69	87.3	10.86	7.2	221.3	--	--
09:20	10	10	200	62.32	--	7.5	1.66	121	10.86	7	217.9	--	--
09:25	5	10	200	61.4	--	7.47	1.64	238	10.59	6.9	208.7	--	--
09:30	5	15	200	61.4	--	7.48	1.66	557	11.08	6.7	196.5	--	--
09:35	5	20	200	61.4	--	7.49	1.66	923	11.3	6.8	-190.7	--	--
09:40	5	25	200	61.4	--	7.51	1.69	994	11.33	7.5	185.6	--	--
09:45	5	30	200	61.4	--	7.55	1.69	958	11.55	7.3	182.7	--	--
09:50	5	35	200	61.4	--	7.57	1.7		11.64	7.6	178.5	--	--
09:55	5	40	200	61.4	--	7.6	1.69		11.92	7.3	176.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40ml glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-54			**Date**	06/04/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.0 degrees F and Clear. The wind is blowing S at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.54	**Total Depth (ft-bmp)**	19.03	**Water Column (ft)**	10.49	**Gallons in Well**	1.7
Purge Start	10:20	**Pump Intake (ft-bmp)**	16.53	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:00	**Volumes Purged**	1.24	**Sample ID**	MW-14-54_060422	**Sampled by**	Austin Westhuis
Sample Time	10:55	**Gallons Purged**	2.11	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:25	0	0	200	8.85	0.26	8.11	0.99	8.89	0.19	13	-62.4	--	--
10:30	5	5	200	8.85	0.53	8.1	0.98	3.61	0.08	12.9	-86.5	--	--
10:35	5	10	200	8.85	0.79	8.1	0.96	2.12	0.04	12.8	-104.4	--	--
10:40	5	15	200	8.85	1.06	8.1	0.93	1.78	0.04	12.6	-116.2	--	--
10:45	5	20	200	8.85	1.32	8.07	0.86	1.64	0.04	12.5	-134.2	--	--
10:50	5	25	200	8.85	1.59	8.08	0.84	1.47	0.04	12.6	-142.1	--	--
10:55	5	30	200	8.85	1.85	8.08	0.84	1.31	0.04	12.6	-143.9	Clear	Mild

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-55			**Date**	06/04/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.0 degrees F and Clear. The wind is blowing S at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	14.18	**Total Depth (ft-bmp)**	20.05	**Water Column (ft)**	5.87	**Gallons in Well**	0.95
Purge Start	11:15	**Pump Intake (ft-bmp)**	17.55	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:55	**Volumes Purged**	2.22	**Sample ID**	MW-14-55_060422	**Sampled by**	Austin Westhuis
Sample Time	11:50	**Gallons Purged**	2.11	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:20	0	0	200	14.18	0.26	6.97	0.56	11.7	0.19	12.1	-74	--	--
11:25	5	5	200	14.18	0.53	6.95	0.56	4.44	0.12	12	-51.4	--	--
11:30	5	10	200	14.18	0.79	7	0.56	2.03	0.11	12	-40.5	--	--
11:35	5	15	200	14.18	1.06	7.04	0.56	1.81	0.1	11.9	-35.5	--	--
11:40	5	20	200	14.18	1.32	7.07	0.56	1.46	0.1	11.8	-27.8	--	--
11:45	5	25	200	14.18	1.59	7.05	0.56	1.22	0.1	11.9	-22.1	--	--
11:50	5	30	200	14.18	1.85	7.08	0.57	1.04	0.1	12.1	-18.3	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-57			**Date**	06/04/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.9 degrees F and Clear. The wind is blowing S at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	10.22	**Total Depth (ft-bmp)**	21.4	**Water Column (ft)**	11.18	**Gallons in Well**	1.82
Purge Start	12:30	**Pump Intake (ft-bmp)**	18.9	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:05	**Volumes Purged**	1.02	**Sample ID**	MW-14-57_060422	**Sampled by**	Austin Westhuis
Sample Time	13:00	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:35	0	0	200	10.22	0.26	7.21	0.77	2.66	0.29	12.6	36.3	--	--
12:40	5	5	200	10.26	0.53	7.23	0.76	1.93	0.22	12.4	44.7	--	--
12:45	5	10	200	10.26	0.79	7.21	0.76	1.61	0.17	12.5	44.7	--	--
12:50	5	15	200	10.26	1.06	7.27	0.76	1.5	0.15	12.5	44.6	--	--
12:55	5	20	200	10.26	1.32	7.29	0.75	1.29	0.14	12.4	43.7	--	--
13:00	5	25	200	10.26	1.59	7.3	0.75	1.2	0.14	12.3	42.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-58R			**Date**	04/06/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	51.1 degrees F and Mostly Clear. The wind is blowing E at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	12.06	**Total Depth (ft-bmp)**	29.59	**Water Column (ft)**	17.53	**Gallons in Well**	2.85
Purge Start	12:00	**Pump Intake (ft-bmp)**	27.59	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:25	**Volumes Purged**	0.46	**Sample ID**	MW-14-58R_040622	**Sampled by**	Austin Westhuis
Sample Time	12:20	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:05	0	0	200	12.06	0.26	6.95	1.983	4.41	0.75	9.8	-24.3	--	--
12:10	5	5	200	12.06	0.53	6.97	1.988	1.91	0.71	9.8	-35	--	--
12:15	5	10	200	12.06	0.79	6.98	1.983	1.3	0.7	9.8	-36.6	--	--
12:20	5	15	200	12.06	1.06	6.99	1.976	1.22	0.69	9.8	-37.1	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs 8260 and 1,4-Dioxane 8260	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-14-58R			**Date**	6/7/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	9.75	**Total Depth (ft-bmp)**	27	**Water Column(ft)**	17.25	**Gallons in Well**	2.8
MP Elevation	NA	**Pump Intake (ft-bmp)**	19	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	11:55	**Gallons Purged**		**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	11:05						
Purge End:	11:55						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
11:05	0	100	9.75	0.13	8.04	2.5	25	2.02	13.6	-8.3		
11:10	5	100	9.75	0.13	7.98	2.52	15	0.37	14	-4.3		
11:15	5	100	9.75	0.40	7.94	2.53	12	0.17	13.9	-3.5		
11:20	5	100	9.75	0.53	7.95	2.54	11	0.08	13.9	-3.8		
11:25	5	100	9.75	0.66	7.3	2.66	8	0.06	14.3	-12.7		
11:30	5	100	9.75	0.79	7.01	2.75	8	0.08	14.2	-16.9		
11:35	5	100	9.75	0.92	7	2.76	8	0.05	14.2	-17.6		
11:40	5	100	9.75	1.06	7	2.75	8	0.03	14.2	-18		
11:45	5	100	9.75	1.19	7	2.75	8	0.02	14.4	-18.9		
11:50	5	100	9.75	1.32	7	2.75	8	0.02	14.5	-20		
11:55	5	100	9.75	1.45	7	2.75	8	0.04	14.8	-20		

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane	40 mL Vial	3	HCL
VOCs	40 mL Vial	3	HCL
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Condition of Well: Good

Well Locked at Arrival: yes

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-14-59			**Date**	6/7/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	5.15	**Total Depth (ft-bmp)**	20	**Water Column(ft)**	14.85	**Gallons in Well**	2.41
MP Elevation	NA	**Pump Intake (ft-bmp)**	13	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	10:45	**Gallons Purged**	1.45	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	09:55						
Purge End:	10:45						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
09:55	0	100	13	0.13	7.38	0.71	21	1.44	13.6	-5.9		
10:00	5	100	13	0.26	7.32	0.71	18	0.2	13.5	-1.8		
10:05	5	100	13	0.40	7.28	0.71	18	0.12	13.4	0.5		
10:10	5	100	13	0.53	7.27	0.71	15	0.08	13.2	0.6		
10:15	5	100	13	0.66	7.26	0.71	15	0.05	13.2	1.3		
10:20	5	100	13	0.79	7.25	0.71	18	0.04	13.2	0.7		
10:25	5	100	13	0.92	7.27	0.71	15	0.07	13.6	-0.6		
10:30	5	100	13	1.06	7.3	0.71	15	0.07	13.6	-2.3		
10:35	5	100	13	1.19	7.31	0.71	15	0.07	13.6	-3.1		
10:40	5	100	13	1.32	7.32	0.71	15	0.06	13.6	-3.2		
10:45	5	100	13	1.45	7.31	0.71	15	0.06	13.5	-3.1		

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane	40 mL Vial	3	HCL
VOCs	40 mL Vial	3	HCL
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Condition of Well: Good

Well Locked at Arrival: yes

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-14-60			**Date**	6/7/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	13	**Total Depth (ft-bmp)**	20	**Water Column(ft)**	7	**Gallons in Well**	1.14
MP Elevation	NA	**Pump Intake (ft-bmp)**	13	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	09:35	**Gallons Purged**	1.19	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	08:55						
Purge End:	09:35						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
08:55	0	100	13	0.13	7.36	1.13	25	0.21	13.5	-7.2		
09:00	5	100	13	0.26	7.31	1.12	21	0.07	13.1	-9.8		
09:05	5	100	13	0.40	7.32	1.13	18	0.06	13.1	-11.2		
09:10	5	100	13	0.53	7.33	1.13	18	0.04	13	-11.9		
09:15	5	100	13	0.66	7.35	1.14	18	0.01	13	-12.3		
09:20	5	100	13	0.79	7.36	1.14	15	0.02	13	-12.2		
09:25	5	100	13	0.92	7.36	1.15	15	0.01	12.9	-12.9		
09:30	5	100	13	1.06	7.37	1.16	15	0.01	12.9	-13.5		
09:35	5	100	13	1.19	7.37	1.16	15	0.02	12.9	-13.6		

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Vial	3	HCL
1,4-Dioxane	40 mL Vial	3	None
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-61			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.59	**Total Depth (ft-bmp)**	78.83	**Water Column (ft)**	13.24	**Gallons in Well**	2.15
Purge Start	10:00	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	10:25	**Volumes Purged**		**Sample ID**	MW-14-61_060122	**Sampled by**	Donald Richmond
Sample Time	10:30	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:10	0	0	200	65.59	--	6.92	2.02	1.92	2.86	17.4	70.6	--	--
10:15	5	5	200	65.59	--	6.94	2.03	9.96	2.35	17.7	64.9	--	--
10:20	5	10	200	65.59	--	6.92	2.05	1.35	2.1	17.5	63.3	Clear	None

Constituent Sampled	**Container**	**Number**	**Preservative**
PFAS, 1,4 D, Nutrients, VOCS	40 mL Glass	7	H2SO4, HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-14-62			**Date**	6/7/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Cloudy
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	11.38	**Total Depth (ft-bmp)**	17	**Water Column(ft)**	5.62	**Gallons in Well**	0.91
MP Elevation	NA	**Pump Intake (ft-bmp)**	15	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	14:50	**Gallons Purged**	1.72	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	13:50						
Purge End:	14:50						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
13:50	0	100	10	0.13	10.81	0.521	13	1.4	17.2	0.5		
13:55	5	100	10	0.26	10.77	0.578	12	0.15	17.2	7.5		
14:00	5	100	10	0.40	10.84	0.64	8	0.05	16.7	8.1		
14:05	5	100	10	0.53	10.89	0.65	6	0.01	16.2	8.6		
14:10	5	100	10	0.66	10.9	0.65	6	0.01	16.5	9.4		
14:15	5	100	10	0.79	10.95	0.66	6	0.01	16.4	7.7		
14:20	5	100	10	0.92	10.99	0.66	6	0.01	16.5	6.4		
14:25	5	100	10	1.06	11.03	0.66	6	0.02	16.4	5.1		
14:30	5	100	10	1.19	11.05	0.65	6	0.02	16.4	4.4		
14:35	5	100	10	1.32	11.07	0.65	6	0.02	16.4	3.9		
14:40	5	100	10	1.45	11.1	0.65	6	0.03	16.5	2.8		
14:45	5	100	10	1.59	11.12	0.65	5	0.04	16.4	2		
14:50	5	100	10	1.72	11.13	0.65	5	0.03	16.5	1.7		

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane	40 mL Vial	3	HCL
VOCs	40 mL Vial	3	HCL
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Condition of Well: Good

Well Locked at Arrival: yes

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-63			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	66.51	**Total Depth (ft-bmp)**	76.72	**Water Column (ft)**	10.21	**Gallons in Well**	1.66
Purge Start	09:20	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	10:20	**Volumes Purged**		**Sample ID**	MW-14-63_060822	**Sampled by**	Donald Richmond
Sample Time	10:20	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:35	0	0	200	66.51	--	6.98	1.04	581	0.36	15.2	-63.1	--	--
09:40	5	5	200	66.51	--	6.99	1.04	286	0.32	15.3	-68.3	--	--
09:45	5	10	200	66.51	--	6.99	1.06	206	0.26	16	-70	--	--
09:50	5	15	200	66.51	--	7	1.05	131	0.22	15.2	-72.7	--	--
09:55	5	20	200	66.51	--	6.99	1.06	108	0.18	15.5	-73.7	--	--
10:00	5	25	200	66.51	--	6.99	1.06	93.9	0.15	15.8	-74.9	--	--
10:05	5	30	200	66.51	--	6.99	1.07	82.1	0.14	16	-75.3	--	--
10:10	5	35	200	66.51	--	6.99	1.07	71	0.16	15.7	-76.1	--	--
10:15	5	40	200	66.51	--	6.99	1.06	57.7	0.15	15.5	-76.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-64			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Clear. The wind is blowing W/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	67.56	**Total Depth (ft-bmp)**	106.3	**Water Column (ft)**	38.74	**Gallons in Well**	6.29
Purge Start	10:15	**Pump Intake (ft-bmp)**	104	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:00	**Volumes Purged**	0.19	**Sample ID**	MW-14-64_060922	**Sampled by**	Billy Cobern
Sample Time	11:00	**Gallons Purged**	1.19	**Replicate/ Code No.**	DUP-11_060922	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:20	0	0	100	67.69	0.13	7.15	1.62	22.9	6.21	17.3	91.4	--	--
10:25	5	5	100	67.69	0.26	7.01	1.62	20.8	2.95	16.9	83.9	--	--
10:30	5	10	100	67.69	0.40	7	1.63	19.4	2.48	17	76.8	--	--
10:35	5	15	100	67.69	0.53	7.01	1.64	15.1	2.39	17	73.5	--	--
10:40	5	20	100	67.69	0.66	7.01	1.63	12.7	2.48	17.3	71.7	--	--
10:45	5	25	100	67.69	0.79	7.01	1.64	10.3	2.33	17.4	70.9	--	--
10:50	5	30	100	67.69	0.92	7.01	1.64	9.56	2.39	17.5	70.8	--	--
10:55	5	35	100	67.69	1.06	7.01	1.64	8.82	2.33	17.5	70.7	--	--
11:00	5	40	100	67.69	1.19	7.01	1.64	8.79	2.31	17.5	70.6	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-66			**Date**	06/03/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Cloudy. The wind is blowing W/SW at 16.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.11	**Total Depth (ft-bmp)**	22.21	**Water Column (ft)**	17.1	**Gallons in Well**	2.78
Purge Start	10:50	**Pump Intake (ft-bmp)**	20.21	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:20	**Volumes Purged**	0.57	**Sample ID**	MW-14-66_060322	**Sampled by**	Austin Westhuis
Sample Time	11:15	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:55	0	0	200	6.24	0.26	7.43	0.62	4.41	0.19	14.6	65.4	--	--
11:00	5	5	200	6.46	0.53	7.42	0.6	2.18	0.16	14.5	62.5	--	--
11:05	5	10	200	6.63	0.79	7.39	0.58	1.78	0.13	14.1	56.3	--	--
11:10	5	15	200	6.67	1.06	7.38	0.58	1.35	0.13	14	51.3	--	--
11:15	5	20	200	6.68	1.32	7.41	0.58	1.22	0.12	13.9	50.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Total Select Metals (As, Ni, P	125 mL Plastic	1	HNO3

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-67			**Date**	06/03/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Clear. The wind is blowing W/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.75	**Total Depth (ft-bmp)**	20.83	**Water Column (ft)**	15.08	**Gallons in Well**	2.45
Purge Start	09:50	**Pump Intake (ft-bmp)**	18.33	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:20	**Volumes Purged**	0.65	**Sample ID**	MW-14-67_060322	**Sampled by**	Austin Westhuis
Sample Time	10:15	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:55	0	0	200	5.75	0.26	6.91	1.12	2.34	0.72	13.2	146.3	--	--
10:00	5	5	200	5.75	0.53	7.15	1.12	1.74	0.68	13	130.2	--	--
10:05	5	10	200	5.75	0.79	7.17	1.12	1.61	0.67	12.9	127	--	--
10:10	5	15	200	5.75	1.06	7.19	1.12	1.29	0.65	12.9	123.3	--	--
10:15	5	20	200	5.75	1.32	7.2	1.12	1.2	0.65	12.8	120.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None
Total Select Metals (As, Ni, P	125 mL Plastic	1	HNO3

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-70			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	60.1 degrees F and Cloudy. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	10.68	**Total Depth (ft-bmp)**	23.1	**Water Column (ft)**	12.42	**Gallons in Well**	2.02
Purge Start	09:20	**Pump Intake (ft-bmp)**	20.6	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:00	**Volumes Purged**	1.05	**Sample ID**	MW-14-70_060222	**Sampled by**	Austin Westhuis
Sample Time	09:55	**Gallons Purged**	2.11	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:25	0	0	200	11.29	0.26	7.06	0.97	1.94	0.22	10.5	-649	--	--
09:30	5	5	200	11.29	0.53	7.1	0.97	1.81	0.15	10.8	-616.2	--	--
09:35	5	10	200	11.29	0.79	7.2	0.98	1.63	0.14	11	-521.4	--	--
09:40	5	15	200	11.29	1.06	7.24	0.98	1.51	0.1	10.9	-457	--	--
09:45	5	20	200	11.29	1.32	7.26	0.98	1.45	0.1	10.9	-378.8	--	--
09:50	5	25	200	11.29	1.59	7.28	0.98	1.23	0.1	10.9	-380.2	--	--
09:55	5	30	200	11.29	1.85	7.28	0.98	1.05	0.1	10.8	-388.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Well Locked at Arrival: yes
Condition of Well: Good condition
Well Locked at Departure: yes
Well Completion: Stick-up
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-15-71			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.65	**Total Depth (ft-bmp)**	119.1	**Water Column (ft)**	54.45	**Gallons in Well**	8.85
Purge Start	09:00	**Pump Intake (ft-bmp)**	116.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	09:45	**Volumes Purged**	0.13	**Sample ID**	MW-15-71_060922	**Sampled by**	Billy Cobern
Sample Time	09:45	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:05	0	0	100	64.66	0.13	7.26	1.43	19.2	5.92	15.6	71.6	--	--
09:10	5	5	100	64.66	0.26	7.08	1.45	18.3	3	15	71.1	--	--
09:15	5	10	100	64.66	0.40	7.04	1.45	16.8	2.31	15	69.4	--	--
09:20	5	15	100	64.66	0.53	7.03	1.45	14.3	1.88	14.9	68.3	--	--
09:25	5	20	100	64.66	0.66	7.01	1.45	14.9	1.43	14.9	67.2	--	--
09:30	5	25	100	64.66	0.79	6.98	1.45	14.3	1.23	14.9	66	--	--
09:35	5	30	100	64.66	0.92	6.95	1.46	13	1.08	14.9	64.6	--	--
09:40	5	35	100	64.66	1.06	6.94	1.45	12.8	1.05	14.8	63.2	--	--
09:45	5	40	100	64.66	1.19	6.94	1.46	12.6	1	14.8	61.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-15-72			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	55.71	**Total Depth (ft-bmp)**	68.65	**Water Column (ft)**	12.94	**Gallons in Well**	2.1
Purge Start	16:40	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	17:15	**Volumes Purged**		**Sample ID**	MW-15-72_060122	**Sampled by**	Donald Richmond
Sample Time	17:15	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:45	0	0	200	55.71	--	7.06	0.94	27.5	0.37	18	-85.1	--	--
16:50	5	5	200	55.71	--	6.91	0.93	0.02	0.18	18.3	-81.4	--	--
16:55	5	10	200	55.71	--	6.91	0.95	0.02	0.18	17.7	-84.4	--	--
17:00	5	15	200	55.71	--	6.92	1.03	0.02	0.13	17.6	-88.5	--	--
17:05	5	20	200	55.71	--	6.94	1.07	0.02	0.11	17.5	-90.8	--	--
17:10	5	25	200	55.71	--	6.95	1.1	0.02	0.11	17.2	-92.6	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4 D, VOCS, PFAS	250ml plastic, 40ml voas	5	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-15-73			**Date**	06/07/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	70.61	**Total Depth (ft-bmp)**	79.25	**Water Column (ft)**	8.64	**Gallons in Well**	1.4
Purge Start	10:00	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	10:50	**Volumes Purged**		**Sample ID**	MW-15-73_060722	**Sampled by**	Donald Richmond
Sample Time	10:50	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:20	0	0	200	70.61	--	6.49	2.81	46.4	4.55	15	-38	--	--
10:25	5	5	200	70.61	--	6.59	3.02		0.72	16.6	-45.5	--	--
10:30	5	10	200	70.61	--	6.53	3.04		0.18	16.7	-41.1	--	--
10:35	5	15	200	70.61	--	6.61	3.04	777	0.62	16.1	-50.3	--	--
10:40	5	20	200	70.61	--		3.04	777	0.58	16	-51.1	--	--
10:45	5	25	200	70.61	--	6.63	3.04	777	0.62	16.2	-50.7	Gray	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-74			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.25	**Total Depth (ft-bmp)**	75.75	**Water Column (ft)**	12.5	**Gallons in Well**	2.03
Purge Start	14:50	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:50	**Volumes Purged**		**Sample ID**	MW-16-74_060122	**Sampled by**	Donald Richmond
Sample Time	15:50	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:00	0	0	200	63.25	--	6.92	1.97	85.9	0.4	17.3	-4.1	--	--
15:05	5	5	200	63.25	--	6.92	1.98	240	0.29	17.1	-50.4	--	--
15:10	5	10	200	63.25	--	6.92	2	301	0.18	17.6	-56	--	--
15:15	5	15	200	63.25	--	6.93	1.99	304	0.14	17.5	-57.9	--	--
15:20	5	20	200	63.25	--	6.94	1.98	343	0.24	17	-60.3	--	--
15:25	5	25	200	63.25	--	6.95	1.97	315	0.14	17.1	-61.5	--	--
15:30	5	30	200	63.25	--	6.95	1.97	337	0.17	17.2	-63.3	--	--
15:35	5	35	200	63.25	--	6.96	1.97	332	0.14	17.1	-63.8	--	--
15:40	5	40	200	63.25	--	6.96	1.97	359	0.12	17.3	-65.3	--	--
15:45	5	45	200	63.25	--	6.97	1.97	384	0.17	17.2	-66.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-75			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	60.72	**Total Depth (ft-bmp)**	72.68	**Water Column (ft)**	11.96	**Gallons in Well**	1.94
Purge Start	15:55	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:55	**Volumes Purged**		**Sample ID**	MW-16-75_060822	**Sampled by**	Donald Richmond
Sample Time	16:55	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:05	0	0	200	60.72	--	7.1	1.85	283	0.42	17.1	-67.6	--	--
16:10	5	5	200	60.72	--	7.09	1.85	418	0.3	17.1	-71.4	--	--
16:15	5	10	200	60.72	--	7.09	1.86	498	0.21	17.2	-76.9	--	--
16:20	5	15	200	60.72	--	7.09	1.85		0.18	17.2	-78.9	--	--
16:35	15	30	200	60.72	--	7.1	1.88	620	0.48	17.4	-83.2	--	--
16:40	5	35	200	60.72	--	7.11	1.87	407	0.21	17.1	85.9	--	--
16:45	5	40	200	60.72	--	7.11	1.87	386	0.15	16.8	-87.3	--	--
16:50	5	45	200	60.72	--	7.11	1.85	317	0.11	16.5	-88.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-76			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.65	**Total Depth (ft-bmp)**	80.97	**Water Column (ft)**	17.32	**Gallons in Well**	2.81
Purge Start	12:50	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:20	**Volumes Purged**		**Sample ID**	MW-16-76_060822	**Sampled by**	Donald Richmond
Sample Time	13:20	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:00	0	0	200	63.65	--	7.13	1.97	13.8	0.65	15	-45.3	--	--
13:05	5	5	200	63.65	--	7.13	1.97	9.03	0.36	14.7	-57.9	--	--
13:10	5	10	200	63.65	--	7.13	2	10.9	0.36	14.6	-62.9	--	--
13:15	5	15	200	63.65	--	7.13	2.04	10.1	0.33	14.8	-63.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-77			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	59.04	**Total Depth (ft-bmp)**	71.62	**Water Column (ft)**	12.58	**Gallons in Well**	2.04
Purge Start	14:05	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:05	**Volumes Purged**		**Sample ID**	MW-16-77_060822	**Sampled by**	Donald Richmond
Sample Time	15:05	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:20	0	0	200	59.04	--	6.97	2.28	2.26	0.85	14	-47.5	--	--
14:25	5	5	200	59.04	--	7.13	2.14	1.47	1.73	14.3	-45.8	--	--
14:30	5	10	200	59.04	--	7.2	2.12	17.2	2.27	14.3	-46	--	--
14:35	5	15	200	59.04	--	7.26	2.1	21.1	2.94	14.7	-44	--	--
14:40	5	20	200	59.04	--	7.09	2.46	101	2.24	14.6	-46.5	--	--
14:45	5	25	200	59.04	--	7.06	2.6	116	0.97	15	-55.3	--	--
14:50	5	30	200	59.04	--	7.06	2.63	106	0.9	15.2	-57.7	--	--
14:55	5	35	200	59.04	--	7.03	2.72	64.9	0.66	16.4	-60.3	--	--
15:00	5	40	200	59.04	--	7.03	2.77	57.2	0.61	17.6	-62.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-78			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.49	**Total Depth (ft-bmp)**	77.42	**Water Column (ft)**	13.93	**Gallons in Well**	2.26
Purge Start	11:05	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:50	**Volumes Purged**		**Sample ID**	MW-16-78_060222	**Sampled by**	Donald Richmond
Sample Time	11:50	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:20	0	0	200	63.49	--	7.16	1.39	11.7	5.74	16.9	-45.3	--	--
11:25	5	5	200	63.49	--	6.9	1.32	2.69	0.19	15.8	-66.4	--	--
11:30	5	10	200	63.49	--	6.91	1.33	0.61	0.17	16	-71.1	--	--
11:35	5	15	200	63.49	--	6.95	1.32	0.21	0.1	15.8	-79.1	--	--
11:40	5	20	200	63.49	--	6.96	1.32	2.2	0.12	16	-82.2	--	--
11:45	5	25	200	63.49	--	6.97	1.33	3.49	0.12	16.2	-84.4	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-79			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.4	**Total Depth (ft-bmp)**	73.45	**Water Column (ft)**	9.05	**Gallons in Well**	1.47
Purge Start	09:05	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	10:00	**Volumes Purged**		**Sample ID**	MW-16-79_060222	**Sampled by**	Donald Richmond
Sample Time	10:00	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:20	0	0	200	64.4	--	6.99	0.99	52.3	0.42	15	-60.9	--	--
09:25	5	5	200	64.4	--	7.05	0.98	51.5	0.37	14.8	-73.3	--	--
09:30	5	10	200	64.4	--	7.07	0.97	59.2	0.31	14.9	-77.6	--	--
09:35	5	15	200	64.4	--	7.11	0.96	92.3	0.5	15.1	-76.2	--	--
09:40	5	20	200	70.54	--	7.12	0.96	100	0.59	15.7	-74.9	--	--
09:45	5	25	200	70.54	--	7.12	0.97	102	0.64	15.4	-74.7	--	--
09:50	5	30	200	70.54	--	7.14	0.97	84.5	0.71	15.7	-73.4	Clear	Strong

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments: Product was observed on the tubing and bladder pump when it was removed from the well.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-80			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	62.47	**Total Depth (ft-bmp)**	71.52	**Water Column (ft)**	9.05	**Gallons in Well**	1.47
Purge Start	11:00	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:00	**Volumes Purged**		**Sample ID**	MW-16-80_060822	**Sampled by**	Donald Richmond
Sample Time	12:00	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:05	0	0	200	62.47	--	6.43	3	105	1.13	14.1	-24.7	--	--
11:10	5	5	200	62.47	--	6.52	2.92	80.7	0.25	13.7	-36.1	--	--
11:15	5	10	200	62.47	--	6.53	2.91	68.6	0.26	13.4	-37.9	--	--
11:20	5	15	200	62.47	--	6.56	2.88	42.9	0.21	12.8	-43.1	--	--
11:25	5	20	200	62.47	--	6.57	2.86	32	0.18	12.9	-44.4	--	--
11:30	5	25	200	62.47	--	6.59	2.85	25.7	0.15	13.4	-49.9	--	--
11:35	5	30	200	62.47	--	6.59	2.85	20.7	0.17	13.4	-50.7	--	--
11:40	5	35	200	62.47	--	6.6	2.82	20.9	0.15	13.1	-51.8	--	--
11:45	5	40	200	62.47	--	6.62	2.77	9.11	0.15	12.9	-54	--	--
11:50	5	45	200	62.47	--	6.62	2.77	5.55	0.14	12.8	-55	--	--
11:55	5	50	200	62.47	--	6.63	2.75	4.9	0.1	13.3	-57.4	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-81			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	62.89	**Total Depth (ft-bmp)**	77.24	**Water Column (ft)**	14.35	**Gallons in Well**	2.33
Purge Start	12:35	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:15	**Volumes Purged**		**Sample ID**	MW-16-81_060222	**Sampled by**	Donald Richmond
Sample Time	13:15	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:45	0	0	200	63.49	--	6.72	3.21	34.7	6.7	19.4	41.7	--	--
12:50	5	5	200	63.49	--	6.71	3.15	41	6.79	19.1	38.3	--	--
12:55	5	10	200	63.49	--	6.72	3.16	28.7	6.35	19.4	35.5	--	--
13:00	5	15	200	63.49	--	6.73	3.14	22.2	6.38	19.3	34.3	--	--
13:05	5	20	200	63.49	--	6.73	3.12	21	6.99	19.9	28.8	--	--
13:10	5	25	200	63.49	--	6.74	3.12	21.6	6.55	19.8	24.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM,VOCs SW-	40 mL Glass	9	HCL

Comments: MSMSD taken

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-82			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.23	**Total Depth (ft-bmp)**	77.14	**Water Column (ft)**	12.91	**Gallons in Well**	2.1
Purge Start	14:15	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:50	**Volumes Purged**		**Sample ID**	MW-16-82_060222	**Sampled by**	Donald Richmond
Sample Time	14:50	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:20	0	0	200	64.23	--	6.91	1.15	3.08	0.33	20.4	-91.9	--	--
14:25	5	5	200	64.23	--	6.93	1.18	0.02	0.17	20.7	-101.9	--	--
14:30	5	10	200	67.3	--	6.95	1.17	0.02	0.14	20.5	-104.3	--	--
14:35	5	15	200	67.3	--	6.95	1.19	0.02	0.17	20.6	-108.9	--	--
14:40	5	20	200	67.3	--	6.99	1.17	0.02	0.09	20.7	-116.2	--	--
14:45	5	25	200	67.3	--	7	1.19	0.02	0.09	20.6	-119.1	--	--
14:50	5	30	200	67.3	--	7	1.2	0.02	0.09	21	-122.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-83			**Date**	06/06/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	70.0 degrees F and Cloudy. The wind is blowing SW at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	71.16	**Total Depth (ft-bmp)**	79.07	**Water Column (ft)**	7.91	**Gallons in Well**	1.29
Purge Start	15:30	**Pump Intake (ft-bmp)**	76.57	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	16:05	**Volumes Purged**	1.43	**Sample ID**	MW-16-83_060622	**Sampled by**	Austin Westhuis
Sample Time	16:00	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:35	0	0	200	71.16	0.26	6.59	3.58	14.3	0.11	16.7	-54.9	--	--
15:40	5	5	200	71.16	0.53	6.6	3.51	4.04	0.09	15.7	-62.6	--	--
15:45	5	10	200	71.16	0.79	6.6	3.49	2.19	0.06	15.9	-62.9	--	--
15:50	5	15	200	71.16	1.06	6.62	3.48	1.77	0.05	15.9	-63.3	--	--
15:55	5	20	200	71.16	1.32	6.71	3.44	1.6	0.05	15.6	-65.5	--	--
16:00	5	25	200	71.16	1.59	6.72	3.43	1.51	0.05	15.7	-68	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-84			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	66.84	**Total Depth (ft-bmp)**	81.15	**Water Column (ft)**	14.31	**Gallons in Well**	2.33
Purge Start	15:25	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:00	**Volumes Purged**		**Sample ID**	MW-16-84_060222	**Sampled by**	Donald Richmond
Sample Time	16:00	**Gallons Purged**		**Replicate/ Code No.**	Dup-04_060222	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:35	0	0	200	66.84	--	7.08	1.41	84	0.28	16.7	-82.4	--	--
15:40	5	5	200	66.84	--	7.1	1.48	52.8	0.22	16.8	-87.1	--	--
15:45	5	10	200	66.84	--	7.12	1.5	43	0.18	16.7	-89.9	--	--
15:50	5	15	200	66.84	--	7.13	1.54	40	0.15	16.9	-93.2	--	--
15:55	5	20	200	66.84	--	7.14	1.54	42.8	0.14	16.8	-95.1	--	--
16:00	5	25	200	66.84	--	7.14	1.55	46.9	0.14	16.6	-96.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCS, 1,4 D	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-85			**Date**	06/06/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	71.1 degrees F and Light Rain. The wind is blowing N at 3.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	68.44	**Total Depth (ft-bmp)**	82	**Water Column (ft)**	13.56	**Gallons in Well**	2.2
Purge Start	14:20	**Pump Intake (ft-bmp)**	79.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:00	**Volumes Purged**	0.96	**Sample ID**	MW-16-85_060622	**Sampled by**	Austin Westhuis
Sample Time	14:55	**Gallons Purged**	2.11	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:25	0	0	200	68.44	0.26	7.21	0.95	3.08	1.91	16.3	-68.9	--	--
14:30	5	5	200	68.44	0.53	7.19	0.68	2.18	0.03	15.7	-58.7	--	--
14:35	5	10	200	68.44	0.79	7.15	0.64	2.02	0.03	15.6	-51.2	--	--
14:40	5	15	200	68.44	1.06	7.16	0.62	1.62	0.03	15.6	-46.7	--	--
14:45	5	20	200	68.44	1.32	7.17	0.64	1.36	0.03	15.6	-45	--	--
14:50	5	25	200	68.44	1.59	7.16	0.65	1.22	0.03	15.6	-44.8	--	--
14:55	5	30	200	68.44	1.85	7.16	0.65	1.03	0.03	15.6	-46.2	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs and 1,4-Dioxane	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-17-86			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	72.0 degrees F and Clear. The wind is blowing W at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.81	**Total Depth (ft-bmp)**	81.4	**Water Column (ft)**	16.59	**Gallons in Well**	2.7
Purge Start	13:20	**Pump Intake (ft-bmp)**	79	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:00	**Volumes Purged**	0.39	**Sample ID**	MW-17-86_060222	**Sampled by**	Billy Cobern
Sample Time	14:00	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:25	0	0	100	64.89	0.13	7.04	2.09	28.4	2.02	22.1	-85.1	--	--
13:30	5	5	100	64.89	0.26	6.99	2.03	24.7	0.93	21.9	-83.1	--	--
13:35	5	10	100	64.89	0.40	6.99	2.03	22.9	0.63	21.9	-83.5	--	--
13:40	5	15	100	64.89	0.53	6.99	2.03	13.2	0.59	22	-85.1	--	--
13:45	5	20	100	64.89	0.66	6.98	2.05	10.2	0.47	22.1	-88.2	--	--
13:50	5	25	100	64.89	0.79	6.98	2.04	9.47	0.45	22.5	-89.8	--	--
13:55	5	30	100	64.89	0.92	6.98	2.04	9.04	0.43	22.5	-90.1	--	--
14:00	5	35	100	64.89	1.06	6.99	2.05	9.23	0.42	22.5	-91.4	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM,VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-17-87			**Date**	06/06/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Cloudy. The wind is blowing S at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	4	**Well Casing Material**	Steel
Static Water Level (ft-bmp)	73.52	**Total Depth (ft-bmp)**	113.75	**Water Column (ft)**	40.23	**Gallons in Well**	26.15
Purge Start	10:10	**Pump Intake (ft-bmp)**	111.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:05	**Volumes Purged**	0.06	**Sample ID**	MW-17-87_060622	**Sampled by**	Billy Cobern
Sample Time	11:05	**Gallons Purged**	1.45	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:15	0	0	100	73.53	0.13	8.62	2.55	48.3	2.23	20.4	-93.3	--	--
10:20	5	5	100	73.53	0.26	8.58	2.55	41	2.34	20.7	-88	--	--
10:25	5	10	100	73.53	0.40	8.53	2.55	39.8	2.35	20.9	-79	--	--
10:30	5	15	100	73.53	0.53	8.45	2.55	39.4	3.48	21.4	-66.7	--	--
10:35	5	20	100	73.53	0.66	7.11	3.06	37.3	2.78	19.6	-108.8	--	--
10:40	5	25	100	73.53	0.79	6.96	3.23	35.8	1.35	18.6	-100.6	--	--
10:45	5	30	100	73.53	0.92	7.04	3.26	34.3	0.74	18.6	-116.1	--	--
10:50	5	35	100	73.53	1.06	7.08	3.26	31.9	0.6	18.8	-124.3	--	--
10:55	5	40	100	73.53	1.19	7.09	3.26	30.1	0.54	18.8	-126.7	--	--
11:00	5	45	100	73.53	1.32	7.1	3.26	29.8	0.49	18.8	-127.6	--	--
11:05	5	50	100	73.53	1.45	7.11	3.27	27.8	0.49	18.7	-128.3	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 522	250 mL Amber	1	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-18-88			**Date**	6/9/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	5	**Total Depth (ft-bmp)**	11	**Water Column(ft)**	6	**Gallons in Well**	0.97
MP Elevation	NA	**Pump Intake (ft-bmp)**	10	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	14:05	**Gallons Purged**	1.45	**Replicate/ Code No.**	MS/MSD	**Evacuation Method**	Peristaltic
Purge Start:	13:15						
Purge End:	14:05						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
13:15	0	100	5	0.13	7.27	0.66	22	1.97	15.9	-11.3		
13:20	5	100	5	0.26	6.88	0.67	19	1.82	16.1	10		
13:25	5	100	5	0.40	6.85	0.67	18	2.02	16.2	12.3		
13:30	5	100	5	0.53	6.86	0.66	12	2.13	16	12.9		
13:35	5	100	5	0.53	6.86	0.66	11	2.04	16	12.6		
13:35	0	100	5	0.79	6.86	0.66	10	1.92	15.8	12.3		
13:40	5	100	5	0.92	6.86	0.66	11	1.5	15.9	12.2		
13:45	5	100	5	1.06	6.86	0.67	11	2.3	16.1	12.1		
13:50	5	100	5	1.19	6.87	0.67	11	0.82	15.8	9.9		
13:55	5	100	5	1.32	6.87	0.67	11	0.56	15.1	8.8		
14:00	5	100	5	1.45	6.86	0.66	11	0.42	15.7	10.1		
14:05	5	100	5	1.45	6.87	0.67	11	0.42	15.9	8.9		

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Vial	9	HCL
Metals, Total	125 mL Plastic	3	HNO3
Metals, Dissolved	125 mL Plastic	3	HNO3
PFAS	250 mL Plastic	6	None
Hexavalent Chromium	125 mL Plastic	3	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-18-89			**Date**	6/8/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Sunny
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	4	**Total Depth (ft-bmp)**	12	**Water Column(ft)**	8	**Gallons in Well**	1.3
MP Elevation	NA	**Pump Intake (ft-bmp)**	11	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	13:30	**Gallons Purged**	1.72	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	12:30						
Purge End:	13:30						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
12:30	0	100	4	0.13	7.75	0.89	16	0.62	13.5	0.4		
12:35	5	100	4	0.26	7.41	0.89	15	0.14	13.4	15.5		
12:40	5	100	4	0.40	7.34	0.87	12	0.06	13.3	15.2		
12:45	5	100	4	0.53	7.34	0.84	12	0.07	13.4	13.2		
12:50	5	100	4	0.66	7.39	0.83	10	0.2	13.4	10.4		
12:55	5	100	4	0.79	7.44	0.82	8	0.27	13.4	8.5		
13:00	5	100	4	0.92	7.55	0.85	8	0.21	13.2	7.94		
13:05	5	100	4	1.06	7.63	0.79	8	4.12	13.7	7.7		
13:10	5	100	4	1.19	7.79	0.78	8	7.76	15.8	5.3		
13:15	5	100	4	1.32	8.08	0.77	8	8.46	17	-4.7		
13:20	5	100	4	1.45	8.16	0.76	8	8.51	17.6	-5.9		
13:25	5	100	4	1.59	8.16	0.75	8	8.51	17.9	-3.7		
13:30	5	100	4	1.72	8.15	0.75	8	8.51	18.1	-2.8		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments: Well ran dry had to recharge

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-18-90			**Date**	6/8/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	5	**Total Depth (ft-bmp)**	14	**Water Column(ft)**	9	**Gallons in Well**	1.46
MP Elevation	NA	**Pump Intake (ft-bmp)**	5	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time: 14:40 **Purge Start:** 13:40		**Gallons Purged**	1.72	**Replicate/ Code No.**	DUP-09_060822	**Evacuation Method**	Peristaltic

Purge End: 14:40

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
13:40	0	100	5	0.13	8.52	0.0005	26	2.45	17.8	12.8		
13:45	5	100	5	0.26	8.31	0.0004	15	4.61	16.3	4		
13:50	5	100	5	0.40	8.26	0.0004	10	5.11	16	3.4		
13:55	5	100	5	0.53	7.97	0.0004	12	5.36	15.7	5.8		
14:00	5	100	5	0.66	8.36	0.0003	10	4.97	16.8	3.7		
14:05	5	100	5	0.79	11.28	0.0003	10	4.43	16.1	28		
14:10	5	100	5	0.92	11.29	0.003	10	4.65	15.1	30.8		
14:15	5	100	5	1.06	11.31	0.003	8	5.46	14.8	27.5		
14:20	5	100	5	1.19	11.32	0.003	8	5.51	14.8	24.4		
14:25	5	100	5	1.32	11.32	0.003	8	5.23	15.2	20.7		
14:30	5	100	5	1.45	11.32	0.003	8	5.03	15.4	21.2		
14:35	5	100	5	1.59	11.32	0.003	8	4.87	15.4	18.5		
14:40	5	100	5	1.72	11.33	0.003	8	4.85	15.5	17.6		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	HCL

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-18-91			**Date**	6/8/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Sunny
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	6	**Total Depth (ft-bmp)**	12	**Water Column(ft)**	6	**Gallons in Well**	0.97
MP Elevation	NA	**Pump Intake (ft-bmp)**	11	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	09:35	**Gallons Purged**	1.19	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	09:00						
Purge End:	09:35						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
09:00	0	100	5.5	0.13	7.63	0.77	27	0.34	14.4	-29.8		
09:05	5	100	5.5	0.26	7.67	0.75	16	0.2	14.6	-28.7		
09:10	5	100	5.5	0.40	7.65	0.74	12	0.11	14.5	-28		
09:15	5	100	5.5	0.53	7.66	0.72	9	0.06	14.5	-25.8		
09:20	5	100	5.5	0.66	7.65	0.71	8	0.05	14.4	-23.6		
09:25	5	100	5.5	0.79	7.65	0.71	8	0.05	14.2	-22		
09:30	5	100	5.5	0.92	7.65	0.7	6	0.01	14.4	-21.3		
09:35	5	100	5.5	1.06	7.65	0.69	8	0.03	14.2	-19.9		

Constituent Sampled	**Container**	**Number**	**Preservative**
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-92			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Partly Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	15.3	**Total Depth (ft-bmp)**	30.13	**Water Column (ft)**	14.83	**Gallons in Well**	2.41
Purge Start	12:10	**Pump Intake (ft-bmp)**	27.63	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:40	**Volumes Purged**	0.66	**Sample ID**	MW-18-92_060922	**Sampled by**	Austin Westhuis
Sample Time	12:35	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:15	0	0	200	15.3	0.26	6.75	1.03	4.55	0.34	12.2	1.2	--	--
12:20	5	5	200	15.3	0.53	6.76	1.03	2.33	0.34	12.2	-0.1	--	--
12:25	5	10	200	15.3	0.79	6.77	1.02	2.02	0.32	12	-10.3	--	--
12:30	5	15	200	15.3	1.06	6.77	1.03	1.64	0.31	12	-12.3	--	--
12:35	5	20	200	15.3	1.32	6.78	1.03	1.51	0.31	11.9	-15	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-93			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	75.9 degrees F and Mostly Clear. The wind is blowing W at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	47.49	**Total Depth (ft-bmp)**	85	**Water Column (ft)**	37.51	**Gallons in Well**	6.1
Purge Start	16:10	**Pump Intake (ft-bmp)**	82.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	17:05	**Volumes Purged**	0.24	**Sample ID**	MW-18-93_060922	**Sampled by**	Billy Cobern
Sample Time	17:05	**Gallons Purged**	1.45	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:15	0	0	100	47.39	0.13	7.63	0.72	44.2	5.04	20.1	-126	--	--
16:20	5	5	100	47.79	0.26	7.5	0.69	40.1	2.3	18.1	-142.6	--	--
16:25	5	10	100	48.22	0.40	7.48	0.68	35.1	1.54	19.8	-164.5	--	--
16:30	5	15	100	48.71	0.53	7.48	0.69	28.2	1.51	20	-165.3	--	--
16:35	5	20	100	49.15	0.66	7.47	0.69	23.1	1.44	19.7	-160.8	--	--
16:40	5	25	100	49.58	0.79	7.47	0.68	16.9	1.43	20.1	-156.7	--	--
16:45	5	30	100	49.99	0.92	7.48	0.68	13.8	1.46	20.1	-155.6	--	--
16:50	5	35	100	50.38	1.06	7.48	0.68	13	1.43	20.3	-154.4	--	--
16:55	5	40	100	50.69	1.19	7.48	0.68	10.7	1.44	20.3	-153.6	--	--
17:00	5	45	100	50.98	1.32	7.48	0.68	10.1	1.46	20.4	-153.5	--	--
17:05	5	50	100	51.26	1.45	7.48	0.68	10.4	1.49	20.5	-152.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements. Used historical total depth

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-94			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	69.1 degrees F and Clear. The wind is blowing at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	52.57	**Total Depth (ft-bmp)**	79.65	**Water Column (ft)**	27.08	**Gallons in Well**	4.4
Purge Start	11:35	**Pump Intake (ft-bmp)**	77.15	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:30	**Volumes Purged**	0.66	**Sample ID**	MW-18-94_060822	**Sampled by**	Austin Westhuis
Sample Time	12:25	**Gallons Purged**	2.91	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:40	0	0	200	52.64	0.26	6.72	5.29	310	0.59	14.4	-48.8	--	--
11:45	5	5	200	52.64	0.53	6.82	5.21	122	0.41	13.9	-56.9	--	--
11:50	5	10	200	52.64	0.79	6.84	5.2	65.1	0.33	14	-62.4	--	--
11:55	5	15	200	52.64	1.06	6.86	5.18	41.1	0.24	14	-66.7	--	--
12:00	5	20	200	52.64	1.32	6.86	5.16	24.4	0.23	14	-68.6	--	--
12:05	5	25	200	52.64	1.59	6.86	5.14	11.6	0.25	14	-70.2	--	--
12:10	5	30	200	52.64	1.85	6.87	5.14	7.9	0.24	14	-73	--	--
12:15	5	35	200	52.64	2.11	6.87	5.14	4.22	0.25	14	-73.8	--	--
12:20	5	40	200	52.64	2.38	6.87	5.13	3.89	0.25	13.9	-73.6	--	--
12:25	5	45	200	52.64	2.64	6.88	5.13	3.55	0.24	13.9	-74	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL Glass	3	HCL
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-18-95			**Date**	6/9/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Sunny
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	9	**Total Depth (ft-bmp)**	9.5	**Water Column(ft)**	0.5	**Gallons in Well**	0.08
MP Elevation	NA	**Pump Intake (ft-bmp)**	5	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	13:00	**Gallons Purged**	0.79	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	12:40						
Purge End:	13:00						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
12:40	0	100	5	0.13	7.25	0.522	19	2.74	14.7	12.1		
12:45	5	100	5	0.26	7.07	0.52	12	3.3	14.7	18.5		
12:50	5	100	5	0.40	7.13	0.519	11	3.21	14.7	16.9		
12:53	3	100	5	0.40	7.12	0.516	10	3.22	14.8	16.5		
12:55	2	100	5	0.66	7.13	0.516	10	3.2	14.8	16.3		
13:00	5	100	5	0.79	7.13	0.516	10	3.21	14.8	16.33		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-97			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	71.6 degrees F and Mostly Cloudy. The wind is blowing E/SE at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	61.36	**Total Depth (ft-bmp)**	91.68	**Water Column (ft)**	30.32	**Gallons in Well**	4.93
Purge Start	13:05	**Pump Intake (ft-bmp)**	89.18	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:35	**Volumes Purged**	0.32	**Sample ID**	MW-18-97_060822	**Sampled by**	Austin Westhuis
Sample Time	13:30	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:10	0	0	200	61.36	0.26	6.73	1.64	12.6	0.52	13.6	-41	--	--
13:15	5	5	200	61.36	0.53	6.76	1.65	3.08	0.5	13.4	-44.9	--	--
13:20	5	10	200	61.36	0.79	6.77	1.65	1.44	0.48	13.4	-46.2	--	--
13:25	5	15	200	61.36	1.06	6.79	1.64	1.29	0.46	13.3	-47.1	--	--
13:30	5	20	200	61.36	1.32	6.79	1.64	1.2	0.46	13.4	-47.4	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL Glass	3	HCL
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-18-98			**Date**	6/9/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Sunny
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	5	**Total Depth (ft-bmp)**	12	**Water Column(ft)**	7	**Gallons in Well**	1.14
MP Elevation	NA	**Pump Intake (ft-bmp)**	11	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	11:35	**Gallons Purged**	1.32	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	10:50						
Purge End:	11:35						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
10:50	0	100	5	0.13	6.93	2.44	19	0.19	14.8	-9.7		
10:55	5	100	5	0.26	6.98	2.5	15	0.1	14.7	-13.6		
11:00	5	100	5	0.40	7	2.49	14	0.04	14.8	-14.7		
11:05	5	100	5	0.53	7.01	2.45	12	0.03	14.7	-14.7		
11:10	5	100	5	0.66	7.02	2.44	12	0.03	14.8	-14.5		
11:15	5	100	5	0.79	7.04	2.37	9	0.06	14.8	-14.4		
11:20	5	100	5	0.92	7.1	2.3	10	0.17	14	-13.9		
11:25	5	100	5	1.06	7.1	2.11	10	0.24	14.7	-12.1		
11:30	5	100	5	1.19	7.11	2.05	10	0.37	15	-11.3		
11:35	5	100	5	1.32	7.11	2.03	10	0.38	14.7	-11		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-18-99			**Date**	6/8/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Cloudy
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	5	**Total Depth (ft-bmp)**	14	**Water Column(ft)**	9	**Gallons in Well**	1.46
MP Elevation	NA	**Pump Intake (ft-bmp)**	13	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	16:00	**Gallons Purged**	1.72	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	15:00						
Purge End:	16:00						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
15:00	0	100	5	0.13	7.98	2.04	19	0.34	15	-15.3		
15:05	5	100	5	0.26	7.81	2.05	15	0.09	14.5	-13.8		
15:10	5	100	5	0.40	7.83	2.04	11	0.04	14.4	-15.9		
15:15	5	100	5	0.53	8	1.95	8	0.03	14.3	-11.4		
15:20	5	100	5	0.66	8.06	1.89	8	0.01	14.3	-8.8		
15:25	5	100	5	0.79	8.15	1.83	7	0.02	14.1	-7.2		
15:30	5	100	5	0.92	8.25	1.79	7	0.07	14.1	-6		
15:35	5	100	5	1.06	8.41	1.73	7	0.17	14	-3.9		
15:40	5	100	5	1.19	8.54	1.64	7	0.23	13.9	-1.6		
15:45	5	100	5	1.32	8.69	1.58	7	0.22	13.9	0.2		
15:50	5	100	5	1.45	8.82	1.55	7	0.23	13.8	1.5		
15:55	5	100	5	1.59	9.02	1.53	7	0.22	13.7	2.7		
16:00	5	100	5	1.72	9.05	1.54	7	1.14	13.6	5		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-18-100			**Date**	6/8/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Rain
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	6	**Total Depth (ft-bmp)**	13	**Water Column(ft)**	7	**Gallons in Well**	1.14
MP Elevation	NA	**Pump Intake (ft-bmp)**	12	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	16:40	**Gallons Purged**	0.79	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	16:15						
Purge End:	16:40						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
16:15	0	100	6	0.13	7.52	0.86	26	1.76	14	-20.9		
16:20	5	100	6	0.26	7.43	0.85	20	1.73	14.8	-7.3		
16:25	5	100	6	0.40	7.47	0.85	17	1.71	15	-5.1		
16:30	5	100	6	0.53	7.49	0.84	10	2.2	14.2	-4.4		
16:35	5	100	6	0.66	7.49	0.84	10	2.52	14	-4		
16:40	5	100	6	0.79	7.48	0.83	10	2.43	14.3	-4.2		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-101			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Mostly Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	61.52	**Total Depth (ft-bmp)**	87.45	**Water Column (ft)**	25.93	**Gallons in Well**	4.21
Purge Start	14:30	**Pump Intake (ft-bmp)**	85	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:15	**Volumes Purged**	0.28	**Sample ID**	MW-18-101_060922	**Sampled by**	Billy Cobern
Sample Time	15:15	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:35	0	0	100	61.61	0.13	7.22	1.61	15.4	3.05	25	-200.9	--	--
14:40	5	5	100	61.75	0.26	7.17	1.68	12.2	2.99	24.5	-205.6	--	--
14:45	5	10	100	61.75	0.40	7.06	1.68	9.6	2.4	24.9	-237	--	--
14:50	5	15	100	61.75	0.53	7.07	1.69	7.17	1.73	26.2	-255.8	--	--
14:55	5	20	100	61.75	0.66	7.04	1.7	8.1	1.67	26	-272	--	--
15:00	5	25	100	61.75	0.79	7.02	1.7	7.62	1.72	25.2	-276.9	--	--
15:05	5	30	100	61.75	0.92	6.98	1.69	6.12	1.65	24.8	-287.9	--	--
15:10	5	35	100	61.75	1.06	6.98	1.69	6.51	1.55	25	-293.4	--	--
15:15	5	40	100	61.75	1.19	6.97	1.69	6.12	1.6	25.1	-295.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-102			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Partly Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.49	**Total Depth (ft-bmp)**	15.25	**Water Column (ft)**	5.76	**Gallons in Well**	0.94
Purge Start	13:00	**Pump Intake (ft-bmp)**	12.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:45	**Volumes Purged**	2.13	**Sample ID**	MW-18-102_060922	**Sampled by**	Scott Filipiak
Sample Time	13:45	**Gallons Purged**	2.00	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:05	0	0	200	9.75	0.26	7.27	0.55	1.09	3.44	13.6	45	--	--
13:10	5	5	200	9.75	0.53	7.25	0.54	3	2.86	13.2	40.9	--	--
13:15	5	10	200	9.75	0.79	7.24	0.54	1.78	2.45	13.3	39.3	--	--
13:20	5	15	200	9.75	1.06	7.25	0.54	1.56	1.93	13.3	37.2	--	--
13:25	5	20	200	9.75	1.32	7.25	0.54	1.9	1.57	13.3	35.4	--	--
13:30	5	25	200	9.75	0.16	7.21	0.54	1.55	1.4	13.3	34.2	--	--
13:35	5	30	200	9.75	1.85	7.25	0.54	1.88	1.31	13.3	33	--	--
13:40	5	35	200	9.75	2.11	7.25	0.53	2.22	1.3	13.1	33	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: North of playground

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-103			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Partly Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	2.72	**Total Depth (ft-bmp)**	10.7	**Water Column (ft)**	7.98	**Gallons in Well**	1.3
Purge Start	12:05	**Pump Intake (ft-bmp)**	7.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:45	**Volumes Purged**	1.35	**Sample ID**	MW-18-103	**Sampled by**	Scott Filipiak
Sample Time	12:45	**Gallons Purged**	1.75	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:10	0	0	200	3.33	0.26	7.12	0.62	75.9	0.53	14.4	27.9	--	--
12:15	5	5	200	3.35	0.53	7.1	0.61	4.56	0.3	14.2	25.3	--	--
12:20	5	10	200	3.35	0.79	7.08	0.61	3.18	0.25	14.1	22.5	--	--
12:25	5	15	200	3.35	1.06	7.08	0.61	2.05	0.24	14.3	20.8	--	--
12:30	5	20	200	3.35	1.32	7.07	0.6	2.18	0.24	14.1	20	--	--
12:35	5	25	200	3.35	1.59	7.08	0.61	1.98	0.23	14.1	19.7	--	--
12:40	5	30	200	3.35	1.85	7.08	0.61	2.07	0.22	14.1	19.6	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Angry Birds in nearby trees. ??

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: NE of playground
Well Locked at Arrival: yes
Condition of Well: Good condition
Well Locked at Departure: yes
Well Completion: Flush mount
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-104			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Clear. The wind is blowing W/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	1.32	**Total Depth (ft-bmp)**	10	**Water Column (ft)**	8.68	**Gallons in Well**	1.41
Purge Start	11:10	**Pump Intake (ft-bmp)**	7.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:50	**Volumes Purged**	1.24	**Sample ID**	MW-18-104_060922	**Sampled by**	Scott Filipiak
Sample Time	11:50	**Gallons Purged**	1.75	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:15	0	0	200	2.05	0.26	7.12	0.55	37.2	1.91	13.7	51	--	--
11:20	5	5	200	2.22	0.53	7.13	0.55	5.32	0.38	13.9	39.7	--	--
11:25	5	10	200	2.22	0.79	7.11	0.54	3.18	0.52	14.1	37.2	--	--
11:30	5	15	200	2.22	1.06	7.12	0.54	2.15	0.22	14.1	29.2	--	--
11:35	5	20	200	2.22	1.32	7.12	0.54	1.8	0.21	14.1	26.7	--	--
11:40	5	25	200	2.22	1.59	7.13	0.55	1.69	0.21	14.3	24.2	--	--
11:45	5	30	200	2.22	1.85	7.14	0.55	1.75	0.22	14.3	24	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: West of Playground
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G2000

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-105			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Clear. The wind is blowing W/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	1.15	**Total Depth (ft-bmp)**	11.2	**Water Column (ft)**	10.05	**Gallons in Well**	1.63
Purge Start	10:15	**Pump Intake (ft-bmp)**	8.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:55	**Volumes Purged**	1.07	**Sample ID**	MW-18-105_060922	**Sampled by**	Scott Filipiak
Sample Time	10:55	**Gallons Purged**	1.75	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:20	0	0	200	1.51	0.26	7.15	0.55	13.2	1.34	13.9	22.2	--	--
10:25	5	5	200	1.51	0.53	7.11	0.53	3.76	0.54	13.1	22.4	--	--
10:30	5	10	200	1.51	0.79	7.13	0.54	2.12	0.42	13.1	18.4	--	--
10:35	5	15	200	1.51	1.06	7.13	0.53	1.81	0.34	13	16.3	--	--
10:40	5	20	200	1.51	1.32	7.12	0.53	2.02	0.25	13.1	13.9	--	--
10:45	5	25	200	1.51	1.59	7.12	0.53	1.96	0.25	13.1	11	--	--
10:50	5	30	200	1.51	1.85	7.13	0.54	2.1	0.25	13.1	10.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Baseball Field
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-106			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Clear. The wind is blowing SW at 11.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.46	**Total Depth (ft-bmp)**	9.7	**Water Column (ft)**	5.24	**Gallons in Well**	0.85
Purge Start	14:15	**Pump Intake (ft-bmp)**	7.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:00	**Volumes Purged**	2.35	**Sample ID**	MW-18-106_060922	**Sampled by**	Scott Filipiak
Sample Time	15:00	**Gallons Purged**	2.00	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:20	0	0	200	4.91	0.26	7.12	0.63	61.3	0.94	15.2	-31.7	--	--
14:25	5	5	200	4.91	0.53	7.11	0.61	29	0.86	15.3	-33.7	--	--
14:30	5	10	200	4.91	0.79	7.09	0.58	12.4	0.95	14.8	-39.9	--	--
14:35	5	15	200	4.91	1.06	7.1	0.58	3.39	0.58	14.6	-46.9	--	--
14:40	5	20	200	4.91	1.32	7.1	0.59	3.33	0.38	14.7	-51.8	--	--
14:45	5	25	200	4.91	1.59	7.11	0.61	3.01	0.3	15	-53.5	--	--
14:50	5	30	200	4.91	1.85	7.11	0.61	2.36	0.3	15	-53.8	--	--
14:55	5	35	200	4.91	2.11	7.11	0.61	2.55	0.3	15	-53.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: East of baseball field

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-107			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Partly Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	17.4	**Total Depth (ft-bmp)**	29.88	**Water Column (ft)**	12.48	**Gallons in Well**	2.03
Purge Start	13:05	**Pump Intake (ft-bmp)**	27.38	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:30	**Volumes Purged**	0.65	**Sample ID**	MW-19-107_060922	**Sampled by**	Austin Westhuis
Sample Time	13:25	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:10	0	0	200	17.4	0.26	6.35	0.85	3.36	0.45	11.6	-26.9	--	--
13:15	5	5	200	17.4	0.53	6.43	0.84	2.77	0.22	11.4	-32.5	--	--
13:20	5	10	200	17.4	0.79	6.44	0.84	2.17	0.22	11.4	-33.7	--	--
13:25	5	15	200	17.4	1.06	6.5	0.84	1.94	0.21	11.3	-38.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-108			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Clear. The wind is blowing W at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	15.5	**Total Depth (ft-bmp)**	30.02	**Water Column (ft)**	14.52	**Gallons in Well**	2.36
Purge Start	11:20	**Pump Intake (ft-bmp)**	27.52	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:55	**Volumes Purged**	0.78	**Sample ID**	MW-19-108_060922	**Sampled by**	Austin Westhuis
Sample Time	11:50	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:25	0	0	200	15.5	0.26	6.28	1.25	91.1	2.75	12	28.2	--	--
11:30	5	5	200	15.5	0.53	6.5	1.23	42.2	0.35	11.7	15.3	--	--
11:35	5	10	200	15.5	0.79	6.53	1.21	12.6	0.24	11.6	12.2	--	--
11:40	5	15	200	15.5	1.06	6.56	1.26	3.08	0.21	11.7	10.7	--	--
11:45	5	20	200	15.5	1.32	6.58	1.25	2.92	0.2	11.6	9.8	--	--
11:50	5	25	200	15.5	1.59	6.59	1.25	2.72	0.2	11.6	9.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-111			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Clear. The wind is blowing W/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	21.75	**Total Depth (ft-bmp)**	27.42	**Water Column (ft)**	5.67	**Gallons in Well**	0.92
Purge Start	10:35	**Pump Intake (ft-bmp)**	24.92	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:05	**Volumes Purged**	1.72	**Sample ID**	MW-19-111_060922	**Sampled by**	Austin Westhuis
Sample Time	11:00	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:40	0	0	200	21.75	0.26	6.17	1.31	2.24	1.14	12	62.5	--	--
10:45	5	5	200	21.75	0.53	6.39	1.28	1.61	0.66	11.6	33.1	--	--
10:50	5	10	200	21.75	0.79	6.45	1.27	1.2	0.47	11.7	27.1	--	--
10:55	5	15	200	21.75	1.06	6.48	1.28	1.18	0.45	11.8	23.9	--	--
11:00	5	20	200	21.75	1.32	6.53	1.28	1.08	0.44	11.8	22.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-19-112			**Date**	6/9/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	7	**Total Depth (ft-bmp)**	14	**Water Column(ft)**	7	**Gallons in Well**	1.14
MP Elevation	NA	**Pump Intake (ft-bmp)**	13	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	17:05	**Gallons Purged**	0.92	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	16:35						
Purge End:	17:05						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
16:35	0	100	5	0.13	6.41	8.21	20	0.12	16.3	-19.6		
16:40	5	100	5	0.26	6.44	8.24	15	0.11	16.2	-22.7		
16:45	5	100	5	0.40	6.47	8.22	11	0.04	16.2	-24.8		
16:50	5	100	5	0.53	6.5	8.11	11	0.05	16.2	-26.7		
16:55	5	100	5	0.66	6.53	8	11	0.09	15.9	-28		
17:00	5	100	5	0.92	6.54	7.98	11	0.09	16	-28.1		
17:05	5	100	5	0.92	6.54	7.98	11	0.09	16	-28.1		

Constituent Sampled	Container	Number	Preservative
PFAS	125 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-114			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	61.0 degrees F and Mostly Cloudy. The wind is blowing W at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	2.14	**Total Depth (ft-bmp)**	10.8	**Water Column (ft)**	8.66	**Gallons in Well**	1.41
Purge Start	09:15	**Pump Intake (ft-bmp)**	8.8	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:02	**Volumes Purged**	1.60	**Sample ID**	MW-19-114_060922	**Sampled by**	Scott Filipiak
Sample Time	10:00	**Gallons Purged**	2.25	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:20	0	0	200	3.25	0.26	7.24	0.465	1.02	0.7	12.9	30.2	--	--
09:25	5	5	200	3.33	0.53	7.23	0.465	1.11	0.78	12.9	28.4	--	--
09:30	5	10	200	3.33	0.79	7.18	0.466	1.31	0.64	13.1	21.2	--	--
09:35	5	15	200	3.33	1.06	7.17	0.468	0.96	0.29	13.3	15.8	--	--
09:40	5	20	200	3.33	1.32	7.19	0.47	0.74	0.31	13.2	9.9	--	--
09:45	5	25	200	3.33	1.59	7.2	0.469	0.71	0.18	13.2	8.1	--	--
09:50	5	30	200	3.33	1.85	7.2	0.471	1	0.2	13.2	6.1	--	--
09:55	5	35	200	3.33	2.11	7.21	0.473	0.96	0.21	13.3	5.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Baseball Field
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-115			**Date**	06/03/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	57.43	**Total Depth (ft-bmp)**	78.72	**Water Column (ft)**	21.29	**Gallons in Well**	3.46
Purge Start	13:20	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:50	**Volumes Purged**		**Sample ID**	MW-19-115_060322	**Sampled by**	Donald Richmond
Sample Time	13:50	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:30	0	0	200	57.43	--	7.01	2.47	2.54	0.98	18.3	-63.9	--	--
13:35	5	5	200	57.43	--	7.08	2.4	0.02	1.67	18.2	-87	--	--
13:40	5	10	200	57.43	--	7.07	2.44	0.02	1.69	19.6	-91.8	--	--
13:45	5	15	200	57.43	--	7.05	2.52	0.02	1.63	19.2	-90.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-116			**Date**	06/03/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	55.75	**Total Depth (ft-bmp)**	73.2	**Water Column (ft)**	17.45	**Gallons in Well**	2.84
Purge Start	12:20	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:45	**Volumes Purged**		**Sample ID**	MW-19-116_060322	**Sampled by**	Donald Richmond
Sample Time	12:45	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:30	0	0	200	55.75	--	6.93	1.29	4.38	7.77	17.1	-75.6	--	--
12:35	5	5	200	55.75	--	6.94	1.29	0.02	7.35	17.3	-78	--	--
12:40	5	10	200	55.75	--	6.96	1.29	0.02	7.01	17.6	-81.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-117			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.9 degrees F and Clear. The wind is blowing N at 6.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	58.42	**Total Depth (ft-bmp)**	62.8	**Water Column (ft)**	4.38	**Gallons in Well**	0.71
Purge Start	14:25	**Pump Intake (ft-bmp)**	62	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:05	**Volumes Purged**	1.49	**Sample ID**	MW-19-117_060222	**Sampled by**	Billy Cobern
Sample Time	15:05	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:30	0	0	100	58.62	0.13	7.04	1.17	410	0.58	20	-124.4	--	--
14:35	5	5	100	58.75	0.26	7	1.16	141	0.53	21.1	-125.5	--	--
14:40	5	10	100	58.75	0.40	7	1.17	66.5	0.61	21.5	-125.4	--	--
14:45	5	15	100	58.75	0.53	6.99	1.16	35	0.57	21.7	-124.8	--	--
14:50	5	20	100	58.75	0.66	6.98	1.16	27.3	0.47	22.1	-124.6	--	--
14:55	5	25	100	58.75	0.79	6.98	1.16	24.7	0.49	22.5	-125	--	--
15:00	5	30	100	58.75	0.92	6.98	1.16	25.7	0.49	22.7	-124.7	--	--
15:05	5	35	100	58.75	1.06	6.98	1.16	23.9	0.48	22.7	-124.6	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-118D			**Date**	06/06/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Cloudy. The wind is blowing W/SW at 4.7 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	75.05	**Total Depth (ft-bmp)**	192.95	**Water Column (ft)**	117.9	**Gallons in Well**	19.16
Purge Start	12:40	**Pump Intake (ft-bmp)**	190	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:40	**Volumes Purged**	0.08	**Sample ID**	MW-19-118D	**Sampled by**	Billy Cobern
Sample Time	13:40	**Gallons Purged**	1.59	**Replicate/ Code No.**	MW-19-118D_060622	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:45	0	0	100	75.08	0.13	7.33	1.84	37.2	2.87	22	19.9	--	--
12:50	5	5	100	75.08	0.26	7.32	1.83	37.6	2.77	21.8	14	--	--
12:55	5	10	100	75.08	0.40	7.31	1.82	40.1	2.67	21.6	-1	--	--
13:00	5	15	100	75.08	0.53	7.3	1.82	32.6	2.44	21.7	-8.3	--	--
13:05	5	20	100	75.08	0.66	7.3	1.81	38.2	2.47	21.5	-25.3	--	--
13:10	5	25	100	75.08	0.79	7.29	1.81	35.8	2.34	21.6	-32.6	--	--
13:15	5	30	100	75.08	0.92	7.28	1.81	33.7	2.47	21.5	-50.4	--	--
13:20	5	35	100	75.08	1.06	7.28	1.81	35.4	2.28	21.4	-57.8	--	--
13:25	5	40	100	75.08	1.19	7.27	1.81	34.3	2.33	21.3	-67.8	--	--
13:30	5	45	100	75.08	1.32	7.26	1.81	36.2	2.16	21.4	-79.9	--	--
13:35	5	50	100	75.08	1.45	7.26	1.81	35.9	2.19	21.3	-82.5	--	--
13:40	5	55	100	75.08	1.59	7.26	1.81	38.1	2.09	21.2	-89.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 522	250 mL Amber	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-118S			**Date**	06/06/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	72.0 degrees F and Mostly Cloudy. The wind is blowing S at 6.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	75.01	**Total Depth (ft-bmp)**	162.85	**Water Column (ft)**	87.84	**Gallons in Well**	14.27
Purge Start	11:35	**Pump Intake (ft-bmp)**	160	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:20	**Volumes Purged**	0.08	**Sample ID**	MW-19-118S	**Sampled by**	Billy Cobern
Sample Time	12:20	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:40	0	0	100	75.03	0.13	7.19	2.46	29.7	3.76	19.9	-97.3	--	--
11:45	5	5	100	75.03	0.26	7.18	2.44	29.1	3.39	20.1	-96.3	--	--
11:50	5	10	100	75.03	0.40	7.19	2.45	18.3	4.04	20.6	-93.2	--	--
11:55	5	15	100	75.03	0.53	7.21	2.45	15.4	6.63	20.8	-91.5	--	--
12:00	5	20	100	75.03	0.66	7.23	2.45	14.9	4.13	21.2	-90.7	--	--
12:05	5	25	100	75.03	0.79	7.13	2.45	14.8	3.65	21.3	-109.1	--	--
12:10	5	30	100	75.03	0.92	7.11	2.45	13.8	3.45	21.3	-110.9	--	--
12:15	5	35	100	75.03	1.06	7.08	2.45	13.7	3.3	21.2	-111.2	--	--
12:20	5	40	100	75.03	1.19	7.07	2.45	13.6	3.4	21.2	-111.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 522	250 mL Amber	1	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-119D			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	71.1 degrees F and Partly Cloudy. The wind is blowing E at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	82.51	**Total Depth (ft-bmp)**	197.9	**Water Column (ft)**	115.39	**Gallons in Well**	18.75
Purge Start	13:45	**Pump Intake (ft-bmp)**	195	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:35	**Volumes Purged**	0.07	**Sample ID**	MW-19-119D_060822	**Sampled by**	Billy Cobern
Sample Time	14:35	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:50	0	0	100	82.52	0.13	7.21	1.23	39.9	4.91	17.8	-43.7	--	--
13:55	5	5	100	82.52	0.26	7.08	1.24	24.2	2.21	16.2	-74.7	--	--
14:00	5	10	100	82.52	0.40	7.06	1.24	20.1	0.99	16.1	-82.8	--	--
14:05	5	15	100	82.52	0.53	7.06	1.23	18.2	0.68	15.9	-86	--	--
14:10	5	20	100	82.52	0.66	7.06	1.23	15.7	0.56	15.9	-88	--	--
14:15	5	25	100	82.52	0.79	7.06	1.23	13.3	0.54	15.9	-88.8	--	--
14:20	5	30	100	82.52	0.92	7.06	1.23	10.8	0.55	16.3	-91.7	--	--
14:25	5	35	100	82.52	1.06	7.07	1.23	14.2	0.47	16.4	-91.9	--	--
14:30	5	40	100	82.52	1.19	7.07	1.23	13.9	0.45	16.5	-92.4	--	--
14:35	5	45	100	82.52	1.32	7.07	1.23	13.3	0.46	16.7	-93.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 522	250 mL Amber	1	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-119S			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	71.6 degrees F and Mostly Cloudy. The wind is blowing E/SE at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	68.49	**Total Depth (ft-bmp)**	163.9	**Water Column (ft)**	95.41	**Gallons in Well**	15.5
Purge Start	11:35	**Pump Intake (ft-bmp)**	161.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:40	**Volumes Purged**	0.11	**Sample ID**	MW-19-119S_060822	**Sampled by**	Billy Cobern
Sample Time	12:40	**Gallons Purged**	1.72	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:20	0	0	100	68.79	1.19	7.03	1.28	10.1	0.63	18.1	-57.4	--	--
12:25	5	5	100	68.79	1.32	7.04	1.29	9.92	0.63	18	-58	--	--
12:30	5	10	100	68.79	1.45	7.04	1.28	9.8	0.56	18	-58.2	--	--
12:35	5	15	100	68.79	1.59	7.04	1.28	9.63	0.58	18	-58.4	--	--
12:40	5	20	100	68.79	1.72	7.04	1.28	9.14	0.59	18	-58.5	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 522	250 mL Amber	1	HCL

Comments: Fulcrum app closed out/ deleted the first 40 minutes of data collection

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-120			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.66	**Total Depth (ft-bmp)**	74	**Water Column (ft)**	9.34	**Gallons in Well**	1.52
Purge Start	11:55	**Pump Intake (ft-bmp)**	72	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:55	**Volumes Purged**	1.04	**Sample ID**	MW-19-120	**Sampled by**	Billy Cobern
Sample Time	12:55	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:00	0	0	100	64.72	0.13	7.14	2.51	135	3.25	21.8	11.6	--	--
12:05	5	5	100	64.72	0.26	7.02	2.71	100	0.97	21.9	-3.9	--	--
12:10	5	10	100	64.72	0.40	7.01	2.72	92	0.76	21.9	-4.5	--	--
12:15	5	15	100	64.72	0.53	7.01	2.72	70.2	0.66	22	-5.8	--	--
12:20	5	20	100	64.72	0.66	7	2.72	48.3	0.58	22	-2.5	--	--
12:25	5	25	100	64.72	0.79	7.01	2.72	35	0.6	21.7	9.6	--	--
12:30	5	30	100	64.72	0.92	7.01	2.7	28.6	0.69	21.6	19.7	--	--
12:35	5	35	100	64.72	1.06	7.02	2.68	25.1	0.77	21.5	24	--	--
12:40	5	40	100	64.72	1.19	7.04	2.64	23.9	1.09	21.7	31.8	--	--
12:45	5	45	100	64.72	1.32	7.04	2.62	21.1	1.13	21.8	32.9	--	--
12:50	5	50	100	64.72	1.45	7.05	2.62	19.8	1.12	21.8	33.6	--	--
12:55	5	55	100	64.72	1.59	7.05	2.62	20.1	1.08	21.6	34.4	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM,VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-121			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.35	**Total Depth (ft-bmp)**	71.74	**Water Column (ft)**	8.39	**Gallons in Well**	1.36
Purge Start	13:40	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:05	**Volumes Purged**		**Sample ID**	MW-19-121_060122	**Sampled by**	Donald Richmond
Sample Time	14:05	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:45	0	0	200	63.35	--	7.03	1.87	0.02	6.56	18.3	83.6	--	--
13:50	5	5	200	63.35	--	7.01	1.9	0.02	5.87	19.1	75.3	--	--
13:55	5	10	200	63.35	--	7.02	1.87	0.02	5.73	18.9	71.7	--	--
14:00	5	15	200	63.35	--	7.02	1.89	0.02	5.79	19.1	69.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4 D, Nutrients	40 mL Glass	7	H2SO4, HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-122			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	60.1 degrees F and Cloudy. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	61.79	**Total Depth (ft-bmp)**	66.85	**Water Column (ft)**	5.06	**Gallons in Well**	0.82
Purge Start	09:10	**Pump Intake (ft-bmp)**	65	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	10:00	**Volumes Purged**	1.61	**Sample ID**	MW-19-122_060222	**Sampled by**	Billy Cobern
Sample Time	10:00	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:15	0	0	100	62.15	0.13	7.05	4.52	908	631	15.7	95.2	--	--
09:20	5	5	100	62.1	0.26	7.07	4.52	878	6.2	16.1	97.1	--	--
09:25	5	10	100	62.1	0.40	7.08	4.53	612	6.44	15.8	105	--	--
09:30	5	15	100	62.1	0.53	7.08	4.53	529	6.23	15.8	104	--	--
09:35	5	20	100	62.1	0.66	7.08	4.53	581	6.06	15.8	104.1	--	--
09:40	5	25	100	62.1	0.79	7.09	4.53	522	6.15	15.8	105.5	--	--
09:45	5	30	100	62.1	0.92	7.09	4.51	134	6.18	16	108.5	--	--
09:50	5	35	100	62.1	1.06	7.08	4.5	98.6	6.34	16.4	109.2	--	--
09:55	5	40	100	62.1	1.19	7.08	4.5	94.1	6.17	16.4	109.2	--	--
10:00	5	45	100	62.1	1.32	7.08	4.5	91.3	6.05	16.4	109.2	Brown	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments: Cleaned flow cell at 9:40

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-123			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	60.54	**Total Depth (ft-bmp)**	72.2	**Water Column (ft)**	11.66	**Gallons in Well**	1.89
Purge Start	11:40	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:30	**Volumes Purged**		**Sample ID**	MW-19-123_060122	**Sampled by**	Donald Richmond
Sample Time	12:30	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:50	0	0	200	60.54	--	6.72	2.09	2.4	5.91	17.9	97.2	--	--
11:55	5	5	200	60.54	--	6.82	2.08	0.02	5.65	17.3	76.9	--	--
12:00	5	10	200	60.54	--	6.82	2.14	0.02	4.61	18.4	104.8	--	--
12:05	5	15	200	60.54	--	6.83	2.16	0.02	4.15	18.7	107.9	--	--
12:10	5	20	200	60.54	--	6.82	2.22	0.02	3.86	19.9	118.3	--	--
12:15	5	25	200	60.54	--	6.83	2.16	0.02	4.32	18.7	119.1	--	--
12:20	5	30	200	60.54	--	6.84	2.19	0.02	4.57	18.3	119	--	--
12:25	5	35	200	60.54	--	6.84	2.18	0.02	4.25	18.6	118.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4 D, Nutrients	40 mL Glass	7	H2SO4, HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-124			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	62.1 degrees F and Cloudy. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.89	**Total Depth (ft-bmp)**	72.3	**Water Column (ft)**	8.41	**Gallons in Well**	1.37
Purge Start	10:30	**Pump Intake (ft-bmp)**	70	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:25	**Volumes Purged**	1.06	**Sample ID**	MW-19-124	**Sampled by**	Billy Cobern
Sample Time	11:25	**Gallons Purged**	1.45	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:35	0	0	100	63.89	0.13	6.97	3.46	189	3.04	17.9	-67.7	--	--
10:40	5	5	100	63.89	0.26	6.8	3.47	242	1.01	17	-69.5	--	--
10:45	5	10	100	63.89	0.40	6.79	3.45	267	0.73	17.5	-72.4	--	--
10:50	5	15	100	63.89	0.53	6.78	3.45	222	0.67	17.9	-74	--	--
10:55	5	20	100	63.89	0.66	6.78	3.44	174	0.56	17.9	-74.1	--	--
11:00	5	25	100	63.89	0.79	6.77	3.44	114	0.53	17.9	-73.6	--	--
11:05	5	30	100	63.89	0.92	6.77	3.44	72.2	0.52	17.9	-73.6	--	--
11:10	5	35	100	63.89	1.06	6.77	3.44	57.2	0.51	17.9	-73.6	--	--
11:15	5	40	100	63.89	1.19	6.77	3.43	50.2	0.48	17.9	-73.5	--	--
11:20	5	45	100	63.89	1.32	6.77	3.43	49.8	0.48	17.9	-73.5	--	--
11:25	5	50	100	63.89	1.45	6.77	3.43	47.8	0.48	17.9	-73.4	Brown	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-125			**Date**	06/06/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	71.1 degrees F and Light Rain. The wind is blowing N at 3.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	4	**Well Casing Material**	Steel
Static Water Level (ft-bmp)	75.3	**Total Depth (ft-bmp)**	104.75	**Water Column (ft)**	29.45	**Gallons in Well**	19.14
Purge Start	14:15	**Pump Intake (ft-bmp)**	102	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:55	**Volumes Purged**	0.06	**Sample ID**	MW-19-125	**Sampled by**	Billy Cobern
Sample Time	14:55	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:20	0	0	100	75.31	0.13	9.91	0.79	26.6	5.64	19.8	-47.9	--	--
14:25	5	5	100	75.31	0.26	9.32	0.96	29.7	3.58	18.8	-40	--	--
14:30	5	10	100	75.31	0.40	9.25	0.98	23	1.88	19.2	-59.1	--	--
14:35	5	15	100	75.31	0.53	9.28	0.98	23.1	1.6	19.7	-68.5	--	--
14:40	5	20	100	75.31	0.66	9.3	0.98	17.4	1.55	19.8	-74.4	--	--
14:45	5	25	100	75.31	0.79	9.31	0.97	14.8	1.58	19.9	-78	--	--
14:50	5	30	100	75.31	0.92	9.31	0.96	15.1	1.6	20	-80.9	--	--
14:55	5	35	100	75.31	1.06	9.31	0.96	13.8	1.6	20	-80.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 522	250 mL Amber	1	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-126			**Date**	06/03/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	62.55	**Total Depth (ft-bmp)**	74.43	**Water Column (ft)**	11.88	**Gallons in Well**	1.93
Purge Start	10:30	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:25	**Volumes Purged**		**Sample ID**	MW-20-126_060322	**Sampled by**	Donald Richmond
Sample Time	11:25	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:40	0	0	200	62.55	--	7.14	3.11		9.21	19.2	57.6	--	--
10:45	5	5	200	62.55	--	7.17	1.53	1080	13.54	19.8	61.6	--	--
10:50	5	10	200	62.55	--	7.16	3.16	1080	8.83	15.5	60.9	--	--
10:55	5	15	200	62.55	--	7.05	3.15	176	5.88	15.5	59.6	--	--
11:00	5	20	200	62.55	--	7.24	4.27	246	7.51	16.8	58.9	--	--
11:05	5	25	200	62.55	--	7.03	3.19	149	6	15.6	58.4	--	--
11:10	5	30	200	62.55	--	7.02	3.18	67.8	4.57	16	57.7	--	--
11:15	5	35	200	62.55	--	7.02	3.18	68.1	4.18	15.6	56.4	--	--
11:20	5	40	200	62.55	--	7.02	3.2	63.8	4.65	15.7	54.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-127			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	75.0 degrees F and Mostly Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.91	**Total Depth (ft-bmp)**	78.67	**Water Column (ft)**	14.76	**Gallons in Well**	2.4
Purge Start	12:00	**Pump Intake (ft-bmp)**	76	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:40	**Volumes Purged**	0.44	**Sample ID**	MW-20-127_060122	**Sampled by**	Billy Cobern
Sample Time	12:40	**Gallons Purged**	1.06	**Replicate/ Code No.**	DUP-05_060122	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:05	0	0	100	64.18	0.13	7.16	3.03	166	5.07	22.9	14.4	--	--
12:10	5	5	100	64.28	0.26	6.87	3.28	55.5	3.54	22	-40.7	--	--
12:15	5	10	100	64.5	0.40	6.81	3.35	9.83	1.2	19.8	-52.7	--	--
12:20	5	15	100	64.71	0.53	6.79	3.34	9.21	0.89	19.3	-53.7	--	--
12:25	5	20	100	64.87	0.66	6.79	3.33	9.52	0.76	19.1	-53.6	--	--
12:30	5	25	100	65.01	0.79	6.8	3.33	9.28	0.66	18.6	-53.3	--	--
12:35	5	30	100	65.17	0.92	6.81	3.33	9.61	0.6	18.7	-54.4	--	--
12:40	5	35	100	65.29	1.06	6.81	3.33	9.59	0.6	18.7	-54.5	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	6	HCL
Nitrate	125 mL Plastic	2	None
Total Phosphorus TKN	250 mL Plastic	2	H2SO4

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-128			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	75.0 degrees F and Mostly Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	67.72	**Total Depth (ft-bmp)**	70.15	**Water Column (ft)**	2.43	**Gallons in Well**	0.39
Purge Start	10:25	**Pump Intake (ft-bmp)**	67	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:15	**Volumes Purged**	3.39	**Sample ID**	MW-20-128_060122	**Sampled by**	Billy Cobern
Sample Time	11:15	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:30	0	0	100	67.2	0.13	7.53	3.32	999	7.32	23.2	148.4	--	--
10:35	5	5	100	67.4	0.26	7.52	3.33	999	7.21	23.4	147.8	--	--
10:40	5	10	100	67.7	0.40	7.51	3.33	999	7.16	23.5	147.4	--	--
10:45	5	15	100	67.7	0.53	7.48	3.36	999	7.08	22.6	143.6	--	--
10:50	5	20	100	67.7	0.66	7.46	3.36	740	6.96	22.3	141.5	--	--
10:55	5	25	100	67.7	0.79	7.45	3.39	8.89	6.84	21.3	140.7	--	--
11:00	5	30	100	67.7	0.92	7.47	3.37	8.65	7.33	20.2	136.8	--	--
11:05	5	35	100	67.7	1.06	7.45	3.37	834	6.93	20.2	136.1	--	--
11:10	5	40	100	67.7	1.19	7.45	3.37	840	7.11	20.1	135.9	--	--
11:15	5	45	100	67.7	1.32	7.45	3.37	832	7.13	20.1	135.7	Brown	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM,VOCs	40 mL Glass	3	HCL
Nitrate	125 mL Plastic	1	None
Phosphorus TKN	250 mL Plastic	1	H2SO4

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-129			**Date**	06/03/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	60.55	**Total Depth (ft-bmp)**	69.14	**Water Column (ft)**	8.59	**Gallons in Well**	1.4
Purge Start	14:25	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:10	**Volumes Purged**		**Sample ID**	MW-20-129_060322	**Sampled by**	Donald Richmond
Sample Time	15:10	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:35	0	0	200	60.55	--	6.45	1.12	11.1	0.14	20.2	-34.9	--	--
14:40	5	5	200	60.55	--	6.5	1.22	11.2	0.12	21.2	-37.7	--	--
14:45	5	10	200	60.55	--	6.63	1.63	5.38	0.14	24.6	-49.5	--	--
14:50	5	15	200	60.55	--	6.62	2.04	6.68	0.16	25.4	-58.5	--	--
14:55	5	20	200	60.55	--	6.9	2.64	0.77	0.17	26.4	-76.5	--	--
15:00	5	25	200	60.55	--	6.93	2.76	0.02	0.18	26.4	-80.4	--	--
15:05	5	30	200	60.55	--	6.94	2.86	0.02	0.17	26.7	-82.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-130			**Date**	06/07/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	60.1 degrees F and Cloudy. The wind is blowing N at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.75	**Total Depth (ft-bmp)**	70.3	**Water Column (ft)**	4.55	**Gallons in Well**	0.74
Purge Start	10:00	**Pump Intake (ft-bmp)**	68.3	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:55	**Volumes Purged**	3.93	**Sample ID**	MW-20-130_060722	**Sampled by**	Austin Westhuis
Sample Time	10:50	**Gallons Purged**	2.91	**Replicate/ Code No.**	Dup-03_060722	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:05	0	0	200	65.75	0.26	6.35	1.12	766	0.01	14.1	68.7	--	--
10:10	5	5	200	65.75	0.53	6.52	1.09	455	0.01	14	50.6	--	--
10:15	5	10	200	65.75	0.79	6.6	1.06	318	0.01	14	43.1	--	--
10:20	5	15	200	65.75	1.06	6.63	1.03	221	0.01	14	39.2	--	--
10:25	5	20	200	65.75	1.32	6.66	0.99	86.2	0.01	14	39.6	--	--
10:30	5	25	200	65.75	1.59	6.68	0.97	28.3	0.01	14	33	--	--
10:35	5	30	200	65.75	1.85	6.68	0.95	12.1	0.01	14	28.1	--	--
10:40	5	35	200	65.75	2.11	6.7	0.94	10.4	0.01	14	25.4	--	--
10:45	5	40	200	65.75	2.38	6.7	0.94	10.1	0.01	14	25.2	--	--
10:50	5	45	200	65.75	2.64	6.71	0.92	9.41	0.01	14	22.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	4	None
1,4-Dioxane 8260B SIMS	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-131			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Partly Cloudy. The wind is blowing W/NW at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.24	**Total Depth (ft-bmp)**	8.45	**Water Column (ft)**	3.21	**Gallons in Well**	0.52
Purge Start	16:25	**Pump Intake (ft-bmp)**	7.24	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	16:55	**Volumes Purged**	3.05	**Sample ID**	MW-20-131_060222	**Sampled by**	Austin Westhuis
Sample Time	16:50	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:30	0	0	200	5.34	0.26	7.1	5.83	74.7	1.49	16.5	-0.7	--	--
16:35	5	5	200	5.34	0.53	7.17	5.7	56.6	1.19	16.7	-17.2	--	--
16:40	5	10	200	5.34	0.79	7.17	5.66	41.2	1.18	16.6	-20.5	--	--
16:45	5	15	200	5.34	1.06	7.19	5.6	40.1	1.16	16.4	-22.9	--	--
16:50	5	20	200	5.34	1.32	7.2	5.52	37.3	1.11	16.2	-27.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Well recently struck and damaged. Confirmed with project team we will attempt to sample the well as is for now. The well will be converted to a flush mount at a later time. Depth to water and total depth measurements collected below ground surface (bgs).

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure

Condition of Well: Needs repairs

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-20-132			**Date**	6/2/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	8	**Total Depth (ft-bmp)**	10	**Water Column(ft)**	2	**Gallons in Well**	0.32
MP Elevation	NA	**Pump Intake (ft-bmp)**	9	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	10:35	**Gallons Purged**	1.45	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	09:45						
Purge End:	10:35						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
09:45	0	100	9	0.13	7.35	2.28	25	0.23	11.3	-4.3		
09:50	5	100	9	0.26	7.28	2.24	21	0.38	11.4	-0.8		
09:55	5	100	9	0.40	7.26	2.21	21	0.13	11.4	-0.1		
10:00	5	100	9	0.53	7.25	2.2	20	0.07	11.4	-0.2		
10:05	5	100	9	0.66	7.25	2.19	20	0.08	11.5	-0.3		
10:10	5	100	9	0.79	7.24	2.19	20	0.8	11.6	-0.4		
10:15	5	100	9	0.92	7.24	2.18	20	0.14	11.5	-0.7		
10:20	5	100	9	1.06	7.23	2.17	19	0.28	11.6	-0.5		
10:25	5	100	9	1.19	7.24	2.17	19	0.09	11.5	-0.9		
10:30	5	100	9	1.32	7.23	2.17	19	0.07	11.4	-0.4		
10:34	4	100	9	1.45	7.23	2.17	19	0.1	11.5	-0.5		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-133			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.6	**Total Depth (ft-bmp)**	18.74	**Water Column (ft)**	10.14	**Gallons in Well**	1.65
Purge Start	11:30	**Pump Intake (ft-bmp)**	16.24	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:55	**Volumes Purged**	0.80	**Sample ID**	MW-21-133_060222	**Sampled by**	Austin Westhuis
Sample Time	11:50	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:35	0	0	200	10.38	0.26	6.82	0.68	3.72	0.13	10.4	-447	--	--
11:40	5	5	200	10.68	0.53	6.84	0.68	1.59	0.12	10.4	-461.2	--	--
11:45	5	10	200	10.68	0.79	6.87	0.67	1.22	0.12	10.4	-455.4	--	--
11:50	5	15	200	10.69	1.06	6.87	0.68	1.16	0.12	10.3	-451.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-134			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.32	**Total Depth (ft-bmp)**	20.08	**Water Column (ft)**	11.76	**Gallons in Well**	1.91
Purge Start	12:15	**Pump Intake (ft-bmp)**	17.58	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:55	**Volumes Purged**	1.11	**Sample ID**	MW-21-134_060222	**Sampled by**	Austin Westhuis
Sample Time	12:50	**Gallons Purged**	2.11	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:20	0	0	200	10.4	0.26	6.9	0.65	1.91	0.22	10.8	-177.8	--	--
12:25	5	5	200	10.51	0.53	6.92	0.64	1.8	0.31	10.7	-117.8	--	--
12:30	5	10	200	11	0.79	7.02	0.6	1.74	1.25	10.8	-33.3	--	--
12:35	5	15	200	11.02	1.06	7.04	0.59	1.7	1.28	10.7	-27.4	--	--
12:40	5	20	200	11.03	1.32	7.09	0.57	1.66	1.3	10.6	-28.8	--	--
12:45	5	25	200	11.03	1.59	7.09	0.57	1.41	1.32	10.6	-29.2	--	--
12:50	5	30	200	11.03	1.85	7.09	0.56	1.29	1.32	10.6	-29.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-135			**Date**	06/02/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	72.0 degrees F and Clear. The wind is blowing W at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	24.16	**Total Depth (ft-bmp)**	29.55	**Water Column (ft)**	5.39	**Gallons in Well**	0.88
Purge Start	14:05	**Pump Intake (ft-bmp)**	29.05	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:35	**Volumes Purged**	1.80	**Sample ID**	MW-21-135_060222	**Sampled by**	Austin Westhuis
Sample Time	14:30	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:10	0	0	200	24.16	0.26	7.09	0.81	12.6	0.85	13.2	128.1	--	--
14:15	5	5	200	24.16	0.53	7.62	0.78	4.19	0.64	12.8	113.1	--	--
14:20	5	10	200	24.16	0.79	7.54	0.78	2.25	0.54	12.8	105.6	--	--
14:25	5	15	200	24.16	1.06	7.53	0.77	2.2	0.51	12.7	101.1	--	--
14:30	5	20	200	24.16	1.32	7.51	0.77	1.78	0.51	12.7	100.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-21-136			**Date**	6/2/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	13	**Total Depth (ft-bmp)**	14	**Water Column(ft)**	1	**Gallons in Well**	0.16
MP Elevation	NA	**Pump Intake (ft-bmp)**	14	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	12:15	**Gallons Purged**	1.72	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	11:15						
Purge End:	12:15						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
11:15	0	100	13	0.13	7.27	1.94	25	0.75	12.2	-2.4		
11:20	5	100	13	0.26	7.02	1.85	21	3.8	12.2	5.3		
11:25	5	100	13	0.40	7.05	1.83	21	3.94	12.3	2		
11:30	5	100	13	0.53	7.04	1.91	21	1.22	12.2	-2.1		
11:35	5	100	13	0.66	7.01	1.92	20	1.22	12.2	-4		
11:40	5	100	13	0.79	7.06	1.9	20	1.13	12.1	-6.4		
11:45	5	100	13	0.92	7.06	1.86	19	1.14	11.9	-7.1		
11:50	5	100	13	1.06	7.04	1.83	19	1.28	12.5	-6.2		
11:55	5	100	13	1.19	7.1	1.78	19	1.26	12.4	-9.7		
12:00	5	100	13	1.32	7.1	1.75	19	1.32	12.6	-9		
12:05	5	100	13	1.45	7.11	1.71	19	1.39	12.3	-8.9		
12:10	5	100	13	1.59	7.09	1.67	19	1.19	12.5	-6.2		
12:15	5	100	13	1.72	7.09	1.73	19	1.19	12.4	-6.2		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location:

Well Locked at Arrival:

Condition of Well:

Well Locked at Departure:

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-21-137			**Date**	6/2/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Sunny
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	7	**Total Depth (ft-bmp)**	12	**Water Column(ft)**	5	**Gallons in Well**	0.81
MP Elevation	NA	**Pump Intake (ft-bmp)**	8	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time: 13:30		**Gallons Purged**	1.32	**Replicate/ Code No.**	MS/MSD	**Evacuation Method**	Peristaltic
Purge Start: 12:40							
Purge End: 13:25							

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
12:40	0	100	8	0.13	6.89	1.08	30	1.63	11.9	-2.4		
12:45	5	100	8	0.26	6.59	1.06	23	1.59	11.7	10.9		
12:50	5	100	8	0.40	6.64	1.07	20	2.05	11.7	10.1		
12:55	5	100	8	0.53	6.68	1.08	19	2.2	11.7	6.9		
13:00	5	100	8	0.66	6.7	1.08	20	2.09	11.7	5		
13:05	5	100	8	0.79	6.71	1.07	20	2.1	11.7	4.6		
13:10	5	100	8	0.92	6.71	1.07	20	2.03	11.8	3.5		
13:15	5	100	8	1.06	6.73	1.07	20	2.05	11.7	4.1		
13:20	5	100	8	1.19	6.73	1.07	20	2.1	11.8	4.1		
13:25	5	100	8	1.32	6.72	1.07	20	2.07	11.6	2.1		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	6	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-21-138			**Date**	6/2/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	23	**Total Depth (ft-bmp)**	29	**Water Column(ft)**	6	**Gallons in Well**	0.97
MP Elevation	NA	**Pump Intake (ft-bmp)**	28	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	14:45	**Gallons Purged**	1.85	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	12:56						
Purge End:	14:45						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
13:40	0	100	28	0.13	7.01	1.63	33	0.2	12.6	-8.9		
13:45	5	100	28	0.26	6.84	1.62	20	0.08	12.6	1.5		
13:50	5	100	28	0.40	6.83	1.61	19	0.03	12.6	3.6		
13:55	5	100	28	0.53	6.86	1.61	18	0.05	12.6	3.3		
14:00	5	100	28	0.66	6.86	1.61	18	0.17	12.5	4		
14:05	5	100	28	0.79	6.87	1.6	18	0.07	12.5	4.2		
14:10	5	100	28	0.92	6.87	1.6	18	0.18	12.7	4		
14:15	5	100	28	1.06	6.89	1.61	18	0.23	12.6	3.7		
14:20	5	100	28	1.19	6.88	1.61	18	0.2	12.8	4.1		
14:25	5	100	28	1.32	6.91	1.63	18	0.24	12.5	3.2		
14:30	5	100	28	1.45	6.89	1.63	18	0.24	12.8	3.6		
14:35	5	100	28	1.59	6.91	1.64	18	0.27	12.9	2.9		
14:40	5	100	28	1.72	6.92	1.65	18	0.25	12.9	2.7		
14:45	5	100	28	1.85	6.93	1.65	18	0.28	12.8	2.5		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Condition of Well: Good

Well Locked at Arrival: yes

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-21-139			**Date**	6/7/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Cloudy
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	3.1	**Total Depth (ft-bmp)**	12	**Water Column(ft)**	8.9	**Gallons in Well**	1.45
MP Elevation	NA	**Pump Intake (ft-bmp)**	10	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	13:25	**Gallons Purged**	1.19	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	12:40						
Purge End:	13:25						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
12:40	0	100	10	0.13	7.86	2.28	15	0.01	15.5	-26.3		
12:45	5	100	10	0.26	7.75	2.25	12	0.05	15.4	-30.8		
12:50	5	100	10	0.40	7.69	2.19	13	0.06	15.5	-29		
12:55	5	100	10	0.53	7.6	2.06	10	0.13	15.3	-25.4		
13:00	5	100	10	0.66	7.55	1.92	8	0.12	15.4	-20.9		
13:05	5	100	10	0.79	7.53	1.83	7	0.12	15.4	-18		
13:10	5	100	10	0.92	7.53	1.8	7	0.15	15.2	-16.3		
13:15	5	100	10	1.06	7.5	1.78	6	0.11	15	-14.6		
13:20	5	100	10	1.19	7.5	1.77	7	0.11	15.2	-13.6		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-21-139			**Date**	6/10/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Sunny
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	6	**Total Depth (ft-bmp)**	12	**Water Column(ft)**	6	**Gallons in Well**	0.97
MP Elevation	NA	**Pump Intake (ft-bmp)**	11	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	11:20	**Gallons Purged**	0.79	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	10:55						
Purge End:	11:20						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
10:55	0	100	6	0.13	8.02	2.24	22	1.03	16.4	-31.5		
11:00	5	100	6	0.26	7.98	2.24	16	0.28	16.4	-35.5		
11:05	5	100	6	0.40	7.79	2.07	12	0.25	17	-39.8		
11:10	5	100	6	0.53	7.73	2.05	12	0.09	16.8	-38.6		
11:15	5	100	6	0.53	7.73	2.03	11	0.04	16.8	-39.5		
11:20	5	100	6	0.79	7.72	2.04	11	0.04	16.8	-39.6		

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane	40 mL Vial	3	HCL

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

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Project Number	30112892	**Well ID**	MW-21-140			**Date**	06/07/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	62.1 degrees F and Cloudy. The wind is blowing N/NW at 6.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	67.2	**Total Depth (ft-bmp)**	75.95	**Water Column (ft)**	8.75	**Gallons in Well**	1.42
Purge Start	11:25	**Pump Intake (ft-bmp)**	73.45	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:55	**Volumes Purged**	1.12	**Sample ID**	MW-21-140_060722	**Sampled by**	Austin Westhuis
Sample Time	11:50	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:30	0	0	200	67.46	0.26	6.88	0.66	16.8	0.53	13.6	-22	--	--
11:35	5	5	200	67.5	0.53	6.89	0.65	5.52	0.39	13.5	-28.7	--	--
11:40	5	10	200	67.5	0.79	6.91	0.65	2.11	0.25	13.5	-34.5	--	--
11:45	5	15	200	67.5	1.06	6.92	0.65	1.77	0.24	13.6	-36.2	--	--
11:50	5	20	200	67.5	1.32	6.93	0.65	1.61	0.23	13.5	-37.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

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RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-21-141			**Date**	6/6/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Overcast
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	74.32	**Total Depth (ft-bmp)**	77	**Water Column(ft)**	2.68	**Gallons in Well**	0.44
MP Elevation	NA	**Pump Intake (ft-bmp)**	76	**Purge Method:**	Low-Flow	**Sample Method**	Grab
Sample Time:	16:10	**Gallons Purged**		**Replicate/ Code No.**	MS/MSD	**Evacuation Method**	Bladder
Purge Start:	15:20						
Purge End:	16:05						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
15:25	0	200	74.63	0.00	6.41	1.07	100	0.68	14.4	13.5	Clear	None
15:30	5	200	74.63	0.00	6.48	1.07	47	0.34	14.3	10.2	Clear	None
15:35	5	200	74.75	0.00	6.59	1.04	14	0.32	14.2	6.8	Clear	None
15:40	5	200	74.95	0.00	6.66	1.04	12	0.29	14.5	2.6	Clear	None
15:45	5	200	74.95	0.00	6.71	1.01	15	0.24	14.2	-1.1	Clear	None
15:50	5	200	74.99	0.00	6.77	1	14	0.25	14.4	-6.3	Clear	None
15:55	5	200	75.06	0.00	6.81	0.98	14	0.19	14.7	-9.6	Clear	None
16:00	5	200	75.06	0.00	6.82	0.97	15	0.2	14.3	-11.4	Clear	None
16:05	5	200	75.06	0.00	6.87	0.95	16	0.18	14.6	-12.5	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane	40 mL Vial	3	HCL

Sampling By Monica Dostert

Comments: PME Sampler: Jarrett Humpula

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: MW-21-141

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

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Project Number	30112892	**Well ID**	MW-21-142			**Date**	06/07/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Cloudy. The wind is blowing NW at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.44	**Total Depth (ft-bmp)**	78.83	**Water Column (ft)**	14.39	**Gallons in Well**	2.34
Purge Start	12:20	**Pump Intake (ft-bmp)**	76.33	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:10	**Volumes Purged**	1.02	**Sample ID**	MW-21-142_060722	**Sampled by**	Austin Westhuis
Sample Time	13:05	**Gallons Purged**	2.38	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:25	0	0	200	64.52	0.26	6.8	1.39	548	0.08	13.9	-61	--	--
12:30	5	5	200	64.52	0.53	6.82	1.42	330	0.06	13.3	-70.4	--	--
12:35	5	10	200	64.52	0.79	6.84	1.45	225	0.04	13.3	-76.7	--	--
12:40	5	15	200	64.52	1.06	6.83	1.46	55.5	0.04	13.2	-78.4	--	--
12:45	5	20	200	64.52	1.32	6.83	1.47	21.1	0.04	13.2	-78.8	--	--
12:50	5	25	200	64.52	1.59	6.82	1.5	13.6	0.04	13.1	-79.8	--	--
12:55	5	30	200	64.52	1.85	6.81	1.52	11	0.04	13.3	-79.7	--	--
13:00	5	35	200	64.52	2.11	6.8	1.54	10.5	0.04	13.3	-79.6	--	--
13:05	5	40	200	64.52	2.11	6.78	1.56	10	0.04	13.2	-79.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

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Project Number	30112892	**Well ID**	MW-22-143			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	75.0 degrees F and Clear. The wind is blowing W/NW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	15.3	**Total Depth (ft-bmp)**	31.02	**Water Column (ft)**	15.72	**Gallons in Well**	2.55
Purge Start	10:15	**Pump Intake (ft-bmp)**	29.02	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:50	**Volumes Purged**	0.73	**Sample ID**	MW-22-143_060122	**Sampled by**	Austin Westhuis
Sample Time	10:45	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:20	0	0	200	15.3	0.26	6.99	2.54	2.33	0.4	13.4	-741.4	--	--
10:25	5	5	200	15.3	0.53	7.04	2.53	1.77	0.35	13.1	-703.9	--	--
10:30	5	10	200	15.3	0.79	7.1	2.53	1.51	0.31	13.1	-677.9	--	--
10:35	5	15	200	15.3	1.06	7.12	2.53	1.39	0.28	13	-644.5	--	--
10:40	5	20	200	15.3	1.32	7.14	2.55	1.3	0.27	13	-642.1	--	--
10:45	5	25	200	15.3	1.59	7.14	2.54	1.25	0.26	13	-638.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-144			**Date**	04/04/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	37.0 degrees F and Fog/Mist.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	10.68	**Total Depth (ft-bmp)**	24.08	**Water Column (ft)**	13.4	**Gallons in Well**	2.18
Purge Start	13:40	**Pump Intake (ft-bmp)**	22.08	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:30	**Volumes Purged**	1.21	**Sample ID**	MW-22-144_040422	**Sampled by**	Austin Westhuis
Sample Time	14:25	**Gallons Purged**	2.64	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:45	0	0	200	11.10	0.26	7.15	0.827	316	8.37	9.6	132.2	--	--
13:50	5	5	200	11.12	0.53	7.16	0.827	237	9.28	9.6	134.2	--	--
13:55	5	10	200	11.12	0.79	7.15	0.819	159	9.19	9.4	136.7	--	--
14:00	5	15	200	11.12	1.06	7.15	0.823	102	8.85	9.5	137.7	--	--
14:05	5	20	200	11.12	1.32	7.16	0.822	19.1	9.07	9.5	139.5	--	--
14:10	5	25	200	11.14	1.59	7.16	0.823	5.25	8.97	9.6	139.6	--	--
14:15	5	30	200	11.14	1.85	7.16	0.822	3.08	8.98	9.6	140.1	--	--
14:20	5	35	200	11.14	2.11	7.16	0.821	2.71	8.91	9.7	140.2	--	--
14:25	5	40	200	11.14	2.38	7.16	0.82	2.24	8.73	9.7	140.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well still needs a lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure.	Well Locked at Arrival:	no
Condition of Well:	Good condition	Well Locked at Departure:	no
Well Completion:	Flush mount	Key Number To Well:	NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-144			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	75.0 degrees F and Mostly Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	10.67	**Total Depth (ft-bmp)**	24.08	**Water Column (ft)**	13.41	**Gallons in Well**	2.18
Purge Start	11:15	**Pump Intake (ft-bmp)**	22.08	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:05	**Volumes Purged**	1.21	**Sample ID**	MW-22-144_060122	**Sampled by**	Austin Westhuis
Sample Time	12:00	**Gallons Purged**	2.64	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:20	0	0	200	10.67	0.26	7.04	0.8	3.19	0.44	12.1	-232.3	--	--
11:25	5	5	200	10.67	0.53	7	0.81	2.14	0.32	11.9	-264	--	--
11:30	5	10	200	10.67	0.79	7.1	0.87	2.01	0.28	12.1	-323.2	--	--
11:35	5	15	200	10.67	1.06	7.13	0.88	1.83	0.28	12.1	-329.3	--	--
11:40	5	20	200	10.67	1.32	7.16	0.88	1.61	0.26	12.1	-290.3	--	--
11:45	5	25	200	10.67	1.59	7.17	0.88	1.55	0.25	12.1	-299.9	--	--
11:50	5	30	200	10.67	1.85	7.17	0.89	1.41	0.25	12.2	-283.3	--	--
11:55	5	35	200	10.67	2.11	7.18	0.89	1.25	0.25	12.2	-291.9	--	--
12:00	5	40	200	10.67	2.38	7.18	0.88	1.2	0.25	12.5	-292.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-145			**Date**	04/04/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	36.0 degrees F and Light Rain and Fog/Mist. The wind is blowing SE at 11.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.73	**Total Depth (ft-bmp)**	14.95	**Water Column (ft)**	5.22	**Gallons in Well**	0.85
Purge Start	13:00	**Pump Intake (ft-bmp)**	12.95	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:30	**Volumes Purged**	1.86	**Sample ID**	MW-22-145_040422	**Sampled by**	Austin Westhuis
Sample Time	13:25	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:05	0	0	200	9.75	0.26	6.99	0.6	6.33	1.27	7.6	212.8	--	--
13:10	5	5	200	9.75	0.53	7.05	0.597	2.98	1.16	7.7	207.6	--	--
13:15	5	10	200	9.75	0.79	7.12	0.599	2.02	1.18	7.8	200.2	--	--
13:20	5	15	200	9.75	1.06	7.13	0.597	1.66	1.09	7.7	198.7	--	--
13:25	5	20	200	9.75	1.32	7.13	0.596	1.46	1.07	7.7	196.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well still needs a lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure.	Well Locked at Arrival:	no
Condition of Well:	Good condition	Well Locked at Departure:	no
Well Completion:	Flush mount	Key Number To Well:	NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-145			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	75.0 degrees F and Mostly Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.98	**Total Depth (ft-bmp)**	14.95	**Water Column (ft)**	4.97	**Gallons in Well**	0.81
Purge Start	12:10	**Pump Intake (ft-bmp)**	12.95	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:40	**Volumes Purged**	1.96	**Sample ID**	MW-22-145_060122	**Sampled by**	Austin Westhuis
Sample Time	12:35	**Gallons Purged**	1.59	**Replicate/ Code No.**	Dup-17_060122	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:15	0	0	200	9.98	0.26	7.03	0.66	4.16	1.36	12.4	-37.8	--	--
12:20	5	5	200	9.98	0.53	7.01	0.65	1.39	1.28	12.1	-55.6	--	--
12:25	5	10	200	9.98	0.79	7.04	0.65	1.22	1.16	12.1	-69.1	--	--
12:30	5	15	200	9.98	1.06	7.04	0.66	1.12	1.12	12.2	-72.4	--	--
12:35	5	20	200	9.98	1.32	7.08	0.66	1.03	1.13	12.4	-78.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	4	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-146			**Date**	04/05/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	43.0 degrees F and Haze. The wind is blowing at 4.7 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	1.86	**Total Depth (ft-bmp)**	9.89	**Water Column (ft)**	8.03	**Gallons in Well**	1.3
Purge Start	11:40	**Pump Intake (ft-bmp)**	7.89	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:10	**Volumes Purged**	1.22	**Sample ID**	MW-22-143_040522	**Sampled by**	Austin Westhuis
Sample Time	12:05	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:45	0	0	200	3.00	0.26	7.42	0.622	15.1	8.34	6.8	65.3	--	--
11:50	5	5	200	3.00	0.53	7.42	0.623	5.51	8.21	6.8	76.2	--	--
11:55	5	10	200	3.00	0.79	7.43	0.624	2.81	8.09	6.9	86.8	--	--
12:00	5	15	200	3.00	1.06	7.42	0.621	2.44	8.02	6.9	88.4	--	--
12:05	5	20	200	3.00	1.32	7.42	0.62	2.27	7.98	6.9	88.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well still needs a lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure.	Well Locked at Arrival:	no
Condition of Well:	Good condition	Well Locked at Departure:	no
Well Completion:	Flush mount	Key Number To Well:	NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-146			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	71.1 degrees F and Cloudy. The wind is blowing NW at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.53	**Total Depth (ft-bmp)**	9.89	**Water Column (ft)**	5.36	**Gallons in Well**	0.87
Purge Start	12:55	**Pump Intake (ft-bmp)**	7.89	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:20	**Volumes Purged**	1.52	**Sample ID**	MW-22-146_060122	**Sampled by**	Austin Westhuis
Sample Time	13:15	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:00	0	0	200	5.11	0.26	7.35	0.74	2.48	6.19	11.6	3.1	--	--
13:05	5	5	200	5.11	0.53	7.17	0.75	2.19	5.79	11.8	8.8	--	--
13:10	5	10	200	5.11	0.79	7.23	0.74	1.94	5.79	11.9	8.9	--	--
13:15	5	15	200	5.11	1.06	7.25	0.74	1.24	5.65	12	9.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-147			**Date**	04/04/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	41.0 degrees F and Cloudy. The wind is blowing SE at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.46	**Total Depth (ft-bmp)**	12.25	**Water Column (ft)**	3.79	**Gallons in Well**	0.62
Purge Start	16:00	**Pump Intake (ft-bmp)**	10.25	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	16:40	**Volumes Purged**	3.84	**Sample ID**	MW-22-147_040422	**Sampled by**	Austin Westhuis
Sample Time	16:30	**Gallons Purged**	2.38	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:05	0	0	200	8.61	0.26	7.2	0.972	53.4	11.48	6.9	123.4	--	--
16:10	5	5	200	8.64	0.53	7.19	0.966	21.1	11.42	6.8	128.5	--	--
16:15	5	10	200	8.64	0.79	7.19	0.97	8.74	11.29	6.8	130.8	--	--
16:20	5	15	200	8.64	1.06	7.19	0.972	3.61	11.13	6.9	134	--	--
16:25	5	20	200	8.64	1.32	7.21	0.985	2.91	11.03	6.8	137.6	--	--
16:30	5	25	200	8.64	1.59	7.21	0.99	2.78	10.93	6.9	138.6	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	6	None

Comments: Well still needs a lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure.	Well Locked at Arrival:	no
Condition of Well:	Good condition	Well Locked at Departure:	no
Well Completion:	Flush mount	Key Number To Well:	NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

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Project Number	30112892	**Well ID**	MW-22-147			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	72.0 degrees F and Partly Cloudy. The wind is blowing at 3.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.98	**Total Depth (ft-bmp)**	12.25	**Water Column (ft)**	3.27	**Gallons in Well**	0.53
Purge Start	13:40	**Pump Intake (ft-bmp)**	10.25	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:05	**Volumes Purged**	2.49	**Sample ID**	MW-22-147_060122	**Sampled by**	Austin Westhuis
Sample Time	14:00	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:45	0	0	200	8.98	0.26	7.25	1.07	2.27	3.8	11.9	-72.9	--	--
13:50	5	5	200	9.25	0.53	7.17	1.04	2.01	3.46	11.7	-47.4	--	--
13:55	5	10	200	9.27	0.79	7.17	1.04	1.78	3.35	11.9	-51.4	--	--
14:00	5	15	200	9.27	1.06	7.2	1.06	1.7	3.41	11.8	-52.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-148			**Date**	04/04/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	37.0 degrees F and Fog/Mist.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	24.46	**Total Depth (ft-bmp)**	29.3	**Water Column (ft)**	4.84	**Gallons in Well**	0.79
Purge Start	15:00	**Pump Intake (ft-bmp)**	27.3	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:50	**Volumes Purged**	3.34	**Sample ID**	MW-22-148_040422	**Sampled by**	Austin Westhuis
Sample Time	15:45	**Gallons Purged**	2.64	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:05	0	0	200	25.05	0.26	7.42	0.794	824	8.4	9.5	153.3	--	--
15:10	5	5	200	25.30	0.53	7.43	0.817	272	8.45	10.2	157.1	--	--
15:15	5	10	200	25.62	0.79	7.43	0.821	89.9	8.35	10.2	162.1	--	--
15:20	5	15	200	25.69	1.06	7.43	0.828	33.6	8.62	10.3	165.5	--	--
15:25	5	20	200	25.74	1.32	7.43	0.836	31.2	8.73	10.2	166.7	--	--
15:30	5	25	200	25.75	1.59	7.43	0.839	30.1	8.73	10.3	167.3	--	--
15:35	5	30	200	25.77	1.85	7.43	0.835	21.1	8.37	10.2	168.4	--	--
15:40	5	35	200	25.77	2.11	7.42	0.836	19.6	8.71	10.3	169.9	--	--
15:45	5	40	200	25.78	2.38	7.42	0.837	19.1	8.73	10.3	169.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well still needs a lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-148			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	72.0 degrees F and Partly Cloudy. The wind is blowing at 3.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	23.82	**Total Depth (ft-bmp)**	29.3	**Water Column (ft)**	5.48	**Gallons in Well**	0.89
Purge Start	14:10	**Pump Intake (ft-bmp)**	27.3	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:35	**Volumes Purged**	1.48	**Sample ID**	MW-22-148_060122	**Sampled by**	Austin Westhuis
Sample Time	14:30	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:15	0	0	200	24.02	0.26	7.43	1.1	3.63	3.57	13.8	-45.7	--	--
14:20	5	5	200	24.12	0.53	7.51	0.76	1.91	0.41	13.1	-179.3	--	--
14:25	5	10	200	24.19	0.79	7.5	0.76	1.58	0.39	13.2	-178.9	--	--
14:30	5	15	200	24.19	1.06	7.51	0.76	1.5	0.39	13.2	-173.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-149			**Date**	04/05/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	45.0 degrees F and Haze.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.30	**Total Depth (ft-bmp)**	9.91	**Water Column (ft)**	5.61	**Gallons in Well**	0.91
Purge Start	12:30	**Pump Intake (ft-bmp)**	7.91	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:55	**Volumes Purged**	1.45	**Sample ID**	MW-22-149_040522	**Sampled by**	Austin Westhuis
Sample Time	12:50	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:35	0	0	200	4.45	0.26	7.4	0.4345	16.7	6.79	8.2	106.6	--	--
12:40	5	5	200	4.45	0.53	7.35	0.4317	4.47	6.31	8.2	112.2	--	--
12:45	5	10	200	4.45	0.79	7.35	0.4318	3.71	6.5	8.2	114.9	--	--
12:50	5	15	200	4.45	1.06	7.35	0.4311	3.5	6.4	8.2	116.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well still needs a lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure.	Well Locked at Arrival:	no
Condition of Well:	Good condition	Well Locked at Departure:	no
Well Completion:	Flush mount	Key Number To Well:	NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-22-149			**Date**	6/1/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Cloudy
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	9	**Total Depth (ft-bmp)**	10.5	**Water Column(ft)**	1.5	**Gallons in Well**	0.24
MP Elevation	NA	**Pump Intake (ft-bmp)**	9	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time: 13:40 **Purge Start:** 13:05		**Gallons Purged**	1.32	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge End: 13:40							

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
13:05	0	100	9	0.13	6.93	0.65	22	5.34	13.3	16.7		
13:10	5	100	9	0.26	6.87	0.636	20	5.18	13.4	18.5		
13:15	5	100	9	0.40	7.01	0.618	18	4.37	13.4	14.1		
13:21	6	100	9	0.53	7.07	0.611	15	3.59	13.1	14.5		
13:25	4	100	9	0.66	7.09	0.613	15	4.07	13.3	12.2		
13:30	5	100	9	0.79	7.09	0.625	15	4.94	13	11.4		
13:35	5	100	9	0.92	7.07	0.636	15	5.04	13.3	11.4		
13:40	5	100	9	1.32	7.09	0.643	15	5.06	13.3	10.4		

Constituent Sampled	**Container**	**Number**	**Preservative**
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: MW-22-149

Well Locked at Arrival: no

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-150			**Date**	04/05/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	46.9 degrees F and Mostly Cloudy. The wind is blowing at 4.7 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.00	**Total Depth (ft-bmp)**	17.93	**Water Column (ft)**	12.93	**Gallons in Well**	2.1
Purge Start	13:20	**Pump Intake (ft-bmp)**	15.93	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:50	**Volumes Purged**	0.75	**Sample ID**	MW-22-150_040522	**Sampled by**	Austin Westhuis
Sample Time	13:45	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:25	0	0	200	5.34	0.26	7.3	3.937	7.87	5.36	9.2	170.8	--	--
13:30	5	5	200	5.34	0.53	7.3	3.939	2.93	5.3	9.2	169.8	--	--
13:35	5	10	200	5.34	0.79	7.33	3.932	1.81	5.21	9.1	168.9	--	--
13:40	5	15	200	5.34	1.06	7.32	3.924	1.6	5.18	9	169.9	--	--
13:45	5	20	200	5.34	1.32	7.34	3.926	1.51	5.14	9.1	168.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well still needs a lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure.	Well Locked at Arrival:	no
Condition of Well:	Good condition	Well Locked at Departure:	no
Well Completion:	Flush mount	Key Number To Well:	NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-22-150			**Date**	6/1/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Cloudy
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	16.5	**Total Depth (ft-bmp)**	18	**Water Column(ft)**	1.5	**Gallons in Well**	0.24
MP Elevation	NA	**Pump Intake (ft-bmp)**	16	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	11:05	**Gallons Purged**	1.19	**Replicate/ Code No.**	MS/MSD	**Evacuation Method**	Peristaltic
Purge Start:	10:20						
Purge End:	11:00						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
10:20	0	100	16	0.13	7.1	5.71	45	0.46	12.5	-6.3		
10:25	5	100	16	0.26	7.13	5.44	42	0.52	12.5	-9.3		
10:30	5	100	16	0.40	7.15	5.38	36	0.73	12.9	-9.2		
10:35	5	100		0.53	7.16	5.38	24	0.73	12.6	-8.9		
10:40	5	100		0.66	7.16	5.37	20	0.7	12.6	-7.9		
10:45	5	100		0.79	7.16	5.36	18	0.68	12.5	-7.2		
10:50	5	100		0.92	7.16	5.35	18	0.64	12.7	-6.5		
10:55	5	100		1.06	7.17	5.37	18	0.62	13	-6.4		
11:00	5	100		1.19	7.19	5.36	18	0.63	13	-6.4		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	6	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: MW-22-150

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-151			**Date**	04/05/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	51.1 degrees F and Mostly Clear. The wind is blowing E at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.77	**Total Depth (ft-bmp)**	14.9	**Water Column (ft)**	9.13	**Gallons in Well**	1.48
Purge Start	14:15	**Pump Intake (ft-bmp)**	12.9	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:45	**Volumes Purged**	1.07	**Sample ID**	MW-22-151_040522	**Sampled by**	Austin Westhuis
Sample Time	14:40	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:20	0	0	200	5.77	0.26	7	1.639	10.5	0.32	11.4	131.6	--	--
14:25	5	5	200	5.77	0.53	6.96	1.628	3.02	0.3	11.3	138	--	--
14:30	5	10	200	5.77	0.79	6.96	1.627	1.77	0.3	11.3	140.9	--	--
14:35	5	15	200	5.77	1.06	6.96	1.628	1.57	0.29	11.3	141.2	--	--
14:40	5	20	200	5.77	1.32	6.96	1.624	1.31	0.28	11.3	144.6	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well still needs a lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure.	Well Locked at Arrival:	no
Condition of Well:	Good condition	Well Locked at Departure:	no
Well Completion:	Flush mount	Key Number To Well:	NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-22-151			**Date**	6/1/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Cloudy
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	15	**Total Depth (ft-bmp)**	18	**Water Column(ft)**	3	**Gallons in Well**	0.49
MP Elevation	NA	**Pump Intake (ft-bmp)**	15	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	12:25	**Gallons Purged**	1.72	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	11:35						
Purge End:	12:25						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
11:35	0	100	15	0.13	6.91	2.19	22	0.16	13.2	-5.1		
11:40	5	100	15	0.26	6.64	2.14	19	0.45	13.5	5.5		
11:45	5	100	15	0.40	6.7	2.14	15	0.09	13.6	2.6		
11:50	5	100	15	0.53	6.73	2.13	15	0.07	13.8	1.4		
11:55	5	100	15	0.66	6.76	2.13	15	0.06	13.5	0.4		
12:00	5	100	15	0.79	6.76	2.12	15	0.04	13.7	-0.1		
12:05	5	100	15	0.92	6.78	2.12	15	0.08	13.7	-1.2		
12:10	5	100	15	1.06	6.79	2.12	15	0.08	13.7	-3		
12:15	5	100	15	1.19	6.78	2.11	15	0.12	13.7	-2.4		
12:20	5	100	15	1.45	6.79	2.11	15	0.12	13.6	-3.4		
12:25	5	100	15	1.59	6.79	2.11	15	0.12	13.4	-3		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: MW-22-151

Well Locked at Arrival: no

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-152			**Date**	04/05/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	51.1 degrees F and Mostly Clear. The wind is blowing E at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.95	**Total Depth (ft-bmp)**	14.89	**Water Column (ft)**	7.94	**Gallons in Well**	1.29
Purge Start	15:10	**Pump Intake (ft-bmp)**	12.89	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:55	**Volumes Purged**	1.84	**Sample ID**	MW-22-152_040522	**Sampled by**	Austin Westhuis
Sample Time	15:50	**Gallons Purged**	2.38	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:15	0	0	200	7.00	0.26	7.16	0.604	542	2.39	11.3	-6.4	--	--
15:20	5	5	200	7.00	0.53	7.14	0.601	429	2.22	11.2	-25.9	--	--
15:25	5	10	200	7.00	0.79	7.13	0.6	318	2.17	11.2	-42.3	--	--
15:30	5	15	200	7.00	1.06	7.12	0.602	201	2.15	11.2	-51.7	--	--
15:35	5	20	200	7.00	1.32	7.12	0.603	178	2.12	11.2	-54.4	--	--
15:40	5	25	200	7.00	1.59	7.12	0.603	165	2.12	11.2	-54.9	--	--
15:45	5	30	200	7.00	1.85	7.12	0.603	156	2.11	11.2	-56.1	--	--
15:50	5	35	200	7.00	2.11	7.12	0.602	151	2.1	11.2	-57.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well still needs a lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	MW-22-152			**Date**	6/1/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Cloudy
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	14	**Total Depth (ft-bmp)**	15	**Water Column(ft)**	1	**Gallons in Well**	0.16
MP Elevation	NA	**Pump Intake (ft-bmp)**	14	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time: 14:40		**Gallons Purged**	1.19	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start: 14:00							
Purge End: 14:40							

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
14:00	0	100	14	0.13	6.86	0.93	24	0.53	12.6	7.9		
14:05	5	100	14	0.26	6.8	0.88	21	0.16	12.5	9.8		
14:10	5	100	14	0.40	6.8	0.87	18	0.07	12.4	8.2		
14:15	5	100	14	0.53	6.83	0.87	15	0.07	12.4	5.9		
14:20	5	100	14	0.66	6.87	0.87	15	0.06	12.3	3.7		
14:25	5	100	14	0.79	6.89	0.87	15	0.07	12.5	1.9		
14:30	5	100	14	0.92	6.91	0.87	15	0.07	12.4	0.3		
14:35	5	100	14	1.06	6.91	0.87	15	0.13	12.1	0.5		
14:40	5	100	14	1.19	6.88	0.87	15	0.16	12.1	0.5		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: MW-22-152

Well Locked at Arrival: no

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-153			**Date**	04/06/2022
Project Name/Location	RACER Lansing GWS		**Weather(°F)**	51.1 degrees F and Mostly Clear. The wind is blowing E at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.58	**Total Depth (ft-bmp)**	31.2	**Water Column (ft)**	21.62	**Gallons in Well**	3.51
Purge Start	11:15	**Pump Intake (ft-bmp)**	29.2	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:50	**Volumes Purged**	0.53	**Sample ID**	MW-22-153_040622	**Sampled by**	Austin Westhuis
Sample Time	11:45	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:35	0	0	200	9.58	1.06	7.09	1.56	1.77	1.26	12	-43.6	--	--
11:40	5	5	200	9.58	1.32	7.08	1.562	1.43	1.24	12.1	-46.6	--	--
11:45	5	10	200	9.58	1.59	7.08	1.557	1.21	1.22	12.1	-48.9	Clear	None

Constituent Sampled	**Container**	**Number**	**Preservative**
VOCs 8260 and 1,4-Dioxane 8260	40 mL Glass	3	HCL

Comments: Lost first three sets of parameter readings after tablet malfunctioned.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-153			**Date**	06/04/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing SE at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	10.4	**Total Depth (ft-bmp)**	31.18	**Water Column (ft)**	20.78	**Gallons in Well**	3.38
Purge Start	09:30	**Pump Intake (ft-bmp)**	28.68	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:05	**Volumes Purged**	0.55	**Sample ID**	MW-22-153_060422	**Sampled by**	Austin Westhuis
Sample Time	10:00	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:35	0	0	200	10.42	0.26	6.83	1.65	3.39	0.29	13.6	-28	--	--
09:40	5	5	200	10.42	0.53	6.89	1.57	1.94	0.21	13.8	-44.3	--	--
09:45	5	10	200	10.42	0.79	6.89	1.58	1.51	0.13	13.9	-48.9	--	--
09:50	5	15	200	10.42	1.06	6.91	1.56	1.4	0.11	13.8	-54.4	--	--
09:55	5	20	200	10.42	1.32	6.91	1.55	1.34	0.1	13.8	-57	--	--
10:00	5	25	200	10.42	1.59	6.91	1.54	1.21	0.1	13.8	-58.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane	40 mL Glass	3	HCL
VOCs	40 mL Glass	NA	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-23			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	71.1 degrees F and Partly Cloudy. The wind is blowing E at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	48.12	**Total Depth (ft-bmp)**	65.59	**Water Column (ft)**	17.47	**Gallons in Well**	2.84
Purge Start	14:10	**Pump Intake (ft-bmp)**	63.1	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:45	**Volumes Purged**	0.65	**Sample ID**	MW-23_060822	**Sampled by**	Austin Westhuis
Sample Time	14:40	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:15	0	0	200	48.12	0.26	9.08	0.86	8.08	0.1	13.9	20.9	--	--
14:20	5	5	200	48.12	0.53	8.62	0.92	4.14	0.09	14	22.7	--	--
14:25	5	10	200	48.12	0.79	8.48	0.94	1.99	0.09	13.9	22.7	--	--
14:30	5	15	200	48.12	1.06	8.13	0.98	1.43	0.09	13.9	10.7	--	--
14:35	5	20	200	48.12	1.32	8.07	1	1.33	0.09	14	6.7	--	--
14:40	5	25	200	48.12	1.59	8.05	1	1.3	0.09	14.1	4.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-91-2R			**Date**	06/09/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Partly Cloudy. The wind is blowing W at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	56.61	**Total Depth (ft-bmp)**	84.15	**Water Column (ft)**	27.54	**Gallons in Well**	4.48
Purge Start	13:05	**Pump Intake (ft-bmp)**	81.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:40	**Volumes Purged**	0.21	**Sample ID**	MW-91-2R	**Sampled by**	Billy Cobern
Sample Time	13:40	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:10	0	0	100	56.75	0.13	7.15	1.54	18.3	5.76	18.1	-100.4	--	--
13:15	5	5	100	56.75	0.26	7.14	1.56	8.79	4.93	18	-115.9	--	--
13:20	5	10	100	56.75	0.40	7.15	1.58	4.61	4.73	18.6	-121.4	--	--
13:25	5	15	100	56.75	0.53	7.15	1.59	5.94	4.47	19	-123.4	--	--
13:30	5	20	100	56.75	0.66	7.14	1.6	4.92	4.3	18.9	-124.9	--	--
13:35	5	25	100	56.75	0.79	7.14	1.6	4.71	4.29	18.9	-125.1	--	--
13:40	5	30	100	56.75	0.92	7.14	1.6	4.8	4.35	18.9	-125.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL
Hexavalent Chromium SW-846 719	125 mL Plastic	1	None
Metals	125 mL Plastic	1	HNO3
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-91-5			**Date**	06/08/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.0 degrees F and Clear. The wind is blowing E at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	61.3	**Total Depth (ft-bmp)**	127.7	**Water Column (ft)**	66.4	**Gallons in Well**	10.79
Purge Start	10:15	**Pump Intake (ft-bmp)**	125	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:00	**Volumes Purged**	0.11	**Sample ID**	MW-91-5	**Sampled by**	Billy Cobern
Sample Time	11:00	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:20	0	0	100	61.35	0.13	7.07	0.201	33.7	3.01	14.8	64.8	--	--
10:25	5	5	100	61.35	0.26	6.87	0.196	31	1.55	15.9	61.6	--	--
10:30	5	10	100	61.35	0.40	6.89	0.198	26.3	1.46	16.3	56.8	--	--
10:35	5	15	100	61.35	0.53	6.86	0.199	20.2	1.39	16.4	52.2	--	--
10:40	5	20	100	61.35	0.66	6.88	0.198	15.6	1.37	17.1	47	--	--
10:45	5	25	100	61.35	0.79	6.87	0.199	14.2	1.36	17.4	44.4	--	--
10:50	5	30	100	61.35	0.92	6.85	0.199	13.3	1.29	17.3	42.9	--	--
10:55	5	35	100	61.35	1.06	6.85	0.2	13.1	1.21	17.4	42.1	--	--
11:00	5	40	100	61.35	1.19	6.85	0.2	12.8	1.2	17.5	42.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 522	250 mL Amber	1	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-91-6			**Date**	06/07/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Cloudy. The wind is blowing NW at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	59.71	**Total Depth (ft-bmp)**	96.15	**Water Column (ft)**	36.44	**Gallons in Well**	5.92
Purge Start	12:40	**Pump Intake (ft-bmp)**	93.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:25	**Volumes Purged**	0.20	**Sample ID**	MW-91-6_060722	**Sampled by**	Billy Cobern
Sample Time	13:25	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:45	0	0	100	59.82	0.13	7.59	1.46	19	3.8	19.8	-105.4	--	--
12:50	5	5	100	59.8	0.26	7.52	1.6	16.3	0.78	18.7	-134.4	--	--
12:55	5	10	100	59.8	0.40	7.54	1.6	13.3	0.64	19.1	-147.7	--	--
13:00	5	15	100	59.8	0.53	7.57	1.59	10.3	0.47	18.9	-162.8	--	--
13:05	5	20	100	59.8	0.66	7.58	1.57	9.71	0.44	19.1	-170.3	--	--
13:10	5	25	100	59.8	0.79	7.59	1.56	9.31	0.37	19.2	-174.1	--	--
13:15	5	30	100	59.8	0.92	7.57	1.56	9.02	0.33	18.7	-176	--	--
13:20	5	35	100	59.8	1.06	7.56	1.56	8.94	0.33	18.7	-176.7	--	--
13:25	5	40	100	59.8	1.19	7.56	1.57	8.7	0.34	18.7	-177.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 522	250 mL Amber	1	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MWBP-10-UST5-6			**Date**	06/03/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	78.1 degrees F and Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	29.04	**Total Depth (ft-bmp)**	36.8	**Water Column (ft)**	7.76	**Gallons in Well**	1.26
Purge Start	14:45	**Pump Intake (ft-bmp)**	34.8	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:15	**Volumes Purged**	1.26	**Sample ID**	MWBP-10-UST5-6_060322	**Sampled by**	Austin Westhuis
Sample Time	15:10	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:50	0	0	200	29.04	0.26	7.03	2.67	2.19	0.7	13.1	-16.6	--	--
14:55	5	5	200	29.04	0.53	7.07	2.67	1.79	0.72	13.2	-48.3	--	--
15:00	5	10	200	29.04	0.79	7.07	2.62	1.7	0.74	13.1	-52.2	--	--
15:05	5	15	200	29.04	1.06	7.09	2.63	1.54	0.75	13.1	-55.5	--	--
15:10	5	20	200	29.04	1.32	7.08	2.6	1.5	0.75	13.2	-58.1	Clear	None

Constituent Sampled	Container	Number	Preservative
Total Select Metals (As, Ni, P	125 mL Plastic	1	HNO3
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MWBP-11-UST1-4			**Date**	06/03/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	77.0 degrees F and Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	1.52	**Total Depth (ft-bmp)**	11.24	**Water Column (ft)**	9.72	**Gallons in Well**	1.58
Purge Start	13:40	**Pump Intake (ft-bmp)**	9.24	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:10	**Volumes Purged**	1.00	**Sample ID**	MWBP-11-UST1-4_060322	**Sampled by**	Austin Westhuis
Sample Time	14:05	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:45	0	0	200	1.92	0.26	8.92	0.76	2.28	0.21	15	42.3	--	--
13:50	5	5	200	1.99	0.53	8.92	0.76	2.01	0.11	15.2	38.8	--	--
13:55	5	10	200	1.99	0.79	8.92	0.75	1.78	0.1	15	33.9	--	--
14:00	5	15	200	1.99	1.06	8.9	0.76	1.33	0.1	15	31.2	--	--
14:05	5	20	200	1.99	1.32	8.9	0.76	1.22	0.1	15.1	30.3	Clear	None

Constituent Sampled	Container	Number	Preservative
Total Select Metals (As, Ni, P	125 mL Plastic	1	HNO3
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MWBP-12-UST1-4			**Date**	06/03/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	75.9 degrees F and Clear. The wind is blowing W at 16.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	2.29	**Total Depth (ft-bmp)**	11.3	**Water Column (ft)**	9.01	**Gallons in Well**	1.46
Purge Start	12:40	**Pump Intake (ft-bmp)**	9.3	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:10	**Volumes Purged**	1.09	**Sample ID**	MWBP-12-UST1-4_060322	**Sampled by**	Austin Westhuis
Sample Time	13:05	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:45	0	0	200	2.35	0.26	7.6	0.341	4.03	0.01	13.9	63.8	--	--
12:50	5	5	200	2.35	0.53	7.6	0.341	3.41	0.01	14	64.9	--	--
12:55	5	10	200	2.35	0.79	7.62	0.341	3.11	0.01	14.1	63.7	--	--
13:00	5	15	200	2.37	1.06	7.65	0.339	2.69	0.01	13.9	61.9	--	--
13:05	5	20	200	2.37	1.32	7.65	0.34	2.51	0.01	14	61.7	Clear	None

Constituent Sampled	Container	Number	Preservative
Total Select Metals (As, Ni, P	125 mL Plastic	1	HNO3
VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	P2-MW-04			**Date**	06/04/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing E/SE at 3.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	11.77	**Total Depth (ft-bmp)**	39.52	**Water Column (ft)**	27.75	**Gallons in Well**	4.51
Purge Start	08:25	**Pump Intake (ft-bmp)**	37.02	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	09:10	**Volumes Purged**	0.53	**Sample ID**	P2-MW-04_060422	**Sampled by**	Austin Westhuis
Sample Time	09:05	**Gallons Purged**	2.38	**Replicate/ Code No.**	Dup-02_060422	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:30	0	0	200	12.01	0.26	6.91	0.97	6.53	0.37	12	73	--	--
08:35	5	5	200	12.01	0.53	7.03	0.97	3.09	0.25	12	46	--	--
08:40	5	10	200	12.01	0.79	7.07	0.97	2.27	0.2	12.1	34.3	--	--
08:45	5	15	200	12.01	1.06	7.09	0.97	1.7	0.18	12.1	15.2	--	--
08:50	5	20	200	12.02	1.32	7.11	0.97	1.43	0.17	12.2	5.5	--	--
08:55	5	25	200	12.02	1.59	7.12	0.97	1.31	0.16	12.2	-16.9	--	--
09:00	5	30	200	12.02	1.85	7.13	0.97	1.26	0.16	12.2	-24.8	--	--
09:05	5	35	200	12.02	2.11	7.14	0.98	1.16	0.15	12.2	-26.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	P6-SB-07			**Date**	06/03/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Clear. The wind is blowing W/SW at 15.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.35	**Total Depth (ft-bmp)**	23.65	**Water Column (ft)**	17.3	**Gallons in Well**	2.81
Purge Start	11:35	**Pump Intake (ft-bmp)**	21.15	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:05	**Volumes Purged**	0.56	**Sample ID**	P6-SB-07_060322	**Sampled by**	Austin Westhuis
Sample Time	12:00	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:40	0	0	200	6.55	0.26	7.23	0.62	3.3	0.26	13.2	39	--	--
11:45	5	5	200	6.59	0.53	7.15	0.64	1.99	0.15	13	35	--	--
11:50	5	10	200	6.59	0.79	7.19	0.66	1.81	0.1	13	25.4	--	--
11:55	5	15	200	6.59	1.06	7.18	0.65	1.57	0.1	12.8	22.8	--	--
12:00	5	20	200	6.6	1.32	7.18	0.66	1.45	0.1	12.9	20.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	PW-14-01			**Date**	06/07/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Mostly Cloudy. The wind is blowing NW at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	62.75	**Total Depth (ft-bmp)**	81.84	**Water Column (ft)**	19.09	**Gallons in Well**	3.1
Purge Start	13:45	**Pump Intake (ft-bmp)**	79.34	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:40	**Volumes Purged**	0.94	**Sample ID**	PW-14-01_060722	**Sampled by**	Austin Westhuis
Sample Time	14:35	**Gallons Purged**	2.91	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:50	0	0	200	62.98	0.26	5.88	3.66	738	3.49	15.2	-14	--	--
13:55	5	5	200	62.98	0.53	6.16	3.55	433	3.49	15.1	-24.8	--	--
14:00	5	10	200	62.98	0.79	6.57	3.38	271	5.57	15	-32.2	--	--
14:05	5	15	200	62.98	1.06	6.62	3.37	122	5.69	15	-32.3	--	--
14:10	5	20	200	62.98	1.32	6.79	3.33	52.3	5.73	14.9	-24.4	--	--
14:15	5	25	200	62.98	1.59	6.85	3.32	31.1	5.75	14.9	-23.4	--	--
14:20	5	30	200	62.98	1.85	6.91	3.31	26.8	5.75	14.9	-19.5	--	--
14:25	5	35	200	62.98	2.11	6.96	3.29	21.1	5.75	14.9	-14.7	--	--
14:30	5	40	200	62.98	2.38	6.98	3.27	20.2	5.76	14.9	-10.1	--	--
14:35	5	45	200	62.98	2.64	6.99	3.27	22.3	5.76	14.8	-9.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	PW-14-02			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.9 degrees F and Mostly Cloudy. The wind is blowing W at 4.7 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	6	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.17	**Total Depth (ft-bmp)**	85.17	**Water Column (ft)**	22	**Gallons in Well**	32.17
Purge Start	14:50	**Pump Intake (ft-bmp)**	83	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:45	**Volumes Purged**	0.05	**Sample ID**	PW-14-02_060122	**Sampled by**	Billy Cobern
Sample Time	15:45	**Gallons Purged**	1.45	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:55	0	0	100	63.29	0.13	7.66	1.2	420	7.03	24.6	104.8	--	--
15:00	5	5	100	63.39	0.26	7.41	2.34	283	6.7	24.4	-13.5	--	--
15:05	5	10	100	63.49	0.40	7.24	2.38	156	6.31	23.5	-12.2	--	--
15:10	5	15	100	63.58	0.53	7.22	2.37	52.7	5.46	23.6	-8.2	--	--
15:15	5	20	100	63.67	0.66	7.23	2.38	51.3	5.41	23.3	-1.5	--	--
15:20	5	25	100	63.76	0.79	7.23	2.38	20.2	5.55	22.8	1.3	--	--
15:25	5	30	100	63.84	0.92	7.23	2.38	14.7	5.54	22.6	3.1	--	--
15:30	5	35	100	63.92	1.06	7.23	2.37	12.4	5.56	22.4	3.8	--	--
15:35	5	40	100	63.99	1.19	7.23	2.37	9.87	5.5	22.6	5.8	--	--
15:40	5	45	100	64.05	1.32	7.23	2.36	9.41	5.56	22.5	6.3	--	--
15:45	5	50	100	64.09	1.45	7.23	2.37	9.23	5.46	22.5	7.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM,VOCs	40 mL Glass	3	HCL
Nitrate	125 mL Plastic	1	None
Total Phosphorus TKN	250 mL Plastic	1	H2SO4

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	PW-14-03			**Date**	06/06/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	69.3	**Total Depth (ft-bmp)**	94.3	**Water Column (ft)**	25	**Gallons in Well**	4.06
Purge Start	10:55	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:25	**Volumes Purged**		**Sample ID**	PW-14-03_060622	**Sampled by**	Donald Richmond
Sample Time	11:25	**Gallons Purged**		**Replicate/ Code No.**	DUP-12_060622	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:10	0	0	200	69.3	--	7.06	3.37	0.02	11.59	20.5	67.9	--	--
11:15	5	5	200	69.3	--	7.09	3.44	0.02	11.93	21	66.7	--	--
11:20	5	10	200	69.3	--	7.09	3.46	0.02	12.18	21.1	66.3	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	6	HCL

Comments: Dup-12 taken

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-14-02			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	75.0 degrees F and Clear. The wind is blowing W/NW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	62.82	**Total Depth (ft-bmp)**	70.51	**Water Column (ft)**	7.69	**Gallons in Well**	1.25
Purge Start	09:15	**Pump Intake (ft-bmp)**	68	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	09:40	**Volumes Purged**	0.53	**Sample ID**	TW-14-02	**Sampled by**	Billy Cobern
Sample Time	09:40	**Gallons Purged**	0.66	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:20	0	0	100	63.04	0.13	7.64	5	313	8.09	20.8	171.5	--	--
09:25	5	5	100	63.04	0.26	7.64	5	297	8.07	20.9	169.8	--	--
09:30	5	10	100	63.04	0.40	7.65	5	289	8.07	21	168.6	--	--
09:35	5	15	100	63.04	0.53	7.65	4.99	280	8.05	21.1	167.1	--	--
09:40	5	20	100	63.04	0.66	7.66	4.99	273	8.07	21.2	165.4	Gray	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM,VOCs	40 mL Glass	3	HCL
Nitrate	125 mL Plastic	1	None
Total Phosphorus, TKN	250 mL Plastic	1	H2SO4

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-14-06			**Date**	06/06/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	52.3	**Total Depth (ft-bmp)**	88.39	**Water Column (ft)**	36.09	**Gallons in Well**	5.86
Purge Start	09:10	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	10:10	**Volumes Purged**		**Sample ID**	TW-14-06_060622	**Sampled by**	Donald Richmond
Sample Time	10:10	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:35	0	0	200	52.3	--	7.5	2.95		15.23	15.9	59.1	--	--
09:40	5	5	200	52.3	--	7.51	2.97		14.02	16.3	60.3	--	--
09:45	5	10	200	52.3	--	7.53	2.96		14.02	16.2	61	--	--
09:50	5	15	200	52.3	--	7.55	2.99		14.22	16.5	61.2	--	--
09:55	5	20	200	52.3	--	7.55	2.96		15.52	15.8	62.3	--	--
10:00	5	25	200	52.3	--	7.54	2.95		14.77	16	62.6	--	--
10:05	5	30	200	52.3	--	7.55	2.98		15.97	15.9	63.7	--	--
10:10	5	35	200	52.3	--	7.55	2.99		15.09	16.6	64.1	Brown	None

Constituent Sampled	Container	Number	Preservative
1,4 D, Nutrients	40 ml voa, 150ml plastic, 250	5	H2SO4, HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-15-11			**Date**	06/06/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.9	**Total Depth (ft-bmp)**	86.9	**Water Column (ft)**	23	**Gallons in Well**	3.74
Purge Start	12:05	**Pump Intake (ft-bmp)**		**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:35	**Volumes Purged**		**Sample ID**	TW-15-11_060622	**Sampled by**	Donald Richmond
Sample Time	12:35	**Gallons Purged**		**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:15	0	0	200	63.9	--	7.1	3.23	290	14.08	18.1	77.9	--	--
12:20	5	5	200	63.9	--	7.15	3.21	256	13.18	18	74.3	--	--
12:25	5	10	200	63.9	--	7.14	3.21	248	13.51	17.9	74.3	--	--
12:30	5	15	200	63.9	--	7.16	3.2	248	13.66	17.6	74.1	Orange	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-15-12			**Date**	06/01/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	72.0 degrees F and Partly Cloudy. The wind is blowing at 3.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	59.6	**Total Depth (ft-bmp)**	76.8	**Water Column (ft)**	17.2	**Gallons in Well**	11.18
Purge Start	13:20	**Pump Intake (ft-bmp)**	74	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:55	**Volumes Purged**	0.08	**Sample ID**	TW-15-12	**Sampled by**	Billy Cobern
Sample Time	13:55	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:25	0	0	100	59.1	0.13	7.84	2.39	823	7.7	22.9	87.9	--	--
13:30	5	5	100	59.1	0.26	7.7	2.34	823	7.75	23.2	95.5	--	--
13:35	5	10	100	59.1	0.40	7.69	2.34	769	7.29	23.1	96.1	--	--
13:40	5	15	100	59.1	0.53	7.69	2.34	931	7.78	22.9	96.6	--	--
13:45	5	20	100	59.1	0.66	7.68	2.34	808	7.51	22.8	97.6	--	--
13:50	5	25	100	59.1	0.79	7.63	2.34	868	7.45	22.3	101.2	--	--
13:55	5	30	100	59.1	0.92	7.63	2.32	819	7.33	22.4	101.9	Brown	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM,VOCs	40 mL Glass	3	HCL
Nitrate	125 mL Plastic	1	None
Total Phosphorus TKN	250 mL Plastic	1	H2SO4

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	UNK-10			**Date**	6/8/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Sunny
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	4	**Well Material**	
Static Water Level (ft-bmp)	1	**Total Depth (ft-bmp)**	16	**Water Column(ft)**	15	**Gallons in Well**	9.75
MP Elevation	NA	**Pump Intake (ft-bmp)**	15	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	10:35	**Gallons Purged**	1.06	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	10:00						
Purge End:	10:35						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
10:00	0	100	5.5	0.13	7.32	0.396	25	0.88	15.6	-23.9		
10:05	5	100	5.5	0.26	7.02	0.4	20	0.09	15.5	-12.9		
10:10	5	100	5.5	0.40	6.92	0.398	20	0.04	15.5	-9.1		
10:15	5	100	5.5	0.53	6.91	0.397	18	0.03	15.5	-10.1		
10:20	5	100	5.5	0.66	6.94	0.396	15	0.01	15.4	-12.4		
10:25	5	100	5.5	0.79	6.96	0.396	15	0.01	15.3	-14.1		
10:30	5	100	5.5	0.92	6.96	0.395	15	0.01	15.1	-14.1		
10:35	5	100	5.5	1.06	6.97	0.395	15	0.01	14.8	-14		

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Vial	3	HCL

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: no

Condition of Well: Poor

Well Locked at Departure: no

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	UNK-11			**Date**	6/8/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	2	**Well Material**	
Static Water Level (ft-bmp)	1	**Total Depth (ft-bmp)**	11.5	**Water Column(ft)**	10.5	**Gallons in Well**	1.71
MP Elevation	NA	**Pump Intake (ft-bmp)**	11	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	11:50	**Gallons Purged**	1.72	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	10:50						
Purge End:	11:50						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
10:50	0	100	1	0.13	9.82	0.256	16	3.15	17.3	-8.8		
10:55	5	100	1	0.26	9.83	0.256	15	3.08	18.1	-6.4		
11:00	5	100	2.5	0.40	9.84	0.259	12	3.08	17.6	-4.5		
11:05	5	100	3	0.53	9.73	0.26	10	2.96	17.1	0.6		
11:10	5	100	5.5	0.66	9.56	0.262	10	2.77	17.1	6		
11:15	5	100	5.5	0.79	9.45	0.265	8	2.8	16.7	10.2		
11:20	5	100	5.5	0.92	9.27	0.269	8	2.55	16.6	14.9		
11:25	5	100	5.5	1.06	9.07	0.278	8	2.07	15.6	16.7		
11:30	5	100	5.5	1.19	8.84	0.283	8	1.99	15.8	25.2		
11:35	5	100	3	1.32	8.82	0.286	8	2.08	15.8	25.6		
11:40	5	100	3	1.45	8.75	0.293	8	1.83	15.5	23.8		
11:45	5	100	3	1.59	8.69	0.301	8	1.67	15.2	-23.6		
11:50	5	100	3	1.72	8.52	0.317	8	1.01	14.5	22.9		

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Vial	3	HCL

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: no

Condition of Well: Good

Well Locked at Departure: no

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

ARCADIS Design & Consultancy for natural and built assets

RACER Lansing GW Sampling

Project Number	30112892	**Well ID**	UNK-15			**Date**	6/9/2022
Project Name/Location	RACER Lansing, MI					**Weather(°F)**	Sunny
Measuring Pt. Description	Top of Casing	**Screen Setting (ft-bmp)**		**Casing Diameter (in.)**	4	**Well Material**	
Static Water Level (ft-bmp)	1	**Total Depth (ft-bmp)**	16	**Water Column(ft)**	15	**Gallons in Well**	9.75
MP Elevation	NA	**Pump Intake (ft-bmp)**	15	**Purge Method:**	Low-Flow	**Sample Method**	Low-Flow
Sample Time:	10:35	**Gallons Purged**	1.72	**Replicate/ Code No.**		**Evacuation Method**	Peristaltic
Purge Start:	09:35						
Purge End:	10:35						

Time	Minutes Elapsed	Rate (mL/min)	Depth to Water (ft)	Gallons Purged	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	Redox (mV)	Appearance	
											Color	Odor
09:35	0	100	1	0.13	7.6	0.69	23	0.24	14.7	10.4		
09:40	5	100	3	0.26	7.44	0.69	18	0.12	14.7	16.5		
09:45	5	100	3	0.40	7.45	0.69	10	0.08	14.6	15.4		
09:50	5	100	3	0.53	7.48	0.69	10	0.06	14.6	14.2		
09:55	5	100	3	0.66	7.51	0.69	10	0.03	14.5	12.8		
10:00	5	100	3	0.79	7.54	0.69	10	0.04	14.5	11.8		
10:05	5	100	3	0.92	7.56	0.69	10	0.04	14.4	10.6		
10:10	5	100	3	1.06	7.58	0.68	10	0.04	14.4	9.9		
10:15	5	100	3	1.19	7.6	0.68	10	0.02	14.4	8.8		
10:20	5	100	3	1.32	7.62	0.68	10	0.03	14.1	7.9		
10:25	5	100	3	1.45	7.6	0.68	10	0.23	14.4	7.8		
10:30	5	100	3	1.59	7.64	0.68	10	0.06	14.4	6.3		
10:35	5	100	3	1.72	7.65	0.68	10	0.02	14.4	5.7		

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Sampling By Monica Dostert

Comments:

Well Casing Volume Conversion

Well diameter(inc)=gallons per foot 1 = 0.04 1.5 = 0.09 2.5 = 0.26 3.5 = 0.50 6 = 1.47 1.25 = 0.06 2 = 0.16 3 = 0.37 4 = 0.65

Well Information

Well Location: Reference map

Well Locked at Arrival: yes

Condition of Well: Good

Well Locked at Departure: yes

ft-bmp = feet below measuring point
in. = inches

mS/cm = milliiSiemens per centimeter
NTU = N

mV = millivolts

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	CH-14-RO			**Date**	8/29/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	81.0 degrees F and Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.62	**Total Depth (ft-bmp)**	14.5	**Water Column (ft)**	6.88	**Gallons in Well**	1.12
Purge Start	15:35	**Pump Intake (ft-bmp)**	13	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	16:10	**Volumes Purged**	0.94	**Sample ID**	CH-14-RO_082922	**Sampled by**	Billy Cobern
Sample Time	16:10	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:35	0	0	100	7.88	0.13	6.97	0.80	19.20	0.36	24.3	29.2	--	--
15:40	5	5	100	7.85	0.26	6.92	0.80	18.30	0.24	23.9	36.8	--	--
15:45	5	10	100	7.85	0.40	6.91	0.80	15.80	0.22	24.0	39.2	--	--
15:50	5	15	100	7.85	0.53	6.91	0.80	12.80	0.20	24.0	40.3	--	--
15:55	5	20	100	7.85	0.66	6.91	0.80	11.10	0.17	24.2	40.9	--	--
16:00	5	25	100	7.85	0.79	6.91	0.80	8.88	0.17	24.0	41.0	--	--
16:05	5	30	100	7.85	0.92	6.91	0.80	9.16	0.16	24.0	41.0	--	--
16:10	5	35	100	7.85	1.06	6.91	0.80	9.10	0.16	24.0	41.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None
Top AOF	125 mL Plastic	3	None
Top Assay	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-12-12			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.01	**Total Depth (ft-bmp)**	17.21	**Water Column (ft)**	9.20	**Gallons in Well**	1.49
Purge Start	10:35	**Pump Intake (ft-bmp)**	15.21	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:10	**Volumes Purged**	1.07	**Sample ID**	MW-12-12_083122	**Sampled by**	Donald Richmond
Sample Time	11:10	**Gallons Purged**	1.59	**Replicate/ Code No.**	Dup-03_083122	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:45	0	0	200	8.01	0.53	7.04	2.03	312	0.36	18.1	-27.2	--	--
10:50	5	5	200	10.68	0.79	7.39	0.9	19.5	0.16	18.1	-40.9	--	--
10:55	5	10	200	11.08	1.06	7.43	0.66	10.9	0.13	18.3	-43.1	--	--
11:00	5	15	200	11.08	1.32	7.43	0.63	8.94	0.12	18.5	-42.7	--	--
11:05	5	20	200	11.08	1.59	7.42	0.64	8.27	0.16	18.7	-42.6	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	4	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-12-13			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	11.92	**Total Depth (ft-bmp)**	25.46	**Water Column (ft)**	13.54	**Gallons in Well**	2.20
Purge Start	12:35	**Pump Intake (ft-bmp)**	23.46	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:05	**Volumes Purged**	0.6	**Sample ID**	MW-12-13_083122	**Sampled by**	Donald Richmond
Sample Time	13:05	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:45	0	0	200	11.92	0.53	7.33	0.81	41.5	0.29	23.5	-30.5	--	--
12:50	5	5	200	12.86	0.79	7.32	0.79	11.3	0.22	22.9	-36.1	--	--
12:55	5	10	200	12.86	1.06	7.32	0.77	9.35	0.2	21.9	-40.4	--	--
13:00	5	15	200	12.86	1.32	7.33	0.77	8.22	0.18	21.7	-45.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-22			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Mostly Clear. The wind is blowing W at 12.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	68.15	**Total Depth (ft-bmp)**	96.15	**Water Column (ft)**	28.00	**Gallons in Well**	4.55
Purge Start	10:40	**Pump Intake (ft-bmp)**	90	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:20	**Volumes Purged**	0.23	**Sample ID**	MW-13-22_083022	**Sampled by**	Billy Cobern
Sample Time	11:20	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:45	0	0	100	68.25	0.13	6.79	2.06	13.40	6.08	22.5	-85.3	--	--
10:50	5	5	100	68.25	0.26	6.80	2.07	7.14	7.11	22.6	-83.3	--	--
10:55	5	10	100	68.25	0.40	6.80	2.07	5.04	7.00	22.7	-81.9	--	--
11:00	5	15	100	68.25	0.53	6.81	2.07	4.61	6.94	22.7	-81.4	--	--
11:05	5	20	100	68.25	0.66	6.83	2.07	2.12	7.03	22.8	-82.5	--	--
11:10	5	25	100	68.25	0.79	6.86	2.04	0.02	6.59	23.8	-79.3	--	--
11:15	5	30	100	68.25	0.92	6.84	2.05	0.02	6.65	23.7	-77.1	--	--
11:20	5	35	100	68.25	1.06	6.83	2.07	0.02	6.69	23.5	-75.4	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-36R			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.68	**Total Depth (ft-bmp)**	12.61	**Water Column (ft)**	5.93	**Gallons in Well**	0.96
Purge Start	14:05	**Pump Intake (ft-bmp)**	10.61	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:40	**Volumes Purged**	1.66	**Sample ID**	MW-13-36R_083122	**Sampled by**	Donald Richmond
Sample Time	14:40	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:15	0	0	200	6.68	0.53	11.75	1.58	49.2	0.14	20.8	-84.3	--	--
14:25	10	10	200	6.68	1.06	11.85	1.53	8	0.07	20.2	-96.3	--	--
14:30	5	15	200	6.68	1.32	11.84	1.53	4.48	0.05	20.7	-98	--	--
14:35	5	20	200	6.68	1.59	11.84	1.52	3.68	0.07	20.7	-98.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-14-58R			**Date**	09/12/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.9 degrees F and Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	13.30	**Total Depth (ft-bmp)**	29.6	**Water Column (ft)**	16.3	**Gallons in Well**	2.65
Purge Start	15:10	**Pump Intake (ft-bmp)**	27.1	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:40	**Volumes Purged**	0.50	**Sample ID**	MW-14-58R_091222	**Sampled by**	Austin Westhuis
Sample Time	15:35	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:20	0	0	200	13.30	0.53	7.73	2.49	2.64	2.1	17.1	-45.8	--	--
15:25	5	5	200	13.30	0.79	6.95	2.59	2.14	0.22	16.7	-64.1	--	--
15:30	5	10	200	13.30	1.06	6.93	2.63	1.67	0.21	16.6	-70.5	--	--
15:35	5	15	200	13.30	1.32	6.93	2.65	1.6	0.21	16.6	-72.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-62			**Date**	8/29/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	3.70	**Total Depth (ft-bmp)**	19.62	**Water Column (ft)**	15.92	**Gallons in Well**	2.59
Purge Start	15:35	**Pump Intake (ft-bmp)**	17.62	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	16:15	**Volumes Purged**	0.71	**Sample ID**	MW-14-62_082922	**Sampled by**	Donald Richmond
Sample Time	16:15	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:45	0	0	200	3.70	0.53	10.9	0.52	6.63	0.44	23.6	-145.9	--	--
15:50	5	5	200	3.82	0.79	10.95	0.54	3.62	0.41	23.7	-157.9	--	--
15:55	5	10	200	3.82	1.06	11.1	0.62	1.88	0.38	23.5	-179.9	--	--
16:00	5	15	200	3.82	1.32	11.15	0.64	2.1	0.34	23.4	-192.4	--	--
16:05	5	20	200	3.82	1.59	11.15	0.64	1.69	0.34	23.4	-195.7	--	--
16:10	5	25	200	3.82	1.85	11.16	0.65	1.53	0.33	23.4	-201.6	Clear	None

Constituent Sampled	Container	Number	Preservative
AOF, Top Assay	NA	5	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-67			**Date**	8/29/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	80 °F, Overcast, S winds at 5 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.96	**Total Depth (ft-bmp)**	20.83	**Water Column (ft)**	14.87	**Gallons in Well**	2.42
Purge Start	13:50	**Pump Intake (ft-bmp)**	18.33	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:30	**Volumes Purged**	0.76	**Sample ID**	MW-14-67_082922	**Sampled by**	Austin Westhuis
Sample Time	14:20	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:55	0	0	200	5.96	0.26	7.08	1.22	2.47	6.84	17.4	133.0	--	--
14:00	5	5	200	5.96	0.53	7.07	1.22	2.03	6.45	17.4	126.3	--	--
14:05	5	10	200	5.96	0.79	7.06	1.21	1.71	5.96	17.2	120.7	--	--
14:10	5	15	200	5.96	1.06	7.05	1.21	1.50	5.59	17.2	107.1	--	--
14:15	5	20	200	5.96	1.32	7.04	1.20	1.37	5.51	17.0	105.2	--	--
14:20	5	25	200	5.96	1.59	7.04	1.20	1.22	5.45	17.0	100.2	Clear	None

Constituent Sampled	Container	Number	Preservative
AOF	125 mL HDPE Plastic	3	None
PFAS	250mL HDPE Plastic	2	None
Top Assay	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-70			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	12.58	**Total Depth (ft-bmp)**	23.09	**Water Column (ft)**	10.51	**Gallons in Well**	1.71
Purge Start	11:45	**Pump Intake (ft-bmp)**	21.09	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:10	**Volumes Purged**	0.62	**Sample ID**	MW-14-70_083122	**Sampled by**	Donald Richmond
Sample Time	12:10	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:50	0	0	200	12.58	0.26	7.15	1.29	11.4	0.41	21	5.7	--	--
11:55	5	5	200	13.26	0.53	7.17	1.3	6.1	0.26	21.2	0.3	--	--
12:00	5	10	200	13.26	0.79	7.17	1.29	6.58	0.24	20.9	-1.1	--	--
12:05	5	15	200	13.26	1.06	7.17	1.29	5.67	0.23	20.9	-1.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-88			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	75.9 degrees F and Clear. The wind is blowing W at 11.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.80	**Total Depth (ft-bmp)**	15	**Water Column (ft)**	9.20	**Gallons in Well**	1.49
Purge Start	12:20	**Pump Intake (ft-bmp)**	12.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:00	**Volumes Purged**	0.71	**Sample ID**	MW-18-88_083122	**Sampled by**	Billy Cobern
Sample Time	13:00	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:25	0	0	100	5.88	0.13	6.92	0.72	10.90	0.41	22.4	-5.4	--	--
12:30	5	5	100	5.85	0.26	6.88	0.73	8.14	0.26	22.8	-3.0	--	--
12:35	5	10	100	5.85	0.40	6.87	0.73	8.01	0.18	22.7	-2.5	--	--
12:40	5	15	100	5.85	0.53	6.87	0.73	7.03	0.17	22.7	-1.8	--	--
12:45	5	20	100	5.85	0.66	6.87	0.73	6.91	0.17	22.7	-1.3	--	--
12:50	5	25	100	5.85	0.79	6.87	0.73	7.26	0.16	22.7	-1.0	--	--
12:55	5	30	100	5.85	0.92	6.87	0.72	7.44	0.15	22.6	0.0	--	--
13:00	5	35	100	5.85	1.06	6.88	0.72	7.47	0.15	22.5	1.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-89			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Light Rain. The wind is blowing W at 15.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.97	**Total Depth (ft-bmp)**	15.6	**Water Column (ft)**	8.63	**Gallons in Well**	1.40
Purge Start	13:55	**Pump Intake (ft-bmp)**	13	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:40	**Volumes Purged**	0.85	**Sample ID**	MW-18-89_083022	**Sampled by**	Billy Cobern
Sample Time	14:40	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:00	0	0	100	7.63	0.13	7.69	0.87	6.04	0.44	22.3	-45.4	--	--
14:05	5	5	100	8.09	0.26	7.62	0.87	5.15	0.24	22.7	-54.1	--	--
14:10	5	10	100	8.55	0.40	7.58	0.87	4.14	0.19	22.9	-56.3	--	--
14:15	5	15	100	9.10	0.53	7.52	0.84	3.30	0.15	22.4	-62.0	--	--
14:20	5	20	100	9.59	0.66	7.48	0.83	0.02	0.13	22.7	-67.9	--	--
14:25	5	25	100	10.00	0.79	7.51	0.82	0.02	0.16	22.6	-77.4	--	--
14:30	5	30	100	10.41	0.92	7.52	0.80	0.02	0.18	22.6	-86.5	--	--
14:35	5	35	100	10.86	1.06	7.52	0.79	0.02	0.18	22.5	-87.1	--	--
14:40	5	40	100	11.22	1.19	7.53	0.79	0.02	0.19	22.6	-87.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-90			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	78.1 degrees F and Mostly Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.95	**Total Depth (ft-bmp)**	23.15	**Water Column (ft)**	13.20	**Gallons in Well**	2.14
Purge Start	15:05	**Pump Intake (ft-bmp)**	21	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:40	**Volumes Purged**	0.43	**Sample ID**	MW-18-90_083022	**Sampled by**	Billy Cobern
Sample Time	15:40	**Gallons Purged**	0.92	**Replicate/ Code No.**	DUP-02_083022	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:10	0	0	100	9.99	0.13	11.63	1.86	8.90	0.63	21.9	-178.0	--	--
15:15	5	5	100	9.99	0.26	11.59	1.94	7.70	0.42	21.5	-177.9	--	--
15:20	5	10	100	9.99	0.40	11.58	2.01	5.58	0.38	20.8	-179.6	--	--
15:25	5	15	100	9.99	0.53	11.60	2.05	2.58	0.31	20.4	-181.4	--	--
15:30	5	20	100	9.99	0.66	11.63	2.09	0.02	0.32	20.6	-188.5	--	--
15:35	5	25	100	9.99	0.79	11.66	2.11	0.02	0.34	20.5	-193.4	--	--
15:40	5	30	100	9.99	0.92	11.69	2.13	0.02	0.32	20.2	-195.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	4	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-91			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Clear. The wind is blowing W at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.33	**Total Depth (ft-bmp)**	14.5	**Water Column (ft)**	8.17	**Gallons in Well**	1.33
Purge Start	11:10	**Pump Intake (ft-bmp)**	12	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:55	**Volumes Purged**	0.89	**Sample ID**	MW-18-91_083122	**Sampled by**	Billy Cobern
Sample Time	11:55	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:15	0	0	100	6.91	0.13	7.66	0.80	10.50	0.43	22.1	-122.1	--	--
11:20	5	5	100	7.55	0.26	7.60	0.81	8.92	0.44	23.4	-131.6	--	--
11:25	5	10	100	8.01	0.40	7.59	0.81	10.00	0.25	23.3	-144.7	--	--
11:30	5	15	100	8.50	0.53	7.59	0.80	9.21	0.18	23.1	-151.2	--	--
11:35	5	20	100	9.02	0.66	7.59	0.79	8.62	0.15	23.2	-154.1	--	--
11:40	5	25	100	9.41	0.79	7.59	0.76	7.72	0.14	22.9	-156.9	--	--
11:45	5	30	100	9.86	0.92	7.59	0.76	6.92	0.12	23.1	-158.8	--	--
11:50	5	35	100	10.03	1.06	7.59	0.76	7.23	0.13	23.0	-159.3	--	--
11:55	5	40	100	10.36	1.19	7.60	0.76	7.37	0.13	23.0	-159.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-95			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	77.0 degrees F and Mostly Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.11	**Total Depth (ft-bmp)**	12.45	**Water Column (ft)**	5.34	**Gallons in Well**	0.87
Purge Start	13:25	**Pump Intake (ft-bmp)**	10	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:00	**Volumes Purged**	1.06	**Sample ID**	MW-18-95_083122	**Sampled by**	Billy Cobern
Sample Time	14:00	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:30	0	0	100	7.29	0.13	7.11	0.64	15.20	0.37	21.9	-3.20	--	--
13:35	5	5	100	7.30	0.26	7.08	0.64	11.80	0.20	22.5	-14.01	--	--
13:40	5	10	100	7.30	0.40	7.06	0.64	11.50	0.25	22.8	-22.70	--	--
13:45	5	15	100	7.30	0.53	7.05	0.65	12.60	0.21	22.6	-29.70	--	--
13:50	5	20	100	7.30	0.66	7.05	0.65	9.20	0.18	22.7	-33.80	--	--
13:55	5	25	100	7.30	0.79	7.04	0.66	9.05	0.17	22.8	-37.20	--	--
14:00	5	30	100	7.30	0.92	7.04	0.66	8.96	0.17	22.7	-41.20	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-98			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.9 degrees F and Cloudy. The wind is blowing W at 17.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.79	**Total Depth (ft-bmp)**	14.5	**Water Column (ft)**	9.71	**Gallons in Well**	1.58
Purge Start	12:55	**Pump Intake (ft-bmp)**	12	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:35	**Volumes Purged**	0.67	**Sample ID**	MW-18-98_083022	**Sampled by**	Billy Cobern
Sample Time	13:35	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:00	0	0	100	5.35	0.13	7.18	0.78	12.40	0.28	21.6	-33.0	--	--
13:05	5	5	100	6.38	0.26	7.12	0.78	9.02	0.28	21.9	-30.5	--	--
13:10	5	10	100	6.86	0.40	7.12	0.77	6.04	0.23	22.4	-37.4	--	--
13:15	5	15	100	7.31	0.53	7.14	0.77	3.04	0.22	22.5	-45.8	--	--
13:20	5	20	100	7.82	0.66	7.15	0.77	1.21	0.21	22.4	-54.6	--	--
13:25	5	25	100	8.18	0.79	7.16	0.77	0.02	0.21	22.8	-61.7	--	--
13:30	5	30	100	8.62	0.92	7.16	0.77	0.02	0.23	22.8	-63.1	--	--
13:35	5	35	100	8.99	1.06	7.16	0.77	0.02	0.22	22.8	-68.6	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-99			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.9 degrees F and Partly Cloudy. The wind is blowing W at 15.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	3.20	**Total Depth (ft-bmp)**	16.85	**Water Column (ft)**	13.65	**Gallons in Well**	2.22
Purge Start	12:00	**Pump Intake (ft-bmp)**	14	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:55	**Volumes Purged**	0.42	**Sample ID**	MW-18-99_083022	**Sampled by**	Billy Cobern
Sample Time	12:35	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:05	0	0	100	3.82	0.13	7.84	2.03	11.40	0.43	21.6	-65.4	--	--
12:10	5	5	100	4.08	0.26	7.82	2.03	10.30	0.24	22.2	-102.3	--	--
12:15	5	10	100	4.31	0.40	7.81	1.96	3.30	0.15	22.2	-132.0	--	--
12:20	5	15	100	4.59	0.53	8.04	1.81	0.02	0.24	22.2	-155.1	--	--
12:25	5	20	100	4.84	0.66	8.10	1.72	0.02	0.28	21.8	-153.6	--	--
12:30	5	25	100	5.04	0.79	8.10	1.71	0.02	0.27	21.7	-153.2	--	--
12:35	5	30	100	5.27	0.92	8.11	1.70	0.02	0.26	21.7	-152.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-103			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing W/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.96	**Total Depth (ft-bmp)**	10	**Water Column (ft)**	5.04	**Gallons in Well**	0.82
Purge Start	09:50	**Pump Intake (ft-bmp)**	8.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:25	**Volumes Purged**	1.13	**Sample ID**	MW-18-103_083122	**Sampled by**	Billy Cobern
Sample Time	10:25	**Gallons Purged**	0.92	**Replicate/ Code No.**	MS/MSD	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:55	0	0	100	5.19	0.13	6.99	0.81	16.70	0.44	16.3	19.8	--	--
10:00	5	5	100	5.25	0.26	6.92	0.81	16.90	0.39	16.4	21.3	--	--
10:05	5	10	100	5.28	0.40	6.88	0.81	14.20	0.28	16.6	21.4	--	--
10:10	5	15	100	5.28	0.53	6.89	0.81	12.10	0.25	16.6	20.6	--	--
10:15	5	20	100	5.28	0.66	6.90	0.81	10.30	0.24	16.6	19.6	--	--
10:20	5	25	100	5.28	0.79	6.91	0.82	9.99	0.22	16.5	19.0	--	--
10:25	5	30	100	5.28	0.92	6.92	0.81	9.44	0.24	16.6	17.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	6	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-105			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing W/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	2.83	**Total Depth (ft-bmp)**	11	**Water Column (ft)**	8.17	**Gallons in Well**	1.33
Purge Start	08:45	**Pump Intake (ft-bmp)**	8.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	09:25	**Volumes Purged**	0.79	**Sample ID**	MW-18-105_083122	**Sampled by**	Billy Cobern
Sample Time	09:25	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:50	0	0	100	3.09	0.13	7.42	0.598	22.70	0.68	16.1	12.8	--	--
08:55	5	5	100	3.19	0.26	7.28	0.596	19.30	0.54	16.4	12.6	--	--
09:00	5	10	100	3.37	0.40	7.16	0.594	16.30	0.49	16.4	14.9	--	--
09:05	5	15	100	3.49	0.53	7.15	0.592	14.10	0.50	16.4	14.9	--	--
09:10	5	20	100	3.60	0.66	7.15	0.589	11.30	0.56	16.2	14.2	--	--
09:15	5	25	100	3.69	0.79	7.15	0.590	9.96	0.61	16.3	13.2	--	--
09:20	5	30	100	3.77	0.92	7.15	0.590	9.51	0.59	16.3	12.7	--	--
09:25	5	35	100	3.85	1.06	7.16	0.590	9.08	0.59	16.3	12.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	3	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-139			**Date**	8/29/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	3.14	**Total Depth (ft-bmp)**	15.36	**Water Column (ft)**	12.22	**Gallons in Well**	1.99
Purge Start	13:45	**Pump Intake (ft-bmp)**	13.36	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:25	**Volumes Purged**	0.93	**Sample ID**	MW-21-139_082922	**Sampled by**	Donald Richmond
Sample Time	14:25	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:50	0	0	200	3.14	0.26	6.8	2.25	6.55	0.75	22.8	37.2	--	--
13:55	5	5	200	4.46	0.53	7.37	1.81	4.03	1.18	22.5	-28.1	--	--
14:00	5	10	200	4.46	0.79	7.47	1.58	4.37	1.15	22.5	-53.5	--	--
14:05	5	15	200	4.46	1.06	7.49	1.52	1.42	1.17	22.3	-59.7	--	--
14:10	5	20	200	4.46	1.32	7.49	1.49	2.16	1.14	22.4	-62.6	--	--
14:15	5	25	200	4.46	1.59	7.49	1.39	2.18	1.08	22.7	-63.4	--	--
14:20	5	30	200	4.46	1.85	7.49	1.38	2.59	1.06	22.8	-63.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM,PFAS	NA	8	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-140			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	67.76	**Total Depth (ft-bmp)**	75.97	**Water Column (ft)**	8.21	**Gallons in Well**	1.33
Purge Start	11:25	**Pump Intake (ft-bmp)**	73.97	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:25	**Volumes Purged**	2.19	**Sample ID**	MW-21-140_083022	**Sampled by**	Donald Richmond
Sample Time	12:25	**Gallons Purged**	2.91	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:35	0	0	200	67.76	0.53	7.18	0.88	128	3.48	26.4	-7.3	--	--
11:40	5	5	200	67.76	0.79	7.14	0.87	138	2.15	25.9	-15.9	--	--
11:45	5	10	200	67.76	1.06	7.07	0.84	168	0.68	24.5	-48.6	--	--
12:00	15	25	200	67.76	1.85	7.08	0.83	132	0.72	24.5	-49.2	--	--
12:05	5	30	200	67.76	2.11	7.09	0.8	91.5	0.83	23.3	-47.9	--	--
12:10	5	35	200	67.76	2.38	7.1	0.78	68.3	0.81	23.6	-43.2	--	--
12:15	5	40	200	67.76	2.64	7.12	0.73	82	1.9	18.4	-36.3	--	--
12:20	5	45	200	67.76	2.91	7.11	0.7	49.8	3.15	17.9	-28.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-142			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	67.23	**Total Depth (ft-bmp)**	78.81	**Water Column (ft)**	11.58	**Gallons in Well**	1.88
Purge Start	13:15	**Pump Intake (ft-bmp)**	76.81	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:00	**Volumes Purged**	1.12	**Sample ID**	MW-21-142_083022	**Sampled by**	Donald Richmond
Sample Time	14:00	**Gallons Purged**	2.11	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:25	0	0	200	67.23	0.53	7.12	1.22	29.4	0.61	17.3	-18.6	--	--
13:30	5	5	200	67.23	0.79	7.12	1.22	48.1	0.47	17.4	-51.2	--	--
13:35	5	10	200	67.23	1.06	6.93	1.51	28.3	0.34	17.4	-67.2	--	--
13:40	5	15	200	67.23	1.32	6.92	1.54	24.3	0.35	17	-68.3	--	--
13:45	5	20	200	67.23	1.59	6.91	1.56	20.4	0.31	16.7	-70	--	--
13:50	5	25	200	67.23	1.85	6.89	1.6	18.4	0.31	16.8	-71.4	--	--
13:55	5	30	200	67.23	2.11	6.89	1.6	17	0.29	16.4	-71.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-143			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	69.1 degrees F and Partly Cloudy. The wind is blowing W at 11.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	16.72	**Total Depth (ft-bmp)**	31.02	**Water Column (ft)**	14.30	**Gallons in Well**	2.32
Purge Start	09:15	**Pump Intake (ft-bmp)**	29.02	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:05	**Volumes Purged**	1.14	**Sample ID**	MW-22-143_083022	**Sampled by**	Austin Westhuis
Sample Time	10:00	**Gallons Purged**	2.64	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:20	0	0	200	16.72	0.26	6.93	2.63	119.0	1.06	15.1	-41.6	--	--
09:25	5	5	200	16.72	0.53	6.97	2.60	84.1	1.19	14.9	-45.8	--	--
09:30	5	10	200	16.72	0.79	6.96	2.60	43.1	1.14	14.9	-48.3	--	--
09:35	5	15	200	16.72	1.06	6.96	2.62	17.3	1.04	15.0	-52.2	--	--
09:40	5	20	200	16.72	1.32	6.96	2.62	13.3	0.96	15.0	-54.8	--	--
09:45	5	25	200	16.72	1.59	6.96	2.63	11.9	0.98	14.9	-55.9	--	--
09:50	5	30	200	16.72	1.85	6.96	2.65	10.5	0.96	14.9	-57.5	--	--
09:55	5	35	200	16.72	2.11	6.96	2.65	10.3	0.93	14.9	-57.7	--	--
10:00	5	40	200	16.72	2.38	6.95	2.66	10.0	0.92	14.9	-58.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-144			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Mostly Clear. The wind is blowing W at 12.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	12.67	**Total Depth (ft-bmp)**	24.08	**Water Column (ft)**	11.41	**Gallons in Well**	1.85
Purge Start	10:35	**Pump Intake (ft-bmp)**	22.08	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:05	**Volumes Purged**	0.86	**Sample ID**	MW-22-144_083022	**Sampled by**	Austin Westhuis
Sample Time	11:00	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:40	0	0	200	12.67	0.26	6.89	1.18	12.30	2.89	16.2	11.6	--	--
10:45	5	5	200	12.67	0.53	6.89	1.16	3.81	2.72	16.3	19.0	--	--
10:50	5	10	200	12.67	0.79	6.89	1.15	2.64	2.65	16.3	22.2	--	--
10:55	5	15	200	12.67	1.06	6.88	1.13	2.39	2.58	16.1	23.8	--	--
11:00	5	20	200	12.67	1.32	6.88	1.14	2.21	2.48	16.2	26.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-145			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.9 degrees F and Partly Cloudy. The wind is blowing W at 15.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	12.74	**Total Depth (ft-bmp)**	14.95	**Water Column (ft)**	2.21	**Gallons in Well**	0.36
Purge Start	11:15	**Pump Intake (ft-bmp)**	12.95	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:45	**Volumes Purged**	4.40	**Sample ID**	MW-22-145_083022	**Sampled by**	Austin Westhuis
Sample Time	11:40	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:20	0	0	200	12.74	0.26	6.84	0.93	7.33	6.17	16.8	22.6	--	--
11:25	5	5	200	12.74	0.53	6.84	0.98	2.71	5.95	16.8	25.1	--	--
11:30	5	10	200	12.74	0.79	6.84	1.02	2.31	5.78	16.8	27.3	--	--
11:35	5	15	200	12.74	1.06	6.84	1.03	2.03	5.39	16.8	28.4	--	--
11:40	5	20	200	12.74	1.32	6.85	1.04	1.78	5.38	16.7	29.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-146			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.9 degrees F and Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.82	**Total Depth (ft-bmp)**	9.89	**Water Column (ft)**	2.07	**Gallons in Well**	0.34
Purge Start	12:30	**Pump Intake (ft-bmp)**	8.39	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:10	**Volumes Purged**	6.22	**Sample ID**	MW-22-146_083022	**Sampled by**	Austin Westhuis
Sample Time	13:05	**Gallons Purged**	2.11	**Replicate/ Code No.**	Dup-04_083022	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:35	0	0	200	7.82	0.26	6.97	0.87	3.93	6.68	16.8	4.1	--	--
12:40	5	5	200	7.82	0.53	6.95	0.87	2.08	6.80	16.8	23.6	--	--
12:45	5	10	200	7.82	0.79	6.94	0.87	1.87	6.79	16.9	37.5	--	--
12:50	5	15	200	7.82	1.06	6.94	0.83	1.69	6.71	16.7	56.9	--	--
12:55	5	20	200	7.82	1.32	6.94	0.81	1.60	6.57	16.7	70.6	--	--
13:00	5	25	200	7.82	1.59	6.93	0.81	1.52	6.53	16.7	75.6	--	--
13:05	5	30	200	7.82	1.85	6.93	0.81	1.43	6.48	16.6	79.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-147			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Light Rain. The wind is blowing W at 15.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.50	**Total Depth (ft-bmp)**	12.25	**Water Column (ft)**	2.75	**Gallons in Well**	0.45
Purge Start	13:40	**Pump Intake (ft-bmp)**	10.25	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:10	**Volumes Purged**	3.52	**Sample ID**	MW-22-147_083022	**Sampled by**	Austin Westhuis
Sample Time	14:05	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:45	0	0	200	9.80	0.26	7.01	1.42	2.88	1.04	17.4	-21.5	--	--
13:50	5	5	200	9.89	0.53	7.00	1.41	2.34	2.03	17.4	-10.3	--	--
13:55	5	10	200	10.00	0.79	6.98	1.41	2.04	2.12	17.3	-2.7	--	--
14:00	5	15	200	10.05	1.06	6.97	1.42	1.71	2.19	17.3	1.1	--	--
14:05	5	20	200	10.07	1.32	6.97	1.42	1.65	2.26	17.4	3.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-148			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	78.1 degrees F and Mostly Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	23.37	**Total Depth (ft-bmp)**	29.3	**Water Column (ft)**	5.93	**Gallons in Well**	0.96
Purge Start	14:20	**Pump Intake (ft-bmp)**	27.3	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:00	**Volumes Purged**	2.20	**Sample ID**	MW-22-148_083022	**Sampled by**	Austin Westhuis
Sample Time	14:50	**Gallons Purged**	2.11	**Replicate/ Code No.**	MS/MSD	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:25	0	0	200	25.21	0.26	7.03	0.75	2.95	1.11	16.2	32.1	--	--
14:30	5	5	200	25.51	0.53	7.05	0.75	2.72	1.63	16.1	64.5	--	--
14:35	5	10	200	25.51	0.79	7.07	0.75	2.13	1.45	16.5	87.2	--	--
14:40	5	15	200	25.51	1.06	7.07	0.77	2.13	2.19	16.3	112.3	--	--
14:45	5	20	200	25.55	1.32	7.06	0.76	2.08	2.26	16.2	118.0	--	--
14:50	5	25	200	25.55	1.59	7.05	0.76	1.84	2.30	16.2	122.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	6	None

Comments: Well locked with Arcadis 2035 Master Lock.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-149			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.0 degrees F and Clear. The wind is blowing W/SW at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.29	**Total Depth (ft-bmp)**	9.91	**Water Column (ft)**	3.62	**Gallons in Well**	0.59
Purge Start	08:30	**Pump Intake (ft-bmp)**	7.91	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	09:00	**Volumes Purged**	2.69	**Sample ID**	MW-22-149_083122	**Sampled by**	Austin Westhuis
Sample Time	08:55	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:35	0	0	200	6.59	0.26	7.03	0.53	5.44	6.43	18.2	206.4	--	--
08:40	5	5	200	6.69	0.53	7.04	0.53	3.21	6.33	18.3	211.2	--	--
08:45	5	10	200	6.69	0.79	7.06	0.54	2.29	6.08	18.4	217.2	--	--
08:50	5	15	200	6.69	1.06	7.06	0.54	2.18	5.96	18.5	219.8	--	--
08:55	5	20	200	6.69	1.32	7.06	0.55	2.01	5.91	18.5	223.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-150			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing W/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.18	**Total Depth (ft-bmp)**	17.93	**Water Column (ft)**	11.75	**Gallons in Well**	1.91
Purge Start	09:40	**Pump Intake (ft-bmp)**	15.93	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:10	**Volumes Purged**	0.83	**Sample ID**	MW-22-150_083122	**Sampled by**	Austin Westhuis
Sample Time	10:05	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:45	0	0	200	6.92	0.26	7.12	4.57	3.77	1.64	16.5	-65.7	--	--
09:50	5	5	200	7.40	0.53	7.16	4.40	2.61	1.28	16.7	-64.0	--	--
09:55	5	10	200	7.66	0.79	7.16	4.35	2.14	1.32	16.7	-61.9	--	--
10:00	5	15	200	7.70	1.06	7.16	4.32	1.77	1.27	16.7	-53.8	--	--
10:05	5	20	200	7.71	1.32	7.16	4.30	1.56	1.22	16.6	-51.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-151			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	71.1 degrees F and Clear. The wind is blowing W at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.48	**Total Depth (ft-bmp)**	14.9	**Water Column (ft)**	8.42	**Gallons in Well**	1.37
Purge Start	10:30	**Pump Intake (ft-bmp)**	12.9	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:00	**Volumes Purged**	1.16	**Sample ID**	MW-22-151_083122	**Sampled by**	Austin Westhuis
Sample Time	10:55	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:35	0	0	200	6.48	0.26	6.76	2.2	4.48	1.82	18.1	-36.0	--	--
10:40	5	5	200	6.48	0.53	6.76	2.19	3.14	1.72	18.2	-36.9	--	--
10:45	5	10	200	6.48	0.79	6.76	2.19	2.61	1.61	18.3	-37.0	--	--
10:50	5	15	200	6.48	1.06	6.76	2.19	2.24	1.55	18.5	-36.8	--	--
10:55	5	20	200	6.48	1.32	6.76	2.18	1.92	1.52	18.4	-36.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-152			**Date**	8/31/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Clear. The wind is blowing W at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.49	**Total Depth (ft-bmp)**	14.89	**Water Column (ft)**	6.40	**Gallons in Well**	1.04
Purge Start	11:15	**Pump Intake (ft-bmp)**	12.89	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:50	**Volumes Purged**	1.78	**Sample ID**	MW-22-152_083122	**Sampled by**	Austin Westhuis
Sample Time	11:45	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:20	0	0	200	8.49	0.26	6.85	0.84	2.57	1.62	17.0	-6.1	--	--
11:25	5	5	200	8.49	0.53	6.86	0.86	2.22	1.56	17.0	-5.5	--	--
11:30	5	10	200	8.49	0.79	6.86	0.88	2.02	1.41	17.5	-4.9	--	--
11:35	5	15	200	8.49	1.06	6.86	0.88	1.71	1.02	17.4	-6.0	--	--
11:40	5	20	200	8.49	1.32	6.85	0.88	1.61	0.97	17.5	-9.1	--	--
11:45	5	25	200	8.49	1.59	6.84	0.88	1.34	0.95	17.3	-11.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-153			**Date**	8/30/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**					
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	10.56	**Total Depth (ft-bmp)**	31.18	**Water Column (ft)**	20.62	**Gallons in Well**	3.35
Purge Start	09:50	**Pump Intake (ft-bmp)**	29.18	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:20	**Volumes Purged**	0.39	**Sample ID**	MW-22-153_083022	**Sampled by**	Donald Richmond
Sample Time	10:20	**Gallons Purged**	1.32	**Replicate/ Code No.**	Dup-01_083022	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:00	0	0	200	10.56	0.53	6.92	1.41	14.1	0.28	15.9	-61.5	--	--
10:05	5	5	200	10.56	0.79	6.96	1.41	2.64	0.28	16.1	-64.9	--	--
10:10	5	10	200	10.56	1.06	6.96	1.43	1.5	0.24	16.1	-66.2	--	--
10:15	5	15	200	10.56	1.32	6.95	1.44	1.79	0.26	15.8	-66.6	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs,1,4-Dioxane 8270D SIM	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-153			**Date**	09/12/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.9 degrees F and Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	10.80	**Total Depth (ft-bmp)**	31.17	**Water Column (ft)**	20.37	**Gallons in Well**	3.31
Purge Start	14:40	**Pump Intake (ft-bmp)**	28.67	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:05	**Volumes Purged**	0.40	**Sample ID**	MW-22-153_091222	**Sampled by**	Austin Westhuis
Sample Time	15:00	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:45	0	0	200	10.80	0.26	6.94	1.63	2.58	0.08	15.4	-62.7	--	--
14:50	5	5	200	10.80	0.53	6.96	1.68	2.12	0.05	15.4	-69.7	--	--
14:55	5	10	200	10.80	0.79	6.96	1.67	1.9	0.05	15.1	-73.2	--	--
15:00	5	15	200	10.80	1.06	6.97	1.67	1.43	0.05	15.1	-76.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

30112892, MW-22-154, 2022-09-12, RACER Trust, RACER Lansing GWS 2022

Created	2022-09-12 20:02:02 UTC by Austin Westhuis
Updated	2022-09-12 20:20:58 UTC by Austin Westhuis
Location	42.73906321734445, -84.57948122181425
Status	QC Complete
Note: This app is for sampling that is completed using a pump or bailer and not hydrasleeve or PDB	
Note: Please make sure to sync frequently throughout your work day when possible.	
Have you read the Quality Procedure (QP) and/or Technical Guidance Instruction (TGI) relevant to this use case?	Yes
Selecting "Yes" confirms your digital signature as having read the QP and/or TGI relevant to this use case.	
Project Number	30112892
Client	RACER Trust
Project Name / Location	RACER Lansing GWS 2022
Well ID	MW-22-154
Date	2022-09-12
Time In	15:50
Sampler Name	Austin Westhuis
Are you connected to the internet via data plan or WiFi?	Yes
Click here to get weather data from National Weather Service (NWS) for your current location. It may take a few seconds to retrieve and populate the data from NWS.	N/A
Weather from NWS	64.9 degrees F and Cloudy. The wind is blowing S/SW at 11.4 mph.
Note: You have selected to bring in weather data from NWS. Please review and/or confirm the weather data prior to submitting (ensure wind speed, temperature, etc. is of reasonable value and in the units required by project).	
Weather Calculation	NA
Is well able to be sampled?	Yes

Evacuation Details

Is Well Head PID Reading required?	No
Measuring Point (mp) Description	Top of Inner Casing
Casing Diameter (inches)	2
Well Casing Material	PVC
Static Water Level (ft-bmp)	6.52
Total Depth (ft-bmp)	10.59
Water Column	4.07
Gallons in Well	0.66
Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 1 cubic inch = 0.004329 gallons 0.5" diameter = 0.01 gal/ft = 37.85 mL/ft 1" diameter = 0.04 gal/ft = 151.4 mL/ft 2" diameter = 0.16 gal/ft = 605.66 mL/ft 3" diameter = 0.37 gal/ft = 1400.6 mL/ft 4" diameter = 0.65 gal/ft = 2460 mL/ft	
Purge Method	Low-Flow
Purge Equipment	Peristaltic
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	8.59
Water Quality Meter Make/Model	YSI Professional Plus

Serial Number of Water Quality Meter	13E100093
Are you using the Groundwater Sampling TGI to stabilize parameters?	Yes
Purge Start (Pump On)	16:00

@16:05, DTW:6.52, pH:6.87, temp:16.3, cond:6.13, turb:4.12, DO:2.15, redox:40.6

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Reading Time	16:05
Minutes Elapsed between readings	0
Total Elapsed Minutes (during parameter readings)	0
Total Elapsed Minutes from Purge Start Time	5
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	6.52
Milliliters Purged (total)	1000
Theoretical Total Volume Purged	1000 milliliters purged
pH	6.87
Conductivity (mS/cm)	6.13
Turbidity (NTU)	4.12
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	2.15
Temperature (Degrees Celsius)	16.3
Redox (ORP mV)	40.6
parameters	@16:05, DTW:6.52, pH:6.87, temp:16.3, cond:6.13, turb:4.12, DO:2.15, redox:40.6
Are you collecting an additional groundwater parameter not listed above?	No

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:10, DTW:6.52, pH:6.89, temp:16.2, cond:5.77, turb:1.93, DO:2.43, redox:55.9

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Reading Time	16:10
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	5
Total Elapsed Minutes from Purge Start Time	10
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	6.52
Milliliters Purged (total)	2000
Theoretical Total Volume Purged	2000 milliliters purged
pH	6.89
Conductivity (mS/cm)	5.77
Turbidity (NTU)	1.93

Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	2.43
Temperature (Degrees Celsius)	16.2
Redox (ORP mV)	55.9
parameters	@16:10, DTW:6.52, pH:6.89, temp:16.2, cond:5.77, turb:1.93, DO:2.43, redox:55.9
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: not stable cond: not stable turb: not stable DO: not stable temp: not stable ORP: not stable time elapsed: 5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:15, DTW:6.52, pH:6.89, temp:16.2, cond:5.77, turb:1.54, DO:2.28, redox:59

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Reading Time	16:15
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	10
Total Elapsed Minutes from Purge Start Time	15
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	6.52
Milliliters Purged (total)	3000
Theoretical Total Volume Purged	3000 milliliters purged
pH	6.89
Conductivity (mS/cm)	5.77
Turbidity (NTU)	1.54
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	2.28
Temperature (Degrees Celsius)	16.2
Redox (ORP mV)	59
parameters	@16:15, DTW:6.52, pH:6.89, temp:16.2, cond:5.77, turb:1.54, DO:2.28, redox:59
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: stable cond: not stable turb: not stable DO: not stable temp: stable ORP: not stable time elapsed: 10

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@16:20, DTW:6.52, pH:6.89, temp:16.2, cond:5.77, turb:1.41, DO:2.26, redox:62.2

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Reading Time	16:20
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	15
Total Elapsed Minutes from Purge Start Time	20

Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	6.52
Milliliters Purged (total)	4000
Theoretical Total Volume Purged	4000 milliliters purged
pH	6.89
Conductivity (mS/cm)	5.77
Turbidity (NTU)	1.41
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	2.26
Temperature (Degrees Celsius)	16.2
Redox (ORP mV)	62.2
parameters	@16:20, DTW:6.52, pH:6.89, temp:16.2, cond:5.77, turb:1.41, DO:2.26, redox:62.2
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	You may sample the well.
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Sample Start Time	16:25
Purge End (Pump Off)	16:30
Total Volume Measured (units)	Milliliters
Total Milliliters Purged	5000
Well Volumes Purged	2.0

Sample Information

Did the well go dry during purging?	No
Sample ID	MW-22-154_091222
Sample Time	16:20
Sample Date	2022-09-12
Sample Equipment	Peristaltic
Sample Type	Grab
Color	Clear
Notable Odors	None
Replicate Type	Not Applicable

VOCs 8260, 40 mL Glass, 3

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Constituent Sampled	VOCs 8260
Container Type	40 mL Glass
Number of Containers	3
Preservative	HCL
Field Filtered?	No
Total Count of Bottles Collected	3
Time Out	16:25

Well Information

Is the well damaged?	No
Well Completion	Flush mount
Well Location	See figure.
Condition of Well	Good condition
Well Locked at Arrival	Yes
Lock Functioning	Yes
Well Locked at Departure	Yes
Key Number to Well	2035
Access to well maintained	Yes
Well housing and pad in good shape	Yes
Well properly labeled	Yes
Photo of Well	
Have you performed work in accordance with the applicable QP/TGI?	Yes
Unique Sample ID	30112892-MW-22-154_091222-2022912

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-155			**Date**	09/12/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	61.0 degrees F and Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	12.08	**Total Depth (ft-bmp)**	31.5	**Water Column (ft)**	19.42	**Gallons in Well**	3.16
Purge Start	11:20	**Pump Intake (ft-bmp)**	29	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:10	**Volumes Purged**	0.84	**Sample ID**	MW-22-155_091222	**Sampled by**	Austin Westhuis
Sample Time	12:05	**Gallons Purged**	2.64	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:25	0	0	200	12.08	0.26	7.1	1.7	512	0.66	14.2	-92.7	--	--
11:30	5	5	200	12.08	0.53	7.09	1.69	212	0.06	14.1	-99.1	--	--
11:35	5	10	200	12.08	0.79	7.08	1.69	124	0.06	14	-102	--	--
11:40	5	15	200	12.08	1.06	7.08	1.69	82.1	0.05	14.1	-104	--	--
11:45	5	20	200	12.08	1.32	7.07	1.69	31.9	0.05	14.1	-105.1	--	--
11:50	5	25	200	12.08	1.59	7.06	1.69	12.8	0.05	14	-105.7	--	--
11:55	5	30	200	12.08	1.85	7.06	1.69	4.49	0.05	14	-105.9	--	--
12:00	5	35	200	12.08	2.11	7.04	1.7	4.1	0.05	13.9	-106.5	--	--
12:05	5	40	200	12.08	2.38	7.03	1.7	3.78	0.05	13.9	-106.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-156			**Date**	09/12/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	61.0 degrees F and Cloudy. The wind is blowing S/SW at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	13.29	**Total Depth (ft-bmp)**	31.06	**Water Column (ft)**	17.77	**Gallons in Well**	2.89
Purge Start	10:20	**Pump Intake (ft-bmp)**	28.56	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:10	**Volumes Purged**	0.91	**Sample ID**	MW-22-156_091222	**Sampled by**	Austin Westhuis
Sample Time	11:05	**Gallons Purged**	2.64	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:25	0	0	200	13.29	0.26	6.65	1.78	497	7.64	15.6	59.1	--	--
10:30	5	5	200	13.29	0.53	6.74	1.7	243	7.3	15.1	22.1	--	--
10:35	5	10	200	13.29	0.79	6.83	1.57	116	6.61	15	-16.3	--	--
10:40	5	15	200	13.29	1.06	6.86	1.51	73.9	6.28	14.9	-28.9	--	--
10:45	5	20	200	13.29	1.32	6.88	1.48	39.4	6.14	14.9	-40.4	--	--
10:50	5	25	200	13.29	1.59	6.91	1.44	12.6	3.52	14.9	-52.3	--	--
10:55	5	30	200	13.29	1.85	6.92	1.42	4.12	3.35	14.8	-60.6	--	--
11:00	5	35	200	13.29	2.11	6.93	1.42	3.66	3.2	14.8	-65.9	--	--
11:05	5	40	200	13.29	2.38	6.94	1.41	3.21	3.17	14.8	-69.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure.	Well Locked at Arrival:	yes
Condition of Well:	Good condition	Well Locked at Departure:	yes
Well Completion:	Stick-up	Key Number To Well:	2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-157			**Date**	09/12/2022
Project Name/Location	RACER Lansing GWS 2022	**Weather(°F)**	64.9 degrees F and Cloudy. The wind is blowing S at 9.2 mph.				
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	2.75	**Total Depth (ft-bmp)**	27.55	**Water Column (ft)**	24.8	**Gallons in Well**	4.03
Purge Start	13:45	**Pump Intake (ft-bmp)**	25.05	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:10	**Volumes Purged**	0.33	**Sample ID**	MW-22-157_091222	**Sampled by**	Austin Westhuis
Sample Time	14:10	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:50	0	0	200	2.75	0.26	7.06	1.48	3.09	0.2	16.7	-96.9	--	--
13:55	5	5	200	2.75	0.53	7.03	1.47	2.16	0.25	16.4	-95.7	--	--
14:00	5	10	200	2.75	0.79	7.02	1.47	1.77	0.23	16.4	-95.5	--	--
14:05	5	15	200	2.75	1.06	7.01	1.46	1.51	0.23	16.6	-95.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	P6-SB-07			**Date**	8/29/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	79.0 degrees F and Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.65	**Total Depth (ft-bmp)**	23.65	**Water Column (ft)**	16.00	**Gallons in Well**	2.60
Purge Start	14:50	**Pump Intake (ft-bmp)**	21.15	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:30	**Volumes Purged**	0.71	**Sample ID**	P6-SB-07_082922	**Sampled by**	Austin Westhuis
Sample Time	15:20	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:55	0	0	200	7.65	0.26	7.03	0.64	4.55	6.77	17.9	-46.8	--	--
15:00	5	5	200	7.65	0.53	7.09	0.63	2.71	6.38	17.7	-4.3	--	--
15:05	5	10	200	7.65	0.79	7.09	0.63	2.12	6.00	17.7	1.9	--	--
15:10	5	15	200	7.65	1.06	7.08	0.62	2.01	5.66	17.7	7.9	--	--
15:15	5	20	200	7.65	1.32	7.08	0.61	1.66	5.49	17.7	9.2	--	--
15:20	5	25	200	7.65	1.59	7.08	0.61	1.45	5.23	17.7	13.5	Clear	None

Constituent Sampled	Container	Number	Preservative
AOF	125 mL HDPE Plastic	3	None
PFAS	250mL HDPE Plastic	2	None
PFAS Top Assay	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 6000B

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	UNK-15			**Date**	8/29/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	79.0 degrees F and Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	0.45	**Total Depth (ft-bmp)**	16	**Water Column (ft)**	15.55	**Gallons in Well**	10.11
Purge Start	14:30	**Pump Intake (ft-bmp)**	13.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:10	**Volumes Purged**	0.10	**Sample ID**	UNK-15_082922	**Sampled by**	Billy Cobern
Sample Time	15:10	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:35	0	0	100	0.65	0.13	6.82	0.74	18.8	0.33	22.8	70.6	--	--
14:40	5	5	100	0.75	0.26	7.01	0.72	16.5	0.30	23.2	58.4	--	--
14:45	5	10	100	0.85	0.40	7.08	0.71	15.3	0.26	23.4	48.8	--	--
14:50	5	15	100	0.94	0.53	7.06	0.71	12.1	0.25	23.6	39.1	--	--
14:55	5	20	100	1.03	0.66	7.14	0.70	11.3	0.21	23.8	31.0	--	--
15:00	5	25	100	1.13	0.79	7.19	0.70	9.03	0.21	23.8	26.0	--	--
15:05	5	30	100	1.19	0.92	7.23	0.70	9.16	0.21	23.6	21.6	--	--
15:10	5	35	100	1.27	1.06	7.27	0.70	9.27	0.22	23.4	17.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None
Top AOF	125 mL Plastic	3	None
Top Assay	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	CH-14-RO			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	59.0 degrees F and Mostly Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.66	**Total Depth (ft-bmp)**	15.89	**Water Column (ft)**	7.23	**Gallons in Well**	1.17
Purge Start	13:04	**Pump Intake (ft-bmp)**	13.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:49	**Volumes Purged**	1.37	**Sample ID**	CH-14-RO_110922	**Sampled by**	Cooper Osgood
Sample Time	13:45	**Gallons Purged**	1.61	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:07	0	0	160	8.66	0.13	7.34	0.75	0.02	0.34	17.7	39.7	Clear green tint	
13:12	5	5	160	8.90	0.34	7.35	0.74	0.02	0.28	17.7	38.9	Clear green tint	
13:17	5	10	160	8.94	0.55	7.36	0.74	0.02	0.22	17.8	38.4	Clear green tint	
13:22	5	15	160	8.94	0.76	7.35	0.74	0.02	0.17	17.9	38.2	Clear green tint	
13:27	5	20	160	8.94	0.97	7.35	0.74	0.02	0.21	17.8	38.2	Clear green tint	
13:32	5	25	160	8.98	1.18	7.35	0.74	0.02	0.29	17.9	38	Clear green tint	
13:37	5	30	160	8.99	1.39	7.35	0.74	0.02	0.27	17.6	38.23	Clear green tint	
13:42	5	35	160	8.99	1.61	7.35	0.74	0.02	0.27	17.6	38.3	Clear green tint	

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing Mi

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-02-04(3)			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	53.1 degrees F and Clear. The wind is blowing W/NW at 16.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	60.61	**Total Depth (ft-bmp)**	83.81	**Water Column (ft)**	23.20	**Gallons in Well**	3.77
Purge Start	13:35	**Pump Intake (ft-bmp)**	81.31	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:50	**Volumes Purged**	0.53	**Sample ID**	MW-02-04(3)_110722	**Sampled by**	Austin Westhuis
Sample Time	14:35	**Gallons Purged**	1.59	**Replicate/ Code No.**	MS/MSD	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:40	0	0	100	61.65	0.13	6.9	5.73	519	0.63	14.4	-26.5	Clear	None
13:45	5	5	100	61.90	0.26	6.91	5.65	251	0.76	14.5	-36.3	Clear	None
13:50	5	10	100	61.90	0.40	6.91	5.68	113	0.77	14.3	-38.2	Clear	None
13:55	5	15	100	61.94	0.53	6.91	5.68	89.7	0.87	14.2	-41	Clear	None
14:00	5	20	100	61.94	0.66	6.91	5.79	319	0.72	14.2	-42.8	Clear	None
14:05	5	25	100	62.00	0.79	6.9	5.85	580	0.64	14.1	-44.2	Clear	None
14:10	5	30	100	62.09	0.92	6.9	5.87	627	0.63	14.2	-44.5	Clear	None
14:15	5	35	100	62.09	1.06	6.89	5.94	650	0.48	14.1	-46	Clear	None
14:20	5	40	100	62.09	1.19	6.89	5.98	624	0.44	14.2	-46.8	Clear	None
14:25	5	45	100	62.09	1.32	6.89	6.04	598	0.37	14.1	-48	Clear	None
14:30	5	50	100	62.09	1.45	6.89	6.07	561	0.36	14.1	-48.8	Clear	None
14:35	5	55	100	62.11	1.59	6.87	6.06	531	0.36	14.1	-49.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	6	None

Comments: Stabilization criteria not met. Well sampled after one hour of purging.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-12-09			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.0 degrees F and Clear. The wind is blowing W/NW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	13.30	**Total Depth (ft-bmp)**	21.7	**Water Column (ft)**	8.40	**Gallons in Well**	1.36
Purge Start	16:09	**Pump Intake (ft-bmp)**	19.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	17:20	**Volumes Purged**	1.59	**Sample ID**	MW-12-09_110122	**Sampled by**	Cooper Osgood
Sample Time	17:15	**Gallons Purged**	2.16	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:12	0	0	130	13.30	0.10	7.28	1.3	112	0.41	17.9	-18.7	Clear	None
16:17	5	5	130	13.30	0.27	7.26	1.45	107	0.14	17.7	-57.9	Clear	None
16:22	5	10	130	13.30	0.45	7.24	1.56	56.7	0.13	17.6	-71.3	Clear	None
16:27	5	15	130	13.30	0.62	7.22	1.64	40	0.1	17.5	-77.3	Clear	None
16:32	5	20	130	13.30	0.79	7.21	1.71	39.1	0.1	17.4	-80.6	Clear	None
16:37	5	25	130	13.30	0.96	7.19	1.79	62.9	0.09	17.4	-83.1	Clear	None
16:42	5	30	130	13.30	1.13	7.18	1.82	35.2	0.13	17.4	-85.1	Clear	None
16:47	5	35	130	13.30	1.31	7.18	1.85	13.9	0.11	17.4	-86.7	Clear	None
16:52	5	40	130	13.30	1.48	7.18	1.85	8.2	0.14	17.3	-87.8	Clear	None
16:57	5	45	130	13.30	1.65	7.17	1.87	6.18	0.13	17.3	-88.8	Clear	None
17:02	5	50	130	13.30	1.82	7.18	1.86	2.69	0.15	17.3	-89.6	Clear	None
17:07	5	55	130	13.30	1.99	7.17	1.86	0.02	0.17	17.3	-90.1	Clear	None
17:12	5	60	130	13.30	2.16	7.17	1.86	0.02	0.2	17.3	-90.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Well not stable 60 turbidity and DO

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-12-12			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	46.0 degrees F and Clear. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.11	**Total Depth (ft-bmp)**	17.2	**Water Column (ft)**	8.09	**Gallons in Well**	1.31
Purge Start	08:45	**Pump Intake (ft-bmp)**	15	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	09:30	**Volumes Purged**	0.91	**Sample ID**	MW-12-12_110922	**Sampled by**	Billy Cobern
Sample Time	09:30	**Gallons Purged**	1.19	**Replicate/ Code No.**	DUP-08_110922	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:50	0	0	100	9.87	0.13	7.64	0.84	31.1	0.67	15.2	47	Clear	None
08:55	5	5	100	10.39	0.26	7.65	0.73	25.4	0.96	15.6	47.3	Clear	None
09:00	5	10	100	10.87	0.40	7.67	0.64	20.3	1.53	15.6	50.4	Clear	None
09:05	5	15	100	11.35	0.53	7.66	0.65	17.3	1.6	15.6	52.6	Clear	None
09:10	5	20	100	11.82	0.66	7.62	0.67	13.8	1.64	15.7	56.2	Clear	None
09:15	5	25	100	12.30	0.79	7.61	0.68	10.4	1.66	15.7	57.5	Clear	None
09:20	5	30	100	12.77	0.92	7.58	0.74	9.69	1.64	15.7	59.9	Clear	None
09:25	5	35	100	13.22	1.06	7.57	0.75	9.31	1.62	15.8	60.2	Clear	None
09:30	5	40	100	13.69	1.19	7.56	0.76	9.41	1.57	15.8	60.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	4	None

Comments: Didn't meet drawdown requirements. No bolts for flush mount cover.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-12-13			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing S at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	12.45	**Total Depth (ft-bmp)**	25.4	**Water Column (ft)**	12.95	**Gallons in Well**	2.10
Purge Start	10:50	**Pump Intake (ft-bmp)**	23	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:15	**Volumes Purged**	0.31	**Sample ID**	MW-12-12_110922	**Sampled by**	Billy Cobern
Sample Time	11:15	**Gallons Purged**	0.66	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:55	0	0	100	12.85	0.13	7.39	0.82	9.51	0.52	14.2	-64	Clear	None
11:00	5	5	100	13.21	0.26	7.36	0.81	6.73	0.39	14.1	-66.9	Clear	None
11:05	5	10	100	13.59	0.40	7.34	0.79	6.15	0.33	14.2	-69	Clear	None
11:10	5	15	100	13.85	0.53	7.32	0.8	5.82	0.31	14.2	-72.2	Clear	None
11:15	5	20	100	14.19	0.66	7.31	0.79	5.66	0.3	14.2	-74.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-12-18			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing S/SW at 4.7 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	23.42	**Total Depth (ft-bmp)**	35.3	**Water Column (ft)**	11.88	**Gallons in Well**	1.93
Purge Start	12:28	**Pump Intake (ft-bmp)**	30	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:20	**Volumes Purged**	0.90	**Sample ID**	MW-12-18_110222	**Sampled by**	Cooper Osgood
Sample Time	13:15	**Gallons Purged**	1.74	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:32	0	0	150	23.42	0.16	7.38	2.15	32.6	2.08	15.3	-0.4	Clear	None
12:37	5	5	150	23.42	0.36	7.4	2.12	25.7	2.1	14.8	-1.2	Clear	None
12:42	5	10	150	25.31	0.55	7.35	2.19	25.2	1.88	14.6	-1.4	Clear	None
12:47	5	15	150	25.50	0.75	7.21	2.54	10.1	1.58	14.6	-2.5	Clear	None
12:52	5	20	150	25.60	0.95	7.18	2.68	0.02	1.42	14.7	-7.7	Clear	None
12:57	5	25	150	25.76	1.15	7.16	2.8	0.02	1.27	14.5	-14.3	Clear	None
13:02	5	30	150	25.76	1.35	7.15	2.85	0.02	1.13	14.6	-19.4	Clear	None
13:07	5	35	150	25.76	1.55	7.14	2.89	0.02	1.1	14.5	-23.5	Clear	None
13:12	5	40	150	26.00	1.74	7.14	2.92	0.02	1.03	14.6	-27.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing Mi
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-12-21			**Date**	11/4/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	69.1 degrees F and Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.18	**Total Depth (ft-bmp)**	78.02	**Water Column (ft)**	12.84	**Gallons in Well**	2.09
Purge Start	15:15	**Pump Intake (ft-bmp)**	75.52	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:20	**Volumes Purged**	0.82	**Sample ID**	MW-12-21_110422	**Sampled by**	Austin Westhuis
Sample Time	16:15	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:20	0	0	100	67.45	0.13	6.77	1.73	126	0.42	14.8	-33.3	Clear	None
15:25	5	5	100	67.59	0.26	6.79	1.7	87.7	0.58	14.7	-42.2	Clear	None
15:30	5	10	100	68.22	0.40	6.79	1.68	37.3	0.57	14.8	-45.3	Clear	None
15:35	5	15	100	69.08	0.53	6.81	1.63	12.2	0.75	14.5	-44	Clear	None
15:40	5	20	100	71.11	0.66	6.83	1.64	9.44	0.9	14.6	-43.4	Clear	None
15:45	5	25	100	71.70	0.79	6.84	1.62	7.34	1.07	14.6	-41.4	Clear	None
15:50	5	30	100	73.10	0.92	6.85	1.61	5.22	1.34	14.7	-37.7	Clear	None
15:55	5	35	100	74.02	1.06	6.87	1.6	3.09	1.36	14.9	-35.5	Clear	None
16:00	5	40	100	74.73	1.19	6.87	1.62	1.88	1.45	15	-36.6	Clear	None
16:05	5	45	100	74.78	1.32	6.88	1.63	1.8	1.43	15	-35.7	Clear	None
16:10	5	50	100	74.80	1.45	6.85	1.65	1.64	1.23	14.7	-38.3	Clear	None
16:15	5	55	100	74.83	1.59	6.85	1.66	1.42	1.1	14.7	-39.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments: Well did not meet stabilization criteria. Collected groundwater sample after purging for one hour.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-22			**Date**	11/5/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.9 degrees F and Partly Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	67.44	**Total Depth (ft-bmp)**	96.12	**Water Column (ft)**	28.68	**Gallons in Well**	4.66
Purge Start	10:35	**Pump Intake (ft-bmp)**	93.62	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:25	**Volumes Purged**	0.28	**Sample ID**	MW-13-22_110522	**Sampled by**	Austin Westhuis
Sample Time	11:20	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:40	0	0	100	67.44	0.13	6.56	2.1	687	2.33	14.5	64	Clear	None
10:45	5	5	100	67.44	0.26	6.61	2.11	553	0.96	14.6	32.3	Clear	None
10:50	5	10	100	67.44	0.40	6.66	2.12	449	0.36	14.4	1.7	Clear	None
10:55	5	15	100	67.44	0.53	6.68	2.13	401	1.26	14.3	-9.6	Clear	None
11:00	5	20	100	67.44	0.66	6.71	2.12	389	0.27	14.4	-20.7	Clear	None
11:05	5	25	100	67.44	0.79	6.72	2.12	373	0.22	14.3	-28.6	Clear	None
11:10	5	30	100	67.44	0.92	6.73	2.1	349	0.22	14.3	-31.9	Clear	None
11:15	5	35	100	67.44	1.06	6.75	2.09	332	0.22	14.4	-35.9	Clear	None
11:20	5	40	100	67.44	1.19	6.75	2.09	332	0.22	14.4	-35.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-25			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	52.0 degrees F and Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.71	**Total Depth (ft-bmp)**	75	**Water Column (ft)**	10.29	**Gallons in Well**	1.67
Purge Start	12:15	**Pump Intake (ft-bmp)**	72.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:05	**Volumes Purged**	0.79	**Sample ID**	MW-13-25_110722	**Sampled by**	Billy Cobern
Sample Time	13:05	**Gallons Purged**	1.32	**Replicate/ Code No.**	DUP-06_110722	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:20	0	0	100	64.75	0.13	6.56	1.68	18.7	1.96	13.5	-26	Clear	None
12:25	5	5	100	64.75	0.26	6.53	1.66	16.2	0.74	13.2	-28.9	Clear	None
12:30	5	10	100	64.75	0.40	6.51	1.66	13.8	0.47	13.2	-30.4	Clear	None
12:35	5	15	100	64.75	0.53	6.5	1.65	12.2	0.5	13.1	-30.6	Clear	None
12:40	5	20	100	64.75	0.66	6.49	1.65	10	0.53	13.2	-30.5	Clear	None
12:45	5	25	100	64.75	0.79	6.49	1.65	9.13	0.58	13.1	-29.9	Clear	None
12:50	5	30	100	64.75	0.92	6.49	1.66	9.72	0.6	13.1	-29.7	Clear	None
12:55	5	35	100	64.75	1.06	6.48	1.66	8.67	0.5	12.9	-29.5	Clear	None
13:00	5	40	100	64.75	1.19	6.48	1.66	8.31	0.53	12.9	-29.2	Clear	None
13:05	5	45	100	64.75	1.32	6.48	1.65	8.07	0.52	13	-29.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	6	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-29			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	46.9 degrees F and Clear. The wind is blowing W at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.01	**Total Depth (ft-bmp)**	76.3	**Water Column (ft)**	12.29	**Gallons in Well**	2.00
Purge Start	09:00	**Pump Intake (ft-bmp)**	74	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	09:55	**Volumes Purged**	0.73	**Sample ID**	MW-13-29_110722	**Sampled by**	Billy Cobern
Sample Time	09:55	**Gallons Purged**	1.45	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:05	0	0	100	64.05	0.13	6.4	3.42	18	3.56	12.4	69.5	Clear	None
09:10	5	5	100	64.05	0.26	6.39	3.43	16.4	1.73	12.7	50	Clear	None
09:15	5	10	100	64.05	0.40	6.39	3.42	14.1	1.58	12.6	41.5	Clear	None
09:20	5	15	100	64.05	0.53	6.4	3.42	12.1	1.34	12.7	34.1	Clear	None
09:25	5	20	100	64.05	0.66	6.4	3.42	11.4	1.33	12.8	30.7	Clear	None
09:30	5	25	100	64.05	0.79	6.41	3.43	10.4	1.23	12.8	29	Clear	None
09:35	5	30	100	64.05	0.92	6.41	3.42	9.77	1.18	12.8	26.4	Clear	None
09:40	5	35	100	64.05	1.06	6.41	3.43	9.21	1.3	12.8	23.9	Clear	None
09:45	5	40	100	64.05	1.19	6.42	3.41	9.36	1.02	12.9	22.4	Clear	None
09:50	5	45	100	64.05	1.32	6.42	3.41	8.88	1.03	13	21.7	Clear	None
09:55	5	50	100	64.05	1.45	6.42	3.41	8.79	1.05	13	21.6	Clear	None

Constituent Sampled	Container	Number	Preservative
T. Phosphorus, TKN	250 mL Plastic	1	H2SO4
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL
Nitrate/Nitrite	125 mL Plastic	1	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-34			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	43.0 degrees F and Clear. The wind is blowing E/NE at 11.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	66.27	**Total Depth (ft-bmp)**	79.9	**Water Column (ft)**	13.63	**Gallons in Well**	2.21
Purge Start	11:05	**Pump Intake (ft-bmp)**	77.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:55	**Volumes Purged**	0.60	**Sample ID**	MW-13-34_110822	**Sampled by**	Billy Cobern
Sample Time	11:55	**Gallons Purged**	1.32	**Replicate/ Code No.**	MS/MSD	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:10	0	0	100	66.55	0.13	7.12	2.16	38.3	3.17	13.5	-71.2	Clear	None
11:15	5	5	100	66.55	0.26	7.09	2.17	36.1	1.82	12.9	-68.1	Clear	None
11:20	5	10	100	66.55	0.40	7.07	2.15	26.3	1.06	12.9	-70.2	Clear	None
11:25	5	15	100	66.55	0.53	7.06	2.14	20.9	0.71	13.5	-73.9	Clear	None
11:30	5	20	100	66.55	0.66	7.05	2.17	16.8	0.62	13.7	-75.9	Clear	None
11:35	5	25	100	66.55	0.79	7.04	2.21	13.7	0.63	12.9	-76.6	Clear	None
11:40	5	30	100	66.55	0.92	7.02	2.21	11.3	0.51	13.4	-78.7	Clear	None
11:45	5	35	100	66.55	1.06	7.02	2.24	9.81	0.49	13.3	-79.9	Clear	None
11:50	5	40	100	66.55	1.19	7.02	2.24	9.4	0.47	13.3	-79.9	Clear	None
11:55	5	45	100	66.55	1.32	7.01	2.23	9.49	0.47	13.1	-80.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	9	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-36R			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	59.0 degrees F and Mostly Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.32	**Total Depth (ft-bmp)**	12.65	**Water Column (ft)**	5.33	**Gallons in Well**	0.87
Purge Start	12:50	**Pump Intake (ft-bmp)**	10	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:25	**Volumes Purged**	1.06	**Sample ID**	MW-13-36R	**Sampled by**	Billy Cobern
Sample Time	13:25	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:55	0	0	100	7.33	0.13	11.84	1.58	11.6	1.16	14.9	-71	Clear	None
13:00	5	5	100	7.33	0.26	11.89	1.63	10.2	1.03	14.9	-88.9	Clear	None
13:05	5	10	100	7.33	0.40	11.93	1.63	9.83	0.86	14.6	-101.9	Clear	None
13:10	5	15	100	7.33	0.53	11.95	1.63	9.12	0.81	14.8	-105.6	Clear	None
13:15	5	20	100	7.33	0.66	11.96	1.65	8.62	0.7	14.8	-108.5	Clear	None
13:20	5	25	100	7.33	0.79	11.96	1.64	8.59	0.66	14.8	-110.9	Clear	None
13:25	5	30	100	7.33	0.92	11.96	1.64	8.05	0.64	14.9	-112.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-43			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	61.0 degrees F and Clear. The wind is blowing at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	59.64	**Total Depth (ft-bmp)**	78.2	**Water Column (ft)**	18.56	**Gallons in Well**	3.02
Purge Start	13:40	**Pump Intake (ft-bmp)**	76	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:15	**Volumes Purged**	0.31	**Sample ID**	MW-13-43_110122	**Sampled by**	Billy Cobern
Sample Time	14:15	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:45	0	0	100	59.94	0.13	7.66	2.61	29.7	9.6	17.4	61.5	Clear	None
13:50	5	5	100	59.85	0.26	7.55	2.65	25.1	8.78	17.1	78.5	Clear	None
13:55	5	10	100	59.85	0.40	7.53	2.64	21.1	9.52	16.8	87.7	Clear	None
14:00	5	15	100	59.85	0.53	7.51	2.65	19.8	9.16	16.7	94.2	Clear	None
14:05	5	20	100	59.85	0.66	7.53	2.65	19.6	10.18	16.5	97.2	Clear	None
14:10	5	25	100	59.85	0.79	7.51	2.64	19.3	10.54	16.5	100.8	Clear	None
14:15	5	30	100	59.85	0.92	7.44	2.64	19.1	10.24	16.6	103.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-45			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	55.9 degrees F and Haze. The wind is blowing SW at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.53	**Total Depth (ft-bmp)**	78.3	**Water Column (ft)**	12.77	**Gallons in Well**	2.08
Purge Start	12:35	**Pump Intake (ft-bmp)**	76	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:15	**Volumes Purged**	0.51	**Sample ID**	MW-13-45_110122	**Sampled by**	Billy Cobern
Sample Time	13:15	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:40	0	0	100	65.61	0.13	6.56	1.3	19.8	1.66	15.6	-29.1	Clear	None
12:45	5	5	100	65.61	0.26	6.55	1.36	17.3	1.14	15.7	-51.2	Clear	None
12:50	5	10	100	65.61	0.40	6.56	1.38	15.4	1.04	15.7	-56	Clear	None
12:55	5	15	100	65.61	0.53	6.56	1.39	14.2	0.93	15.5	-59.9	Clear	None
13:00	5	20	100	65.61	0.66	6.56	1.4	11.5	0.9	15.5	-61.7	Clear	None
13:05	5	25	100	65.61	0.79	6.56	1.4	9.92	0.87	15.6	-62.2	Clear	None
13:10	5	30	100	65.61	0.92	6.56	1.39	9.82	0.87	15.6	-62.7	Clear	None
13:15	5	35	100	65.61	1.06	6.57	1.4	9.73	0.85	15.7	-62.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-46			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	53.1 degrees F and Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.22	**Total Depth (ft-bmp)**	74.65	**Water Column (ft)**	11.43	**Gallons in Well**	1.86
Purge Start	15:00	**Pump Intake (ft-bmp)**	72	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:00	**Volumes Purged**	0.85	**Sample ID**	MW-13-46_110722	**Sampled by**	Billy Cobern
Sample Time	16:00	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:05	0	0	100	63.65	0.13	6.68	2.64	242	1.88	13.9	-64	Clear	None
15:10	5	5	100	63.85	0.26	6.67	2.67	267	1.49	13.5	-60.6	Clear	None
15:15	5	10	100	64.14	0.40	6.67	2.65	151	0.93	13.5	-62.2	Clear	None
15:20	5	15	100	64.42	0.53	6.68	2.63	106	0.89	13.4	-61.4	Clear	None
15:25	5	20	100	64.69	0.66	6.68	2.59	89.3	1.02	13.3	-58.9	Clear	None
15:30	5	25	100	64.93	0.79	6.68	2.59	68.2	1.11	13.3	-57.6	Clear	None
15:35	5	30	100	65.18	0.92	6.68	2.6	48.9	1.11	13.1	-56.6	Clear	None
15:40	5	35	100	65.39	1.06	6.68	2.6	32.1	1.11	13.2	-56.4	Clear	None
15:45	5	40	100	65.60	1.19	6.67	2.61	25.3	1.06	13.2	-56.4	Clear	None
15:50	5	45	100	65.79	1.32	6.67	2.61	23.1	1.04	13.2	-56.4	Clear	None
15:55	5	50	100	65.95	1.45	6.67	2.61	22.7	1	13.2	-55.6	Clear	None
16:00	5	55	100	66.12	1.59	6.67	2.61	22.1	0.99	13.2	-56.6	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Well Locked at Arrival: yes
Condition of Well: Good condition
Well Locked at Departure: yes
Well Completion: Stick-up
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-13-48			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	37.0 degrees F and Clear. The wind is blowing E/NE at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	56.06	**Total Depth (ft-bmp)**	73.25	**Water Column (ft)**	17.19	**Gallons in Well**	2.79
Purge Start	10:00	**Pump Intake (ft-bmp)**	71	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	10:45	**Volumes Purged**	0.43	**Sample ID**	MW-13-48_110822	**Sampled by**	Billy Cobern
Sample Time	10:45	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:05	0	0	100	56.10	0.13	6.83	2.7	21.1	3.58	13.1	-62.6	Clear	None
10:10	5	5	100	56.10	0.26	6.8	2.74	19.3	1.74	13.2	-65.1	Clear	None
10:15	5	10	100	56.10	0.40	6.79	2.74	16.9	1.23	13.2	-67.3	Clear	None
10:20	5	15	100	56.10	0.53	6.78	2.75	14.6	0.75	13.2	-69.4	Clear	None
10:25	5	20	100	56.10	0.66	6.78	2.74	11.3	0.54	13.1	-70.9	Clear	None
10:30	5	25	100	56.10	0.79	6.78	2.74	9.99	0.44	13.1	-71.6	Clear	None
10:35	5	30	100	56.10	0.92	6.78	2.76	9.58	0.4	13.2	-71.8	Clear	None
10:40	5	35	100	56.10	1.06	6.78	2.76	9.34	0.38	13.2	-71.7	Clear	None
10:45	5	40	100	56.10	1.19	6.78	2.77	9.06	0.37	13.3	-71.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-56			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	Partly Cloudy, 51			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.87	**Total Depth (ft-bmp)**	75.75	**Water Column (ft)**	9.88	**Gallons in Well**	1.61
Purge Start	09:00	**Pump Intake (ft-bmp)**	73	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	09:45	**Volumes Purged**	0.74	**Sample ID**	MW-14-56_110322	**Sampled by**	Billy Cobern
Sample Time	09:45	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:05	0	0	100	66.59	0.13	6.8	4.46	25.3	0.9	13.1	-40.1	Clear	None
09:10	5	5	100	66.45	0.26	6.81	4.42	21.7	0.91	13.1	-40.3	Clear	None
09:15	5	10	100	66.35	0.40	6.83	4.28	18.3	0.92	13.2	-39.4	Clear	None
09:20	5	15	100	66.25	0.53	6.84	4.23	14.2	0.98	13.1	-38.8	Clear	None
09:25	5	20	100	66.15	0.66	6.85	4.22	12.8	0.99	13	-38.3	Clear	None
09:30	5	25	100	66.15	0.79	6.85	4.18	10.3	1.02	13.1	-37.8	Clear	None
09:35	5	30	100	66.15	0.92	6.84	4.23	9.72	0.95	13.4	-37.8	Clear	None
09:40	5	35	100	66.15	1.06	6.84	4.25	9.37	0.94	13.4	-37.8	Clear	None
09:45	5	40	100	66.15	1.19	6.83	4.28	9.03	0.89	13.4	-38	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-58R			**Date**	10/14/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	50.0 degrees F and Mostly Cloudy. The wind is blowing SW at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	13.63	**Total Depth (ft-bmp)**	29.61	**Water Column (ft)**	15.98	**Gallons in Well**	2.6
Purge Start	13:50	**Pump Intake (ft-bmp)**	27.11	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:25	**Volumes Purged**	0.71	**Sample ID**	MW-14-58R_101422	**Sampled by**	Austin Westhuis
Sample Time	14:20	**Gallons Purged**	1.85	**Replicate/ Code No.**	Dup-01_101422	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:55	0	0	200	13.68	0.26	7.72	2.01	14.68	0.13	15.6	-113.1	--	--
14:00	5	5	200	13.68	0.53	7.65	2.28	13.94	0.09	15.45	-128.6	--	--
14:05	5	10	200	13.68	0.79	7.31	2.2	13.34	0.08	15.29	-101.7	--	--
14:10	5	15	200	13.68	1.06	7.09	2.28	13.12	0.06	15.28	-82.6	--	--
14:15	5	20	200	13.68	1.32	7.07	2.29	12.51	0.06	15.26	-77.6	--	--
14:20	5	25	200	13.68	1.59	7.07	2.29	11.94	0.06	15.18	-77.3	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure.	Well Locked at Arrival:	yes
Condition of Well:	Good condition	Well Locked at Departure:	yes
Well Completion:	Stick-up	Key Number To Well:	2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-58R			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Haze. The wind is blowing S at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	13.65	**Total Depth (ft-bmp)**	29.9	**Water Column (ft)**	16.25	**Gallons in Well**	2.64
Purge Start	10:39	**Pump Intake (ft-bmp)**	27.25	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:33	**Volumes Purged**	0.56	**Sample ID**	MW-14-58R_110222	**Sampled by**	Cooper Osgood
Sample Time	11:25	**Gallons Purged**	1.48	**Replicate/ Code No.**	DUP-01_110222	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:42	0	0	130	13.65	0.10	7.39	2.9	0.02	1.36	16	3.9	Clear	None
10:47	5	5	130	13.65	0.27	7.38	3.01	0.02	0.26	15.7	-58.1	Clear	None
10:52	5	10	130	13.65	0.45	7.38	3.01	0.02	0.16	15.7	-79.2	Clear	None
10:57	5	15	130	13.65	0.62	7.21	2.93	0.02	0.07	15.7	-89.9	Clear	None
11:02	5	20	130	13.65	0.79	7.1	2.91	0.02	0.36	15.7	-89.2	Clear	None
11:07	5	25	130	13.65	0.96	7.07	2.96	0.02	0.17	15.7	-87.5	Clear	None
11:12	5	30	130	13.65	1.13	7.07	2.98	0.02	0.27	15.8	-87.6	Clear	None
11:17	5	35	130	13.65	1.31	7.06	2.99	0.02	0.28	15.8	-88.2	Clear	None
11:22	5	40	130	13.65	1.48	7.06	2.99	0.02	0.28	15.8	-89.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	4	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-59			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.9 degrees F and Clear. The wind is blowing S at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.09	**Total Depth (ft-bmp)**	19.34	**Water Column (ft)**	14.25	**Gallons in Well**	2.32
Purge Start	14:10	**Pump Intake (ft-bmp)**	17	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:20	**Volumes Purged**	0.92	**Sample ID**	MW-14-59_110222	**Sampled by**	Cooper Osgood
Sample Time	15:15	**Gallons Purged**	2.13	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:12	0	0	130	5.09	0.07	8.41	0.532	0.02	4.42	17.6	-23.4	Clear	None
14:17	5	5	130	5.62	0.24	8.39	0.523	0.02	4.13	17.4	-8.3	Clear	None
14:22	5	10	130	5.69	0.41	8.04	0.517	0.02	3.89	17.5	3.1	Clear	None
14:27	5	15	130	5.69	0.58	7.47	0.6	0.02	1.64	17.4	4.4	Clear	None
14:32	5	20	130	5.69	0.76	7.4	0.65	0.02	0.87	17.4	1.5	Clear	None
14:37	5	25	130	5.69	0.93	7.4	0.66	0.02	0.58	17.6	-2.2	Clear	None
14:42	5	30	130	5.69	1.10	7.39	0.66	0.02	0.39	17.6	-3.8	Clear	None
14:47	5	35	130	5.69	1.27	7.39	0.67	0.02	0.3	17.6	-6.4	Clear	None
14:52	5	40	130	5.70	1.44	7.39	0.67	0.02	0.24	17.6	-8.6	Clear	None
14:57	5	45	130	5.70	1.61	7.39	0.67	0.02	0.22	17.6	-10.3	Clear	None
15:02	5	50	130	5.70	1.79	7.39	0.67	0.02	0.17	17.8	-12.6	Clear	None
15:07	5	55	130	5.70	1.96	7.39	0.66	0.02	0.15	17.7	-13.3	Clear	None
15:12	5	60	130	5.72	2.13	7.39	0.66	0.02	0.31	17.6	-13.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Sampled after 60min DO not stable

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-60			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.9 degrees F and Clear. The wind is blowing W/SW at 4.7 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.30	**Total Depth (ft-bmp)**	22.5	**Water Column (ft)**	13.20	**Gallons in Well**	2.14
Purge Start	14:55	**Pump Intake (ft-bmp)**	20	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:43	**Volumes Purged**	0.82	**Sample ID**	MW-14-60_110122	**Sampled by**	Cooper Osgood
Sample Time	15:40	**Gallons Purged**	1.75	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:58	0	0	130	9.30	0.10	7.53	1.26	0.02	0.77	18.1	-56	Clear	None
15:03	5	5	130	9.30	0.27	7.53	1.33	0.02	0.37	17.6	-110.1	Clear	None
15:08	5	10	130	9.30	0.45	7.51	1.34	0.02	0.24	17.6	-119.5	Clear	None
15:13	5	15	130	9.32	0.62	7.5	1.33	0.02	0.2	17.7	-122.3	Clear	None
15:18	5	20	130	9.32	0.79	7.5	1.34	0.02	0.17	17.8	-124	Clear	None
15:23	5	25	130	9.32	0.96	7.5	1.39	0.02	0.85	17.8	-125.6	Clear	None
15:28	5	30	130	9.32	1.13	7.51	1.38	0.02	0.89	17.7	-127.2	Clear	None
15:33	5	35	130	9.35	1.31	7.51	1.37	0.02	0.83	17.7	-128.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-61			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	69.1 degrees F and Clear. The wind is blowing S at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	67.73	**Total Depth (ft-bmp)**	77.4	**Water Column (ft)**	9.67	**Gallons in Well**	1.57
Purge Start	16:15	**Pump Intake (ft-bmp)**	75	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:50	**Volumes Purged**	0.59	**Sample ID**	MW-14-61_110222	**Sampled by**	Billy Cobern
Sample Time	16:50	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:20	0	0	100	68.01	0.13	6.99	2.49	45.1	1.87	17	140.3	Clear	None
16:25	5	5	100	68.01	0.26	6.96	2.49	41.7	1.29	16.8	135.3	Clear	None
16:30	5	10	100	68.01	0.40	6.92	2.51	39.6	1.09	16.6	130.6	Clear	None
16:35	5	15	100	68.01	0.53	6.9	2.53	37.4	0.85	16.4	127	Clear	None
16:40	5	20	100	68.01	0.66	6.89	2.55	34.2	0.53	16.2	122.7	Clear	None
16:45	5	25	100	68.01	0.79	6.88	2.56	32.8	0.5	16.3	118.5	Clear	None
16:50	5	30	100	68.01	0.92	6.88	2.57	32.7	0.48	16.1	113.1	Clear	None

Constituent Sampled	Container	Number	Preservative
T. Phosphorus, TKN	250 mL Plastic	1	H2SO4
1,4-Dioxane 8260D SIM,VOCs	40 mL Glass	3	HCL
Nitrate/Nitrite	125 mL Plastic	1	None
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-62			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	55.9 degrees F and Haze. The wind is blowing SW at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	3.65	**Total Depth (ft-bmp)**	19.62	**Water Column (ft)**	15.97	**Gallons in Well**	2.59
Purge Start	12:21	**Pump Intake (ft-bmp)**	17	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:31	**Volumes Purged**	0.95	**Sample ID**	MW-14-62_110122	**Sampled by**	Cooper Osgood
Sample Time	13:25	**Gallons Purged**	2.46	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:23	0	0	150	3.65	0.08	10.73	0.269	0.02	0.61	17.2	187.6	Clear	None
12:28	5	5	150	3.65	0.28	11.3	0.373	0.02	0.28	17.2	-12.1	Clear	None
12:33	5	10	150	3.65	0.48	11.43	0.372	0.02	0.25	17	-150.4	Clear	None
12:38	5	15	150	3.65	0.67	11.42	0.4	0.02	0.14	17.2	-202.6	Clear	None
12:43	5	20	150	3.65	0.87	11.43	0.415	0.02	0.12	17.2	-233.7	Clear	None
12:48	5	25	150	3.81	1.07	11.41	0.41	0.02	0.12	17.3	-248.5	Clear	None
12:53	5	30	150	3.81	1.27	11.45	0.426	0.02	0.08	17.1	-266.5	Clear	None
12:58	5	35	150	3.81	1.47	11.45	0.424	0.02	0.08	17.3	-277.8	Clear	None
13:03	5	40	150	3.81	1.66	11.46	0.426	0.02	0.07	17.3	-286.3	Clear	None
13:08	5	45	150	3.81	1.86	11.44	0.422	0.02	0.06	17.4	-296.7	Clear	None
13:13	5	50	150	3.81	2.06	11.46	0.429	0.02	0.07	17.5	-304.8	Clear	None
13:18	5	55	150	3.81	2.26	11.45	0.427	0.02	0.07	17.5	-307.6	Clear	None
13:23	5	60	150	3.81	2.46	11.47	0.433	0.02	0.07	17.6	-312.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-67			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing S at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.61	**Total Depth (ft-bmp)**	20.8	**Water Column (ft)**	14.19	**Gallons in Well**	2.31
Purge Start	11:40	**Pump Intake (ft-bmp)**	18	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:25	**Volumes Purged**	0.51	**Sample ID**	MW-14-67_110922	**Sampled by**	Billy Cobern
Sample Time	12:25	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:45	0	0	100	7.07	0.13	7.42	1.33	12.7	1.14	14.8	48.7	Clear	None
11:50	5	5	100	7.19	0.26	7.39	1.33	8.92	0.8	14.8	44.9	Clear	None
11:55	5	10	100	7.31	0.40	7.38	1.34	7.42	0.69	14.8	45.5	Clear	None
12:00	5	15	100	7.43	0.53	7.36	1.34	7.93	0.56	14.9	46.4	Clear	None
12:05	5	20	100	7.53	0.66	7.33	1.35	7.4	0.43	14.9	48.8	Clear	None
12:10	5	25	100	7.63	0.79	7.3	1.35	7.15	0.35	15	51.3	Clear	None
12:15	5	30	100	7.74	0.92	7.28	1.36	7.1	0.28	15.1	53.2	Clear	None
12:20	5	35	100	7.83	1.06	7.28	1.37	7.61	0.27	15.1	53.9	Clear	None
12:25	5	40	100	7.97	1.19	7.27	1.37	7.27	0.26	15.1	54.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-14-70			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	46.0 degrees F and Clear. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	13.36	**Total Depth (ft-bmp)**	23.1	**Water Column (ft)**	9.74	**Gallons in Well**	1.58
Purge Start	09:55	**Pump Intake (ft-bmp)**	20.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:25	**Volumes Purged**	0.50	**Sample ID**	MW-14-70	**Sampled by**	Billy Cobern
Sample Time	10:25	**Gallons Purged**	0.79	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:00	0	0	100	13.76	0.13	7.28	1.49	19.4	1.67	13.5	62.3	Clear	None
10:05	5	5	100	13.70	0.26	7.27	1.49	13.6	1.07	13.8	37.7	Clear	None
10:10	5	10	100	13.67	0.40	7.26	1.48	10.7	0.98	13.7	27.1	Clear	None
10:15	5	15	100	13.67	0.53	7.25	1.48	9.71	0.86	13.8	23.6	Clear	None
10:20	5	20	100	13.67	0.66	7.25	1.47	9.04	0.81	13.8	18.8	Clear	None
10:25	5	25	100	13.67	0.79	7.25	1.45	9.12	0.79	13.9	14.6	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-15-72			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Haze. The wind is blowing S at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	56.84	**Total Depth (ft-bmp)**	70.3	**Water Column (ft)**	13.46	**Gallons in Well**	2.19
Purge Start	10:15	**Pump Intake (ft-bmp)**	68	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:10	**Volumes Purged**	0.66	**Sample ID**	MW-15-72_110322	**Sampled by**	Billy Cobern
Sample Time	11:10	**Gallons Purged**	1.45	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:20	0	0	100	57.14	0.13	7.17	1.23	13.2	4.05	13.9	-68.6	Clear	None
10:25	5	5	100	57.14	0.26	7.15	1.2	14.8	2.89	13.8	-69.4	Clear	None
10:30	5	10	100	57.14	0.40	7.1	1.19	10.7	2.06	13.5	-69.5	Clear	None
10:35	5	15	100	57.14	0.53	7.08	1.16	9.4	1.54	13.4	-70.6	Clear	None
10:40	5	20	100	57.14	0.66	7.06	1.15	9.31	1.27	13.4	-72.5	Clear	None
10:45	5	25	100	57.14	0.79	7.06	1.14	8.97	1.13	13.5	-73.2	Clear	None
10:50	5	30	100	57.14	0.92	7.02	1.11	7.61	1.1	14.7	-75.7	Clear	None
10:55	5	35	100	57.14	1.06	7	1.14	6.12	0.56	14.8	-78.4	Clear	None
11:00	5	40	100	57.14	1.19	7	1.15	6.02	0.47	14.8	-79.5	Clear	None
11:05	5	45	100	57.14	1.32	7	1.15	5.89	0.47	14.8	-79.7	Clear	None
11:10	5	50	100	57.14	1.45	7	1.15	5.65	0.46	14.8	-79.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-74			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.0 degrees F and Clear. The wind is blowing W/NW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.09	**Total Depth (ft-bmp)**	73.7	**Water Column (ft)**	9.61	**Gallons in Well**	1.56
Purge Start	16:15	**Pump Intake (ft-bmp)**	71	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	17:05	**Volumes Purged**	0.85	**Sample ID**	MW-16-74	**Sampled by**	Billy Cobern
Sample Time	17:05	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:20	0	0	100	64.80	0.13	6.9	2.34	434	1.92	17.6	-28.6	Clear	None
16:25	5	5	100	64.90	0.26	6.88	2.35	370	1.31	17.3	-30.6	Clear	None
16:30	5	10	100	65.00	0.40	6.87	2.35	246	0.92	17.1	-31.2	Clear	None
16:35	5	15	100	65.09	0.53	6.86	2.34	213	0.89	16.8	-29.8	Clear	None
16:40	5	20	100	65.18	0.66	6.85	2.34	189	0.69	16.8	-29	Clear	None
16:45	5	25	100	65.28	0.79	6.85	2.34	170	0.75	16.6	-31.7	Clear	None
16:50	5	30	100	65.28	0.92	6.85	2.34	152	0.65	16.5	-32.9	Clear	None
16:55	5	35	100	65.37	1.06	6.85	2.35	101	0.68	16.5	-33.5	Clear	None
17:00	5	40	100	65.37	1.19	6.85	2.34	97.2	0.73	16.5	-34.9	Clear	None
17:05	5	45	100	65.45	1.32	6.85	2.34	94.7	0.71	16.5	-35.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-75			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.9 degrees F and Clear. The wind is blowing W/SW at 4.7 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	62.29	**Total Depth (ft-bmp)**	74.05	**Water Column (ft)**	11.76	**Gallons in Well**	1.91
Purge Start	14:55	**Pump Intake (ft-bmp)**	72	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:45	**Volumes Purged**	0.69	**Sample ID**	MW-16-75_110122	**Sampled by**	Billy Cobern
Sample Time	15:45	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:00	0	0	100	62.60	0.13	7.08	2	29.7	2.58	17.7	-86.4	Clear	None
15:05	5	5	100	62.80	0.26	7.05	2.03	26.1	0.75	17.1	-89.1	Clear	None
15:10	5	10	100	62.99	0.40	7.03	2.03	21.7	0.72	17	-90.7	Clear	None
15:15	5	15	100	63.15	0.53	7.02	2.04	18.2	0.58	16.9	-91.3	Clear	None
15:20	5	20	100	63.31	0.66	7.01	2.05	12.6	0.57	16.8	-92.5	Clear	None
15:25	5	25	100	63.44	0.79	7.01	2.06	13.7	0.55	16.6	-94.3	Clear	None
15:30	5	30	100	63.56	0.92	7.01	2.07	10.3	0.8	16.6	-96.3	Clear	None
15:35	5	35	100	63.66	1.06	7.01	2.07	9.69	0.47	16.5	-97.5	Clear	None
15:40	5	40	100	63.76	1.19	7.01	2.07	9.51	0.51	16.5	-97.6	Clear	None
15:45	5	45	100	63.85	1.32	7.01	2.07	9.21	0.47	16.5	-97.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-77			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	37.9 degrees F and Fog/Mist. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	61.36	**Total Depth (ft-bmp)**	73.95	**Water Column (ft)**	12.59	**Gallons in Well**	2.05
Purge Start	09:05	**Pump Intake (ft-bmp)**	71.45	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	09:45	**Volumes Purged**	0.52	**Sample ID**	MW-16-77_110222	**Sampled by**	Austin Westhuis
Sample Time	09:40	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:10	0	0	100	62.63	0.13	7	3.13	21.6	0.54	12	35.3	Clear	None
09:15	5	5	100	63.90	0.26	7	3.11	13.7	0.5	12	30.1	Clear	None
09:20	5	10	100	65.50	0.40	6.98	3.08	8.43	0.48	12	22.1	Clear	None
09:25	5	15	100	66.22	0.53	6.98	3.07	5.51	0.48	12.1	19.1	Clear	None
09:30	5	20	100	66.53	0.66	6.99	3.04	3.29	0.5	12.2	16.8	Clear	None
09:35	5	25	100	66.73	0.79	6.99	3.05	2.81	0.5	12	15.1	Clear	None
09:40	5	30	100	66.82	0.92	7	3.04	2.62	0.5	12	14.3	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments: Well did not meet drawdown requirements. All other parameters stabilized.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-78			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing S/SW at 4.7 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.61	**Total Depth (ft-bmp)**	76.18	**Water Column (ft)**	11.57	**Gallons in Well**	1.88
Purge Start	13:00	**Pump Intake (ft-bmp)**	74.68	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:40	**Volumes Purged**	0.56	**Sample ID**	MW-16-78_110222	**Sampled by**	Austin Westhuis
Sample Time	13:35	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:05	0	0	100	64.61	0.13	6.88	1.52	131	1.23	14.3	-17.3	Clear	None
13:10	5	5	100	64.61	0.26	6.91	1.52	52.2	0.79	14.2	-33.4	Clear	None
13:15	5	10	100	64.61	0.40	6.93	1.52	21.1	0.68	14.1	-39.2	Clear	None
13:20	5	15	100	64.61	0.53	6.95	1.52	13.7	0.53	14	-45.3	Clear	None
13:25	5	20	100	64.61	0.66	6.96	1.52	10.9	0.55	14	-45.8	Clear	None
13:30	5	25	100	64.61	0.79	6.96	1.52	9.89	0.53	14	-48.2	Clear	None
13:35	5	30	100	64.61	0.92	6.96	1.52	9.7	0.51	14.1	-48.6	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-80			**Date**	11/4/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.9 degrees F and Mostly Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.18	**Total Depth (ft-bmp)**	73.33	**Water Column (ft)**	8.15	**Gallons in Well**	1.32
Purge Start	12:15	**Pump Intake (ft-bmp)**	70.83	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:45	**Volumes Purged**	0.60	**Sample ID**	MW-16-80_110422	**Sampled by**	Austin Westhuis
Sample Time	12:40	**Gallons Purged**	0.66	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:20	0	0	100	65.81	0.13	6.41	3.59	22.5	0.67	13.1	1.2	Clear	None
12:25	5	5	100	66.10	0.26	6.45	3.47	4.98	0.9	12.9	-6.5	Clear	None
12:30	5	10	100	66.10	0.40	6.47	3.41	2.59	1.04	12.7	-9.7	Clear	None
12:35	5	15	100	66.13	0.53	6.48	3.42	2.09	0.98	12.8	-11.6	Clear	None
12:40	5	20	100	66.13	0.66	6.49	3.42	1.74	0.97	12.7	-13.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-81			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing S at 11.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.02	**Total Depth (ft-bmp)**	77.2	**Water Column (ft)**	12.18	**Gallons in Well**	1.98
Purge Start	11:45	**Pump Intake (ft-bmp)**	75	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:20	**Volumes Purged**	0.47	**Sample ID**	MW-16-81_110322	**Sampled by**	Billy Cobern
Sample Time	12:20	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:50	0	0	100	65.31	0.13	7.31	1.26	10.4	6.93	16.9	66.8	Clear	None
11:55	5	5	100	65.31	0.26	6.87	2.77	8.93	2.76	16.7	75.6	Clear	None
12:00	5	10	100	65.31	0.40	6.76	2.82	8.05	1.19	16.6	84.3	Clear	None
12:05	5	15	100	65.31	0.53	6.76	2.83	7.62	1.01	16.6	86.8	Clear	None
12:10	5	20	100	65.31	0.66	6.75	2.84	7.32	0.92	16.7	92.3	Clear	None
12:15	5	25	100	65.31	0.79	6.76	2.84	6.73	0.94	16.9	96.4	Clear	None
12:20	5	30	100	65.31	0.92	6.78	2.79	6.45	1	17.1	99.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM,VOCs	40 mL Glass	3	HCL
PFAS	40 mL Glass	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-82			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	63.0 degrees F and Clear. The wind is blowing S at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	66.46	**Total Depth (ft-bmp)**	77.15	**Water Column (ft)**	10.69	**Gallons in Well**	1.74
Purge Start	12:30	**Pump Intake (ft-bmp)**	74.65	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:05	**Volumes Purged**	0.53	**Sample ID**	MW-16-82_110322	**Sampled by**	Austin Westhuis
Sample Time	13:00	**Gallons Purged**	0.79	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:35	0	0	100	67.40	0.13	6.92	1.25	17.2	0.52	16	-18.4	Clear	None
12:40	5	5	100	67.62	0.26	6.95	1.23	12.1	0.4	16.2	-36.3	Clear	None
12:45	5	10	100	67.80	0.40	6.97	1.24	6.69	0.34	15.9	-51	Clear	None
12:50	5	15	100	67.98	0.53	6.98	1.24	3.31	0.32	15.9	-53	Clear	None
12:55	5	20	100	68.09	0.66	6.99	1.24	3.09	0.3	15.8	-58.7	Clear	None
13:00	5	25	100	68.11	0.79	7	1.25	2.89	0.3	15.7	-60.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments: Well did not meet stabilization criteria. Well located next to an active sparge system. Collected groundwater sample after one hour of purging.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-84			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	71.1 degrees F and Clear. The wind is blowing SW at 16.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	69.59	**Total Depth (ft-bmp)**	81.2	**Water Column (ft)**	11.61	**Gallons in Well**	1.89
Purge Start	15:35	**Pump Intake (ft-bmp)**	79	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:20	**Volumes Purged**	0.63	**Sample ID**	MW-16-84_110322	**Sampled by**	Billy Cobern
Sample Time	16:20	**Gallons Purged**	1.19	**Replicate/ Code No.**	DUP-04_110322	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:40	0	0	100	69.60	0.13	7.62	0.79	19.9	6.51	19.9	-50.9	Clear	None
15:45	5	5	100	69.81	0.26	7.14	1.95	31.2	2.01	19	-78.2	Clear	None
15:50	5	10	100	69.92	0.40	7.1	1.97	36.7	0.75	18.3	-80.8	Clear	None
15:55	5	15	100	70.02	0.53	7.09	1.95	59.4	0.6	18.2	-81.7	Clear	None
16:00	5	20	100	70.12	0.66	7.09	1.93	80.8	0.52	18.2	-82.1	Clear	None
16:05	5	25	100	70.21	0.79	7.1	1.9	77.4	0.53	18.1	-81.7	Clear	None
16:10	5	30	100	70.30	0.92	7.1	1.86	70.4	0.54	18	-80.9	Clear	None
16:15	5	35	100	70.38	1.06	7.1	1.81	74.3	0.56	18.1	-80.8	Clear	None
16:20	5	40	100	70.45	1.19	7.1	1.81	72.9	0.59	18.1	-80.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM,VOCs	40 mL Glass	6	HCL

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-16-85			**Date**	11/4/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	63.0 degrees F and Mostly Clear. The wind is blowing S/SW at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	70.85	**Total Depth (ft-bmp)**	81.79	**Water Column (ft)**	10.94	**Gallons in Well**	1.78
Purge Start	10:35	**Pump Intake (ft-bmp)**	79.29	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:30	**Volumes Purged**	0.82	**Sample ID**	MW-16-85_110422	**Sampled by**	Austin Westhuis
Sample Time	11:25	**Gallons Purged**	1.32	**Replicate/ Code No.**	MS/MSD	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:40	0	0	100	71.95	0.13	7.15	0.91	222	0.61	15.1	2.4	Clear	None
10:45	5	5	100	72.22	0.26	7.15	0.85	89.1	0.59	15.1	-11.4	Clear	None
10:50	5	10	100	73.70	0.40	7.24	0.78	41.3	1.16	15.2	-26.1	Clear	None
10:55	5	15	100	74.71	0.53	7.26	0.76	19.2	1.73	15.1	-25.8	Clear	None
11:00	5	20	100	75.20	0.66	7.26	0.76	12.5	1.84	15.1	-25.9	Clear	None
11:05	5	25	100	75.32	0.79	7.25	0.77	12	1.91	15.1	-25.1	Clear	None
11:10	5	30	100	75.36	0.92	7.25	0.85	7.14	1.79	15	-28.6	Clear	None
11:15	5	35	100	75.36	1.06	7.24	0.88	3.89	1.61	15	-32.5	Clear	None
11:20	5	40	100	75.36	1.19	7.25	0.9	3.41	1.49	15	-37.9	Clear	None
11:25	5	45	100	75.36	1.32	7.25	0.9	3.12	1.47	15	-38.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	9	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-17-86			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	69.1 degrees F and Clear. The wind is blowing S/SW at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.55	**Total Depth (ft-bmp)**	81.4	**Water Column (ft)**	15.85	**Gallons in Well**	2.58
Purge Start	14:25	**Pump Intake (ft-bmp)**	79	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:10	**Volumes Purged**	0.46	**Sample ID**	MW-17-86_110322	**Sampled by**	Billy Cobern
Sample Time	15:10	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:30	0	0	100	65.65	0.13	7.5	1.94	18.3	5.32	19.2	-54.8	Clear	None
14:35	5	5	100	65.65	0.26	7.11	2.06	14.4	1.12	17.3	-63.3	Clear	None
14:40	5	10	100	65.65	0.40	7.06	2.1	10.1	0.56	17.1	-70	Clear	None
14:45	5	15	100	65.65	0.53	7.03	2.14	8.6	0.46	16.7	-72.9	Clear	None
14:50	5	20	100	65.65	0.66	7.02	2.15	4.56	0.39	16.7	-74.8	Clear	None
14:55	5	25	100	65.65	0.79	7.01	2.15	3.71	0.33	16.8	-76.3	Clear	None
15:00	5	30	100	65.65	0.92	7.01	2.15	2.67	0.36	16.6	-76.7	Clear	None
15:05	5	35	100	65.65	1.06	7.01	2.15	2.47	0.35	16.7	-76.8	Clear	None
15:10	5	40	100	65.65	1.19	7.01	2.15	2.38	0.34	16.7	-77	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM,VOCs	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant-2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-88			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	50.0 degrees F and Clear. The wind is blowing E/SE at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.74	**Total Depth (ft-bmp)**	15.02	**Water Column (ft)**	9.28	**Gallons in Well**	1.51
Purge Start	13:30	**Pump Intake (ft-bmp)**	12.52	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:05	**Volumes Purged**	0.61	**Sample ID**	MW-18-88_110822	**Sampled by**	Austin Westhuis
Sample Time	14:00	**Gallons Purged**	0.79	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:35	0	0	100	6.00	0.13	7.22	0.72	7.48	0.54	15.9	-32.8	Clear	None
13:45	10	10	100	6.00	0.40	7.08	0.71	1.8	0.09	16	-22	Clear	None
13:50	5	15	100	6.00	0.53	7.08	0.71	1.65	0.08	16	-21.5	Clear	None
13:55	5	20	100	6.00	0.66	7.07	0.71	1.43	0.08	15.9	-19.8	Clear	None
14:00	5	25	100	6.00	0.79	7.06	0.71	1.29	0.08	15.9	-18.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-89			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	52.0 degrees F and Clear. The wind is blowing E/NE at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.67	**Total Depth (ft-bmp)**	15.62	**Water Column (ft)**	6.95	**Gallons in Well**	1.13
Purge Start	15:00	**Pump Intake (ft-bmp)**	13.12	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:30	**Volumes Purged**	0.70	**Sample ID**	MW-18-89_110822	**Sampled by**	Austin Westhuis
Sample Time	15:25	**Gallons Purged**	0.66	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:05	0	0	100	9.48	0.13	7.86	0.84	11.8	0.55	16.2	50.8	Clear	None
15:10	5	5	100	9.93	0.26	7.76	0.84	3.59	0.35	16	59.9	Clear	None
15:15	5	10	100	10.31	0.40	7.74	0.84	2.91	0.2	16	61.9	Clear	None
15:20	5	15	100	10.76	0.53	7.75	0.85	2.09	0.19	16	60.5	Clear	None
15:25	5	20	100	11.53	0.66	7.74	0.84	1.93	0.19	16	60.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well did not meet drawdown requirements.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-90			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	43.0 degrees F and Clear. The wind is blowing S at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	10.96	**Total Depth (ft-bmp)**	23.12	**Water Column (ft)**	12.16	**Gallons in Well**	1.98
Purge Start	08:36	**Pump Intake (ft-bmp)**	21	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	09:20	**Volumes Purged**	0.47	**Sample ID**	MW-18-90_110922	**Sampled by**	Cooper Osgood
Sample Time	09:10	**Gallons Purged**	0.93	**Replicate/ Code No.**	DUP-03_110922	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:38	0	0	110	10.96	0.06	12.26	1.78	20.9	1.42	13.2	89.1	Clear	None
08:43	5	5	110	10.96	0.20	12.28	1.99	35.8	0.23	13.6	94.5	Clear	None
08:48	5	10	110	11.05	0.35	12.29	2.09	0.78	0.2	13.9	92.7	Clear	None
08:53	5	15	110	11.05	0.49	12.3	2.14	0.02	0.15	14	90	Clear	None
08:58	5	20	110	11.05	0.64	12.31	2.17	0.02	0.13	14	87.6	Clear	None
09:03	5	25	110	11.05	0.78	12.31	2.19	0.02	0.12	14.1	85.1	Clear	None
09:08	5	30	110	11.05	0.93	12.31	2.2	0.02	0.12	14.2	82.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing Mi

Well Locked at Arrival: yes

Condition of Well: Good condition

Well Locked at Departure: yes

Well Completion: Stick-up

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-91			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	52.0 degrees F and Clear. The wind is blowing E/NE at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.39	**Total Depth (ft-bmp)**	14.99	**Water Column (ft)**	7.60	**Gallons in Well**	1.23
Purge Start	14:20	**Pump Intake (ft-bmp)**	12.49	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:50	**Volumes Purged**	0.64	**Sample ID**	MW-18-91_110822	**Sampled by**	Austin Westhuis
Sample Time	14:45	**Gallons Purged**	0.66	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:25	0	0	100	8.55	0.13	7.69	0.71	2.39	0.27	15.9	11.1	Clear	None
14:30	5	5	100	9.01	0.26	7.67	0.71	2.11	0.16	15.7	2.3	Clear	None
14:35	5	10	100	9.25	0.40	7.66	0.71	1.91	0.14	15.7	-1.3	Clear	None
14:40	5	15	100	9.48	0.53	7.67	0.71	1.74	0.13	15.7	-3.9	Clear	None
14:45	5	20	100	9.68	0.66	7.68	0.71	1.56	0.13	15.6	-6.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well did not meet drawdown requirements.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-92			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	50.0 degrees F and Clear. The wind is blowing E/SE at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	21.21	**Total Depth (ft-bmp)**	30.12	**Water Column (ft)**	8.91	**Gallons in Well**	1.45
Purge Start	13:34	**Pump Intake (ft-bmp)**	27.75	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:25	**Volumes Purged**	1.20	**Sample ID**	MW-18-92_110822	**Sampled by**	Cooper Osgood
Sample Time	14:20	**Gallons Purged**	1.74	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:38	0	0	150	21.21	0.16	6.98	1.31	9.11	1.37	13.4	42.8	Clear	None
13:43	5	5	150	21.21	0.36	6.98	1.3	0.02	0.37	13.5	33.7	Clear	None
13:48	5	10	150	21.21	0.55	6.97	1.28	0.02	0.26	13.8	28	Clear	None
13:53	5	15	150	21.21	0.75	6.95	1.27	0.02	0.22	13.6	25.3	Clear	None
13:58	5	20	150	21.21	0.95	6.95	1.26	0.02	0.22	13.5	23.6	Clear	None
14:03	5	25	150	21.21	1.15	6.95	1.25	0.02	0.4	13.3	22	Clear	None
14:08	5	30	150	24.02	1.35	6.95	1.25	0.02	0.26	13.3	20.2	Clear	None
14:13	5	35	150	24.12	1.55	6.95	1.25	0.02	0.26	13.3	18.9	Clear	None
14:18	5	40	150	24.26	1.74	6.95	1.24	0.02	0.26	13.4	17.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing Mi
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-93			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	53.1 degrees F and Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	47.65	**Total Depth (ft-bmp)**	84.97	**Water Column (ft)**	37.32	**Gallons in Well**	6.06
Purge Start	15:15	**Pump Intake (ft-bmp)**	82.47	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:05	**Volumes Purged**	0.22	**Sample ID**	MW-18-93_110722	**Sampled by**	Austin Westhuis
Sample Time	16:00	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:20	0	0	100	48.15	0.13	7.74	0.67	252	6.16	13.1	-27.1	Clear	None
15:25	5	5	100	49.50	0.26	7.65	0.67	141	5.01	12.8	-27.1	Clear	None
15:30	5	10	100	51.08	0.40	7.61	0.67	51.6	4.54	12.8	-43.4	Clear	None
15:35	5	15	100	51.48	0.53	7.6	0.67	37.1	4.39	12.7	-55.8	Clear	None
15:40	5	20	100	53.22	0.66	7.59	0.66	29.1	4.19	12.7	-61.2	Clear	None
15:45	5	25	100	54.44	0.79	7.57	0.66	4.67	4.09	12.7	-69.1	Clear	None
15:50	5	30	100	56.13	0.92	7.57	0.66	2.79	4.09	12.7	-69.9	Clear	None
15:55	5	35	100	57.63	1.06	7.56	0.66	2.12	4.11	12.6	-68.7	Clear	None
16:00	5	40	100	57.91	1.19	7.56	0.66	1.9	4.11	12.6	-68.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments: Well did not meet drawdown requirements.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-94			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	34.0 degrees F and Clear. The wind is blowing E/NE at 3.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	53.53	**Total Depth (ft-bmp)**	79.68	**Water Column (ft)**	26.15	**Gallons in Well**	4.25
Purge Start	08:25	**Pump Intake (ft-bmp)**	77.18	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	09:10	**Volumes Purged**	0.56	**Sample ID**	MW-18-94_110822	**Sampled by**	Austin Westhuis
Sample Time	09:05	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:30	0	0	100	53.53	0.13	7.08	6.31	212	1.37	12.8	-57.9	Clear	None
08:35	5	5	100	53.53	0.26	7.06	6.31	61.9	0.45	13.3	-64.5	Clear	None
08:40	5	10	100	53.53	0.40	7.06	6.32	15.7	0.38	13.2	-65.9	Clear	None
08:45	5	15	100	53.53	0.53	7.05	6.34	3.08	0.34	13.3	-67.6	Clear	None
08:50	5	20	100	53.53	0.66	7.04	6.33	2.12	0.25	13.3	-69.8	Clear	None
08:55	5	25	100	53.53	0.79	7.03	6.35	1.73	0.16	13.4	-71.9	Clear	None
09:00	5	30	100	53.53	0.92	7.03	6.37	1.51	0.15	13.3	-73.5	Clear	None
09:05	5	35	100	53.53	1.06	7.03	6.39	1.38	0.15	13.4	-74.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-95			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.0 degrees F and Mostly Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	7.11	**Total Depth (ft-bmp)**	12.45	**Water Column (ft)**	5.34	**Gallons in Well**	0.87
Purge Start	15:25	**Pump Intake (ft-bmp)**	9.95	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:55	**Volumes Purged**	1.82	**Sample ID**	MW-18-95_110922	**Sampled by**	Austin Westhuis
Sample Time	15:50	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:30	0	0	200	7.49	0.26	7.29	0.62	2.12	1.88	15.7	98	Clear	None
15:35	5	5	200	7.49	0.53	7.23	0.62	1.75	1.73	15.6	101.8	Clear	None
15:40	5	10	200	7.49	0.79	7.21	0.62	1.7	1.4	15.5	103.7	Clear	None
15:45	5	15	200	7.49	1.06	7.21	0.62	1.43	1.38	15.5	102.2	Clear	None
15:50	5	20	200	7.49	1.32	7.23	0.62	1.03	1.31	15.4	101.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-97			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	46.9 degrees F and Clear. The wind is blowing W at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.09	**Total Depth (ft-bmp)**	91.69	**Water Column (ft)**	28.60	**Gallons in Well**	4.65
Purge Start	10:35	**Pump Intake (ft-bmp)**	89.19	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:10	**Volumes Purged**	0.20	**Sample ID**	MW-18-97_110722	**Sampled by**	Austin Westhuis
Sample Time	11:05	**Gallons Purged**	0.79	**Replicate/ Code No.**	Dup-07	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:40	0	0	100	63.09	0.13	6.89	1.94	22.9	0.22	13.3	-18.6	Clear	None
10:45	5	5	100	63.09	0.26	6.89	1.96	9.81	0.19	13.4	-26.3	Clear	None
10:50	5	10	100	63.09	0.40	6.89	1.96	3.92	0.17	13.4	-28.4	Clear	None
10:55	5	15	100	63.09	0.53	6.89	1.98	2.29	0.23	13.2	-31.6	Clear	None
11:00	5	20	100	63.09	0.66	6.89	1.98	2.09	0.22	13.3	-32.3	Clear	None
11:05	5	25	100	63.09	0.79	6.9	1.98	1.58	0.21	13.3	-35	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-98			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	43.0 degrees F and Clear. The wind is blowing E/NE at 11.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.23	**Total Depth (ft-bmp)**	14.94	**Water Column (ft)**	9.71	**Gallons in Well**	1.58
Purge Start	11:06	**Pump Intake (ft-bmp)**	12.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:15	**Volumes Purged**	1.24	**Sample ID**	MW-18-98_110822	**Sampled by**	Cooper Osgood
Sample Time	12:10	**Gallons Purged**	1.97	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:08	0	0	120	5.23	0.06	7.7	0.567	40	0.34	14.4	43.5	Clear	None
11:13	5	5	120		0.22	7.69	0.553	15.5	0.32	14.5	42.5	Clear	None
11:18	5	10	120	6.90	0.38	7.69	0.548	5.06	0.3	14.5	40.4	Clear	None
11:23	5	15	120	7.15	0.54	7.69	0.545	4.34	0.3	14.5	38.6	Clear	None
11:28	5	20	120	7.55	0.70	7.69	0.543	8.26	0.29	14.2	36.9	Clear	None
11:33	5	25	120	7.84	0.86	7.69	0.542	8.47	0.29	14.4	35.2	Clear	None
11:38	5	30	120	8.01	1.01	7.68	0.54	5.06	0.25	14.5	33.7	Clear	None
11:43	5	35	120	8.20	1.17	7.69	0.539	24.3	0.28	14.4	32	Clear	None
11:48	5	40	120	8.29	1.33	7.68	0.538	16.9	0.24	14.8	30.5	Clear	None
11:53	5	45	120	8.46	1.49	7.68	0.532	3.15	0.21	14.9	28.2	Clear	None
11:58	5	50	120	8.55	1.65	7.68	0.53	0.02	0.21	14.8	27	Clear	None
12:03	5	55	120	8.68	1.81	7.68	0.528	2.75	0.28	14.9	24.6	Clear	None
12:08	5	60	120	8.68	1.97	7.68	0.526	5.08	0.21	15.2	22.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Sampled at 60 min do not stable turb not stable

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing Mi
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-99			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	52.0 degrees F and Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.10	**Total Depth (ft-bmp)**	16.95	**Water Column (ft)**	12.85	**Gallons in Well**	2.09
Purge Start	13:10	**Pump Intake (ft-bmp)**	14.75	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:20	**Volumes Purged**	1.14	**Sample ID**	MW-18-99_110722	**Sampled by**	Cooper Osgood
Sample Time	14:15	**Gallons Purged**	2.38	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:12	0	0	150	4.10	0.08	8.2	1.72	27.3	2.55	15.6	75.8	Clear	None
13:17	5	5	150	5.40	0.28	8.2	1.78	12.6	0.5	15.8	71.4	Clear	None
13:22	5	10	150	5.95	0.48	8.2	1.77	0.02	0.38	15.9	69.3	Clear	None
13:27	5	15	150	6.32	0.67	8.2	1.76	0.02	0.33	15.9	66.1	Clear	None
13:32	5	20	150	6.62	0.87	8.21	1.74	0.02	0.23	15.9	62	Clear	None
13:37	5	25	150	6.78	1.07	8.23	1.7	0.02	0.22	16	56.5	Clear	None
13:42	5	30	150	6.90	1.27	8.27	1.64	0.02	0.27	16	50.8	Clear	None
13:47	5	35	150	6.98	1.39	8.32	1.57	0.02	0.37	15.9	48.3	Clear	None
13:52	5	40	150	7.05	1.59	8.66	1.53	0.02	0.3	15.9	47.2	Clear	None
13:57	5	45	150	7.10	1.78	8.4	1.5	0.02	0.28	15.7	46	Clear	None
14:02	5	50	150	7.10	1.98	8.43	1.5	0.02	0.2	15.8	43.2	Clear	None
14:07	5	55	150	7.10	2.18	8.47	1.48	0.02	0.22	15.9	39.8	Clear	None
14:12	5	60	150	7.10	2.38	8.56	1.47	0.02	0.17	15.8	35.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Sampled at 60 min DO not stable ph not stable

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing Mi
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-100			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	48.9 degrees F and Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	11.25	**Total Depth (ft-bmp)**	15.78	**Water Column (ft)**	4.53	**Gallons in Well**	0.74
Purge Start	11:16	**Pump Intake (ft-bmp)**	13.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:33	**Volumes Purged**	2.74	**Sample ID**	MW-18-100_110722	**Sampled by**	Cooper Osgood
Sample Time	12:25	**Gallons Purged**	2.03	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:20	0	0	120	11.25	0.13	7.66	0.93	41.2	3.21	14.2	98.6	Clear	None
11:25	5	5	120	11.70	0.29	7.75	0.85	40	4.75	13.9	67.7	Clear	None
11:30	5	10	120	12.00	0.44	7.71	0.84	42	2.66	14.5	57.6	Clear	None
11:35	5	15	120	12.42	0.60	7.65	0.86	21.4	2.59	14.8	49.3	Clear	None
11:40	5	20	120	12.50	0.76	7.64	0.86	21.4	2.2	14.7	46	Clear	None
11:45	5	25	120	12.50	0.92	7.69	0.85	30.2	4.45	14	44.2	Clear	None
11:50	5	30	120	12.50	1.08	7.62	0.85	34.7	2.75	15	41.8	Clear	None
11:55	5	35	120	12.75	1.24	7.67	0.85	42.5	4.29	14.5	39.8	Clear	None
12:00	5	40	120	12.75	1.39	7.72	0.85	45.6	5.44	14.1	39.1	Clear	None
12:05	5	45	120	12.75	1.55	7.73	0.85	46.4	5.88	14.3	38.4	Clear	None
12:10	5	50	120	12.75	1.71	7.68	0.85	41.1	5.52	14.4	37.2	Clear	None
12:15	5	55	120	12.75	1.87	7.77	0.85	41.8	6.95	15.3	36.3	Clear	None
12:20	5	60	120	12.75	2.03	7.76	0.85	47.2	6.75	14.1	36.6	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Sampled at 60min Do not stable, temp not stable, turb not stable

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing, Mi
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-101			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	52.0 degrees F and Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.05	**Total Depth (ft-bmp)**	86.77	**Water Column (ft)**	23.72	**Gallons in Well**	3.85
Purge Start	12:15	**Pump Intake (ft-bmp)**	84.27	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:55	**Volumes Purged**	0.27	**Sample ID**	MW-18-101_110722	**Sampled by**	Austin Westhuis
Sample Time	12:50	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:20	0	0	100	63.05	0.13	6.91	3.5	44.9	0.25	13.3	-102.7	Clear	None
12:25	5	5	100	63.05	0.26	6.9	3.65	19.8	0.22	13.4	-121.3	Clear	None
12:30	5	10	100	63.05	0.40	6.88	4.35	12.1	0.19	13.3	-122.3	Clear	None
12:35	5	15	100	63.05	0.53	6.89	4.55	3.08	0.17	13.2	-118.3	Clear	None
12:40	5	20	100	63.05	0.66	6.9	4.7	2.16	0.1	13.3	-113.6	Clear	None
12:45	5	25	100	63.05	0.79	6.91	4.71	1.61	0.1	13.3	-111.5	Clear	None
12:50	5	30	100	63.05	0.92	6.91	4.74	1.48	0.11	13.2	-109.6	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up

Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-102			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	43.0 degrees F and Clear. The wind is blowing S at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	12.94	**Total Depth (ft-bmp)**	14.7	**Water Column (ft)**	1.76	**Gallons in Well**	0.29
Purge Start	08:45	**Pump Intake (ft-bmp)**	13.7	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	09:15	**Volumes Purged**	5.47	**Sample ID**	MW-18-102_110922	**Sampled by**	Austin Westhuis
Sample Time	09:10	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:50	0	0	200	13.21	0.26	7.28	0.66	2.34	3.2	13.5	-16.7	Clear	None
08:55	5	5	200	13.39	0.53	7.27	0.66	1.71	1.09	13.5	-29.5	Clear	None
09:00	5	10	200	13.43	0.79	7.26	0.66	1.47	0.94	13.6	-29.9	Clear	None
09:05	5	15	200	13.43	1.06	7.24	0.66	1.34	0.92	13.6	-30	Clear	None
09:10	5	20	200	13.43	1.32	7.2	0.66	1.22	0.91	13.4	-28.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-103			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	46.0 degrees F and Clear. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.65	**Total Depth (ft-bmp)**	10.73	**Water Column (ft)**	6.08	**Gallons in Well**	0.99
Purge Start	09:35	**Pump Intake (ft-bmp)**	8.23	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:10	**Volumes Purged**	1.87	**Sample ID**	MW-18-103_110922	**Sampled by**	Austin Westhuis
Sample Time	10:00	**Gallons Purged**	1.32	**Replicate/ Code No.**	MS/MSD	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:40	0	0	200	5.12	0.26	6.98	0.84	2.85	0.46	13.3	-18.1	Clear	None
09:45	5	5	200	5.12	0.53	6.99	0.84	2.13	0.48	13.3	-21	Clear	None
09:50	5	10	200	5.12	0.79	6.99	0.84	2.01	0.28	13.3	-20.6	Clear	None
09:55	5	15	200	5.12	1.06	6.99	0.84	1.78	0.27	13.3	-20	Clear	None
10:00	5	20	200	5.12	1.32	6.99	0.84	1.71	0.27	13.2	-19.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	6	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-104			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing S at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	4.39	**Total Depth (ft-bmp)**	9.48	**Water Column (ft)**	5.09	**Gallons in Well**	0.83
Purge Start	10:30	**Pump Intake (ft-bmp)**	6.98	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:15	**Volumes Purged**	2.86	**Sample ID**	MW-18-104_110922	**Sampled by**	Austin Westhuis
Sample Time	11:10	**Gallons Purged**	2.11	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:35	0	0	200	5.01	0.26	7.15	0.66	3.57	2.54	13.9	20.7	Clear	None
10:40	5	5	200	5.22	0.53	7.12	0.66	2.21	2.69	14	21.9	Clear	None
10:45	5	10	200	5.49	0.79	7.14	0.66	2.09	2.91	14	22.2	Clear	None
10:50	5	15	200	6.01	1.06	7.14	0.66	1.71	1.84	14	23.2	Clear	None
10:55	5	20	200	6.10	1.32	7.14	0.66	1.43	1.73	14.1	23	Clear	None
11:00	5	25	200	6.14	1.59	7.15	0.66	1.34	1.42	14.1	23.1	Clear	None
11:05	5	30	200	6.14	1.85	7.15	0.66	1.31	1.39	14.1	22.6	Clear	None
11:10	5	35	200	6.14	2.11	7.15	0.65	1.22	1.37	14.1	22.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-18-105			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	59.0 degrees F and Mostly Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	2.68	**Total Depth (ft-bmp)**	11.2	**Water Column (ft)**	8.52	**Gallons in Well**	1.38
Purge Start	12:30	**Pump Intake (ft-bmp)**	8.7	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:00	**Volumes Purged**	1.15	**Sample ID**	MW-18-105_110922	**Sampled by**	Austin Westhuis
Sample Time	12:55	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:35	0	0	200	3.38	0.26	7.18	0.587	2.93	2.16	13.3	31.8	Clear	None
12:40	5	5	200	3.70	0.53	7.12	0.591	1.69	1.79	13.3	35.3	Clear	None
12:45	5	10	200	4.02	0.79	7.12	0.596	1.6	1.6	13.1	36.5	Clear	None
12:50	5	15	200	4.08	1.06	7.12	0.597	1.44	1.53	13.1	36.8	Clear	None
12:55	5	20	200	4.11	1.32	7.13	0.597	1.24	1.51	13.1	36.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-107			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	52.0 degrees F and Clear. The wind is blowing E/NE at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	24.10	**Total Depth (ft-bmp)**	28.87	**Water Column (ft)**	4.77	**Gallons in Well**	0.78
Purge Start	15:00	**Pump Intake (ft-bmp)**	26.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:47	**Volumes Purged**	1.81	**Sample ID**	MW-19-107_110822	**Sampled by**	Cooper Osgood
Sample Time	15:45	**Gallons Purged**	1.41	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:01	0	0	130	24.10	0.03	6.97	0.98	11.5	1.51	13.4	-6	Clear	None
15:06	5	5	130	24.35	0.21	6.94	0.99	0.02	0.63	13.3	-17	Clear	None
15:11	5	10	130	24.40	0.38	6.94	1	0.02	0.38	13.3	-21.6	Clear	None
15:16	5	15	130	24.53	0.55	6.94	1	0.02	0.31	13.2	-25.7	Clear	None
15:21	5	20	130	24.64	0.72	6.96	0.99	0.02	0.47	13.2	-26.8	Clear	None
15:26	5	25	130	24.69	0.89	6.95	1	0.02	0.34	13.2	-28.3	Clear	None
15:31	5	30	130	24.72	1.06	6.94	1	0.02	0.28	13.1	-30.7	Clear	None
15:36	5	35	130	24.72	1.24	6.94	1	0.02	0.28	13.1	-32.5	Clear	None
15:41	5	40	130	24.72	1.41	6.94	1	0.02	0.28	13.2	-34.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing, Mi
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-108			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	46.0 degrees F and Clear. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	21.16	**Total Depth (ft-bmp)**	30.02	**Water Column (ft)**	8.86	**Gallons in Well**	1.44
Purge Start	10:12	**Pump Intake (ft-bmp)**	28.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:17	**Volumes Purged**	1.17	**Sample ID**	MW-19-108_110922	**Sampled by**	Cooper Osgood
Sample Time	11:10	**Gallons Purged**	1.68	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:15	0	0	120	21.16	0.10	6.88	1.6	1100	2.85	14.2	133	Clear	Medium
10:20	5	5	120	21.16	0.25	6.85	1.63	1030	0.55	14.1	101.9	Clear	Medium
10:25	5	10	120	21.30	0.41	6.85	1.63	396	0.4	14.1	85.1	Clear	Medium
10:30	5	15	120	21.30	0.57	6.85	1.64	151	0.32	14.1	76.7	Clear	Medium
10:35	5	20	120	22.40	0.73	6.85	1.64	73.6	0.28	14.1	69.7	Clear	Medium
10:40	5	25	120	22.40	0.89	6.85	1.64	40	0.27	14.1	63.5	Clear	Medium
10:45	5	30	120	21.30	1.05	6.85	1.64	21	0.25	14.2	56.7	Clear	Medium
10:50	5	35	120	21.30	1.20	6.85	1.64	11.3	0.24	14.2	53.2	Clear	Medium
10:55	5	40	120	21.30	1.36	6.85	1.64	0.02	0.26	14.3	48.7	Clear	Medium
11:00	5	45	120	21.30	1.52	6.85	1.64	0.02	0.26	14.3	45.5	Clear	Medium
11:05	5	50	120	21.30	1.68	6.85	1.63	0.02	0.27	14.4	42.1	Clear	Medium

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing Mi
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-111			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	34.0 degrees F and Clear. The wind is blowing E/NE at 3.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	25.80	**Total Depth (ft-bmp)**	27.45	**Water Column (ft)**	1.65	**Gallons in Well**	0.27
Purge Start	09:01	**Pump Intake (ft-bmp)**	26	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:26	**Volumes Purged**	6.85	**Sample ID**	MW-19-111_110822	**Sampled by**	Cooper Osgood
Sample Time	10:15	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:11	0	0	100	25.80	0.26	6.91	1.6	655	2.04	11.5	60.4	Gray	Medium
09:16	5	5	100	25.98	0.40	6.92	1.58	556	1.49	12.3	46.5	Gray	Medium
09:21	5	10	100	25.98	0.53	6.91	1.59	589	1.15	12.2	38.4	Gray	Medium
09:26	5	15	100	25.98	0.66	6.91	1.59	325	0.98	12.4	34.6	Gray	Medium
09:31	5	20	100	25.98	0.79	6.9	1.58	173	0.79	12.5	31.8	Gray	Medium
09:36	5	25	100	25.98	0.92	6.9	1.58	111	0.7	12.9	29.2	Gray	Medium
09:41	5	30	100	25.98	1.06	6.89	1.58	61.4	0.54	12.5	27.5	Gray	Medium
09:46	5	35	100	25.98	1.19	6.9	1.56	36.7	0.4	12.5	25.9	Gray	Medium
09:51	5	40	100	25.98	1.32	6.9	1.56	17.6	0.37	11.7	24.5	Gray	Medium
09:56	5	45	100	25.98	1.45	6.9	1.56	21.2	0.46	12.1	23.4	Gray	Medium
10:01	5	50	100	25.98	1.59	6.9	1.55	197	1.08	12.8	23.7	Gray	Medium
10:06	5	55	100	25.98	1.72	6.9	1.54	224	0.7	12.9	22.7	Gray	Medium
10:11	5	60	100	25.98	1.85	6.89	1.51	231	0.36	13.6	21	Gray	Medium

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Sampled at 60 min turb not stable do not stable temp not stable

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing Mi
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-112			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	52.0 degrees F and Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.09	**Total Depth (ft-bmp)**	17.6	**Water Column (ft)**	9.51	**Gallons in Well**	1.55
Purge Start	14:50	**Pump Intake (ft-bmp)**	15.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	16:01	**Volumes Purged**	1.56	**Sample ID**	MW-19-112	**Sampled by**	Cooper Osgood
Sample Time	15:55	**Gallons Purged**	2.42	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:51	0	0	150	8.09	0.04	6.43	7.85	80.2	1.05	17.3	-11.3	Gray	None
14:56	5	5	150	8.09	0.24		8.02	58.9	0.3	17.6	-52.3	Gray	None
15:01	5	10	150	8.09	0.44	6.55	7.9	78.4	0.19	17.7	-62.9	Gray	None
15:06	5	15	150	8.09	0.63	6.56	7.87	90.8	0.2	17.6	-65.4	Gray	None
15:11	5	20	150	8.09	0.83	6.56	7.84	102	0.19	17.5	-67.5	Gray	None
15:16	5	25	150	8.09	1.03	6.56	7.83	102	0.21	17.6	-69.1	Gray	None
15:21	5	30	150	8.09	1.23	6.56	7.82	103	0.23	17.7	-70.4	Gray	None
15:26	5	35	150	8.09	1.43	6.55	7.86	97.7	0.25	17.6	-71.6	Gray	None
15:31	5	40	150	8.09	1.62	6.56	7.85	88	0.26	17.5	-72.5	Gray	None
15:36	5	45	150	8.09	1.82	6.55	7.84	73.3	0.29	17.5	-73	Gray	None
15:41	5	50	150	8.09	2.02	6.55	7.83	60.7	0.29	17.5	-73.3	Gray	None
15:46	5	55	150	8.09	2.22	6.55	7.83	49.6	0.32	17.6	-73.6	Gray	None
15:51	5	60	150	8.09	2.42	6.55	7.83	47.6	0.55	17.6	-73.8	Gray	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Turbidity not stable do not stable

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing Mi
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-114			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.0 degrees F and Mostly Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	3.38	**Total Depth (ft-bmp)**	10.78	**Water Column (ft)**	7.40	**Gallons in Well**	1.20
Purge Start	13:20	**Pump Intake (ft-bmp)**	8.28	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:00	**Volumes Purged**	1.76	**Sample ID**	MW-19-114_110922	**Sampled by**	Austin Westhuis
Sample Time	13:55	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:25	0	0	200	4.18	0.26	7.28	0.547	4.71	1.02	14.3	42	Clear	None
13:30	5	5	200	4.18	0.53	7.2	0.547	2.28	0.7	14.4	44.6	Clear	None
13:35	5	10	200	4.18	0.79	7.2	0.549	2.08	0.61	14.3	44.3	Clear	None
13:40	5	15	200	4.18	1.06	7.19	0.547	1.81	0.48	14.3	44.1	Clear	None
13:45	5	20	200	4.18	1.32	7.19	0.546	1.63	0.33	14.2	44.3	Clear	None
13:50	5	25	200	4.18	1.59	7.18	0.546	1.43	0.31	14.1	44.4	Clear	None
13:55	5	30	200	4.18	1.85	7.18	0.545	1.22	0.3	14.1	44.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-115			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.0 degrees F and Clear. The wind is blowing S/SE at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	58.70	**Total Depth (ft-bmp)**	80.3	**Water Column (ft)**	21.60	**Gallons in Well**	3.51
Purge Start	14:20	**Pump Intake (ft-bmp)**	77.8	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:00	**Volumes Purged**	0.30	**Sample ID**	MW-19-115_110222	**Sampled by**	Austin Westhuis
Sample Time	14:55	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:25	0	0	100	60.15	0.13	6.89	3.05	149	0.47	15.05	10.7	Clear	None
14:30	5	5	100	60.90	0.26	6.9	3.05	122	0.35	15	8.6	Clear	None
14:35	5	10	100	61.80	0.40	6.91	3.05	101	0.42	14.8	5.5	Clear	None
14:40	5	15	100	62.45	0.53	6.92	3.04	12.2	0.41	14.8	2.3	Clear	None
14:45	5	20	100	62.76	0.66	6.92	3.04	9.18	0.4	14.8	1.4	Clear	None
14:50	5	25	100	62.82	0.79	6.93	3.05	8.6	0.39	14.8	-2.3	Clear	None
14:55	5	30	100	62.82	0.92	6.93	3.05	811	0.39	14.8	-3.3	Clear	None

Constituent Sampled	**Container**	**Number**	**Preservative**
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments: Well did not meet drawdown requirements. All other parameters stabilized.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Well Locked at Arrival: yes

Condition of Well: Good condition

Well Locked at Departure: yes

Well Completion: Stick-up

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-116			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.9 degrees F and Clear. The wind is blowing S/SE at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	56.76	**Total Depth (ft-bmp)**	73.18	**Water Column (ft)**	16.42	**Gallons in Well**	2.67
Purge Start	15:45	**Pump Intake (ft-bmp)**	70.68	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:20	**Volumes Purged**	0.35	**Sample ID**	MW-19-116_110222	**Sampled by**	Austin Westhuis
Sample Time	16:15	**Gallons Purged**	0.79	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:50	0	0	100	56.96	0.13	6.88	1.43	5.76	0.38	15.2	-41.7	Clear	None
15:55	5	5	100	56.96	0.26	6.91	1.44	3.81	0.26	15.1	-48.1	Clear	None
16:00	5	10	100	56.96	0.40	6.93	1.44	2.88	0.25	15	-52.5	Clear	None
16:05	5	15	100	56.96	0.53	6.94	1.45	2.04	0.21	15.1	-57.5	Clear	None
16:10	5	20	100	56.96	0.66	6.95	1.44	1.91	0.21	15	-59.1	Clear	None
16:15	5	25	100	56.96	0.79	6.96	1.45	1.51	0.2	15	-61.4	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-117			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.9 degrees F and Clear. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	59.32	**Total Depth (ft-bmp)**	62.84	**Water Column (ft)**	3.52	**Gallons in Well**	0.57
Purge Start	13:30	**Pump Intake (ft-bmp)**	62.34	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:35	**Volumes Purged**	1.16	**Sample ID**	MW-19-117_110322	**Sampled by**	Austin Westhuis
Sample Time	14:30	**Gallons Purged**	0.53	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:35	0	0	100	59.61	0.13	7.04	1.13	56.6	0.58	16.3	-37.7	Clear	None
13:40	5	5	100	60.32	0.26	6.9	1.12	31.3	0.64	15.8	-61.2	Clear	None
13:45	5	10	100	60.82	0.40	6.94	1.12	11.2	0.5	15.8	-72.8	Clear	None
13:50	5	15	100	61.34	0.53	6.98	1.12	4.31	0.16	16	-86.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL

Comments: Well purged dry after 20 minutes. Waited for recharge before collecting the groundwater sample.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-120			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	69.1 degrees F and Clear. The wind is blowing S/SW at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.64	**Total Depth (ft-bmp)**	73.98	**Water Column (ft)**	8.34	**Gallons in Well**	1.36
Purge Start	14:50	**Pump Intake (ft-bmp)**	71.48	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:35	**Volumes Purged**	0.87	**Sample ID**	MW-19-120_110322	**Sampled by**	Austin Westhuis
Sample Time	15:30	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:55	0	0	100	65.64	0.13	6.99	1.86	295	1.84	16.8	-17	Clear	None
15:00	5	5	100	65.64	0.26	7.03	2.63	200	1.8	16.8	-20.7	Clear	None
15:05	5	10	100	65.64	0.40	7.03	2.63	112	1.56	16.9	-20.5	Clear	None
15:10	5	15	100	65.64	0.53	7.02	2.66	39.1	1.24	15.8	-17.8	Clear	None
15:15	5	20	100	65.64	0.66	7.02	2.72	13.9	1.22	15.7	-16.4	Clear	None
15:20	5	25	100	65.64	0.79	7.02	2.74	6.83	1.2	15.7	-16	Clear	None
15:25	5	30	100	65.64	0.92	7.02	2.75	6.09	1.18	15.6	-15.9	Clear	None
15:30	5	35	100	65.64	1.06	7.02	2.76	5.58	1.14	15.4	-15.1	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs, 1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-121			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.0 degrees F and Clear. The wind is blowing S/SE at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.78	**Total Depth (ft-bmp)**	71.15	**Water Column (ft)**	6.37	**Gallons in Well**	1.04
Purge Start	14:50	**Pump Intake (ft-bmp)**	69	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:45	**Volumes Purged**	1.40	**Sample ID**	MW-19-121_110222	**Sampled by**	Billy Cobern
Sample Time	15:45	**Gallons Purged**	1.45	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:55	0	0	100	65.08	0.13	6.84	2.06	878	6.8	19.3	158.3	Brown	None
15:00	5	5	100	65.08	0.26	6.84	2.1	8.71	4.93	18.9	147.3	Brown	None
15:05	5	10	100	65.08	0.40	6.85	2.1	521	4.57	18.4	141.8	Brown	None
15:10	5	15	100	65.08	0.53	6.86	2.11	319	4.49	18.2	139.2	Brown	None
15:15	5	20	100	65.08	0.66	6.86	2.11	132	4.45	18.2	135.2	Brown	None
15:20	5	25	100	65.08	0.79	6.87	2.11	85.6	4.37	18.1	132.8	Brown	None
15:25	5	30	100	65.08	0.92	6.87	2.11	67.4	4.28	18	131.2	Brown	None
15:30	5	35	100	65.08	1.06	6.87	2.11	48.3	4.47	17.8	130.6	Brown	None
15:35	5	40	100	65.08	1.19	6.87	2.1	40.2	4.49	17.9	130.2	Brown	None
15:40	5	45	100	65.08	1.32	6.87	2.1	40.3	4.54	18	129.6	Brown	None
15:45	5	50	100	65.08	1.45	6.87	2.1	38.7	4.55	18	129.5	Brown	None

Constituent Sampled	Container	Number	Preservative
T. Phosphorus,TKN	250 mL Plastic	1	H2SO4
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL
Nitrate/Nitrite	125 mL Plastic	1	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-122			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.9 degrees F and Clear. The wind is blowing W/SW at 4.7 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.46	**Total Depth (ft-bmp)**	66.8	**Water Column (ft)**	1.34	**Gallons in Well**	0.22
Purge Start	14:15	**Pump Intake (ft-bmp)**	66.3	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	15:20	**Volumes Purged**	7.81	**Sample ID**	MW-19-122_110122	**Sampled by**	Austin Westhuis
Sample Time	15:15	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:20	0	0	100	65.46	0.13	6.75	4.91	738	2.28	16.9	45.6	Gray	None
14:25	5	5	100	65.46	0.26	6.74	4.92	711	1.54	16.6	43.9	Gray	None
14:30	5	10	100	65.46	0.40	6.72	4.94	636	0.91	16.5	43.1	Gray	None
14:35	5	15	100	65.46	0.53	6.73	4.97	567	0.78	16.8	40.3	Gray	None
14:40	5	20	100	65.46	0.66	6.88	4.89	319	5.49	16	43.7	Gray	None
14:45	5	25	100	65.46	0.79	6.88	4.89	271	5.5	15.9	44.1	Gray	None
14:50	5	30	100	65.46	0.92	6.88	4.95	166	5.64	15.9	47.4	Gray	None
14:55	5	35	100	65.46	1.06	6.88	4.97	91.2	5.68	15.9	49.3	Gray	None
15:00	5	40	100	65.46	1.19	6.88	4.98	24.2	5.6	15.9	51.4	Gray	None
15:05	5	45	100	65.46	1.32	6.89	4.98	22.1	5.33	16.2	52.1	Gray	None
15:10	5	50	100	65.46	1.45	6.89	5	20.9	5.62	16.3	53.3	Gray	None
15:15	5	55	100	65.46	1.59	6.89	5.04	16.1	5.12	16.4	53.4	Gray	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments: Turbidity did not stabilize. Final turbidity measurement 16.1 ntu. Collected groundwater sample after hour of purging.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-123			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.9 degrees F and Clear. The wind is blowing S at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.17	**Total Depth (ft-bmp)**	73.8	**Water Column (ft)**	10.63	**Gallons in Well**	1.73
Purge Start	13:25	**Pump Intake (ft-bmp)**	71	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:10	**Volumes Purged**	0.69	**Sample ID**	MW-19-123_110222	**Sampled by**	Billy Cobern
Sample Time	14:10	**Gallons Purged**	1.19	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:30	0	0	100	63.31	0.13	6.87	2.52	25.6	5.31	16	152.9	Clear	None
13:35	5	5	100	63.31	0.26	6.77	2.49	23	5.33	15.8	148	Clear	None
13:40	5	10	100	63.31	0.40	6.76	2.48	18.9	5.4	15.7	143.4	Clear	None
13:45	5	15	100	63.31	0.53	6.77	2.47	29.7	5.01	15.7	140.9	Clear	None
13:50	5	20	100	63.31	0.66	6.78	2.45	24.2	5	16.2	138.5	Clear	None
13:55	5	25	100	63.31	0.79	6.8	2.45	17.7	4.89	16.5	136.7	Clear	None
14:00	5	30	100	63.31	0.92	6.82	2.45	14.3	5.02	16.7	134.8	Clear	None
14:05	5	35	100	63.31	1.06	6.84	2.45	13.9	5.36	16.8	133.5	Clear	None
14:10	5	40	100	63.31	1.19	6.84	2.45	13.1	5.1	16.8	133.5	Clear	None

Constituent Sampled	Container	Number	Preservative
T. Phosphorus,TKN	250 mL Plastic	1	H2SO4
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL
Nitrate/Nitrite	125 mL Plastic	1	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-19-124			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.0 degrees F and Clear. The wind is blowing W/NW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.63	**Total Depth (ft-bmp)**	72.21	**Water Column (ft)**	7.58	**Gallons in Well**	1.23
Purge Start	15:40	**Pump Intake (ft-bmp)**	69.71	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:25	**Volumes Purged**	0.97	**Sample ID**	MW-19-124_110122	**Sampled by**	Austin Westhuis
Sample Time	16:20	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:45	0	0	100	64.63	0.13	6.73	3.21	394	0.41	16.4	-10.4	Clear	None
15:50	5	5	100	64.63	0.26	6.73	3.2	312	0.31	16.2	-17.9	Clear	None
15:55	5	10	100	64.63	0.40	6.75	3.2	151	0.28	16.1	-27.9	Clear	None
16:00	5	15	100	64.63	0.53	6.75	3.2	52.5	0.29	16	-33.6	Clear	None
16:05	5	20	100	64.63	0.66	6.75	3.2	18.7	0.26	16.1	-34.7	Clear	None
16:10	5	25	100	64.63	0.79	6.76	3.2	11.8	0.28	16	-36.7	Clear	None
16:15	5	30	100	64.63	0.92	6.76	3.2	11.2	0.28	16	-38.8	Clear	None
16:20	5	35	100	64.63	1.06	6.76	3.2	10.7	0.26	16	-40.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-126			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.9 degrees F and Clear. The wind is blowing W/SW at 12.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.50	**Total Depth (ft-bmp)**	75.51	**Water Column (ft)**	10.01	**Gallons in Well**	1.63
Purge Start	16:50	**Pump Intake (ft-bmp)**	73.01	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	17:35	**Volumes Purged**	0.73	**Sample ID**	MW-20-126_110122	**Sampled by**	Austin Westhuis
Sample Time	17:30	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:55	0	0	100	65.50	0.13	7.02	4	655	5.4	14.3	20.1	Clear	None
17:00	5	5	100	65.50	0.26	6.98	3.99	311	3.6	13.8	21.2	Clear	None
17:05	5	10	100	65.50	0.40	6.98	3.98	212	3.34	13.7	21.9	Clear	None
17:10	5	15	100	65.50	0.53	6.98	3.97	54.3	3.23	13.7	23.9	Clear	None
17:15	5	20	100	65.50	0.66	6.97	3.97	13.1	2.95	13.7	24.6	Clear	None
17:20	5	25	100	65.50	0.79	6.97	3.96	10.7	2.83	13.7	27.5	Clear	None
17:25	5	30	100	65.50	0.92	6.97	3.95	10.3	2.83	13.6	28.7	Clear	None
17:30	5	35	100	65.50	1.06	6.96	3.94	9.84	2.87	13.6	30.5	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-127			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Haze. The wind is blowing S at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.61	**Total Depth (ft-bmp)**	78.65	**Water Column (ft)**	13.04	**Gallons in Well**	2.12
Purge Start	10:25	**Pump Intake (ft-bmp)**	76	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:05	**Volumes Purged**	0.50	**Sample ID**	MW-20-127	**Sampled by**	Billy Cobern
Sample Time	11:05	**Gallons Purged**	1.06	**Replicate/ Code No.**	DUP-05_110222	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:30	0	0	100	65.90	0.13	6.93	3.19	15.7	3.98	14.4	-20.3	Clear	None
10:35	5	5	100	65.96	0.26	6.81	3.27	13.2	1.31	14.3	-30.9	Clear	None
10:40	5	10	100	66.01	0.40	6.81	3.27	10	0.81	14.2	-35.2	Clear	None
10:45	5	15	100	66.06	0.53	6.81	3.27	9.83	0.65	14.4	-38.5	Clear	None
10:50	5	20	100	66.10	0.66	6.81	3.27	9.58	0.53	14.4	-39.7	Clear	None
10:55	5	25	100	66.15	0.79	6.81	3.27	9.69	0.43	14.3	-40.2	Clear	None
11:00	5	30	100	66.19	0.92	6.81	3.27	9.54	0.44	14.3	-40.2	Clear	None
11:05	5	35	100	66.19	1.06	6.81	3.27	9.43	0.43	14.3	-40.2	Clear	None

Constituent Sampled	Container	Number	Preservative
T. Phosphorus,TKN	250 mL Plastic	2	H2SO4
1,4-Dioxane 8260D SIM	40 mL Glass	6	HCL
Nitrate/Nitrite	125 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-128			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing S at 3.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	65.17	**Total Depth (ft-bmp)**	70.15	**Water Column (ft)**	4.98	**Gallons in Well**	0.81
Purge Start	11:45	**Pump Intake (ft-bmp)**	67.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:45	**Volumes Purged**	1.96	**Sample ID**	MW-20-128_110222	**Sampled by**	Billy Cobern
Sample Time	12:45	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:50	0	0	100	65.50	0.13	7.75	3.33	63	8.8	16.4	74.4	Gray	None
11:55	5	5	100	65.50	0.26	7.75	3.32	78.6	8.3	16.9	76.5	Gray	None
12:00	5	10	100	65.50	0.40	7.74	3.33	124	8.31	17.1	77.3	Gray	None
12:05	5	15	100	65.50	0.53	7.73	3.32	154	8.2	17.3	78.8	Gray	None
12:10	5	20	100	65.50	0.66	7.72	3.32	184	7.99	17.3	79.5	Gray	None
12:15	5	25	100	65.50	0.79	7.69	3.31	127	745	17.9	80.1	Gray	None
12:20	5	30	100	65.50	0.92	7.68	3.29	144	6.97	19.3	81.9	Gray	None
12:25	5	35	100	65.50	1.06	7.68	3.31	197	7.16	19.7	82.9	Gray	None
12:30	5	40	100	65.50	1.19	7.68	3.32	241	7.23	19.5	83.2	Gray	None
12:35	5	45	100	65.50	1.32	7.67	3.35	205	7.42	19.3	83.8	Gray	None
12:40	5	50	100	65.50	1.45	7.67	3.35	271	7.48	19	84.2	Gray	None
12:45	5	55	100	65.50	1.59	7.67	3.35	202	7.59	19	84.7	Gray	None

Constituent Sampled	Container	Number	Preservative
T. Phosphorus,TKN	250 mL Plastic	1	H2SO4
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL
Nitrate/Nitrite	125 mL Plastic	1	None

Comments: Turbidity did not stabilize within 60 minutes. Well was gurgling during purging.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-129			**Date**	11/1/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	55.9 degrees F and Haze. The wind is blowing SW at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	59.71	**Total Depth (ft-bmp)**	71.7	**Water Column (ft)**	11.99	**Gallons in Well**	1.95
Purge Start	12:50	**Pump Intake (ft-bmp)**	69.2	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:35	**Volumes Purged**	0.61	**Sample ID**	MW-20-129_110122	**Sampled by**	Austin Westhuis
Sample Time	13:30	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:55	0	0	100	61.39	0.13	6.83	2.49	12.2	1.28	15.8	67.6	Clear	None
13:00	5	5	100	62.89	0.26	6.86	2.44	6.55	0.72	15.7	48.8	Clear	None
13:05	5	10	100	64.05	0.40	6.9	2.41	3.91	0.49	15.7	22.1	Clear	None
13:15	10	20	100	64.64	0.66	6.92	2.48	2.64	0.36	15.8	-7.6	Clear	None
13:20	5	25	100	64.94	0.79	6.94	2.53	2.12	0.32	15.9	-17.5	Clear	None
13:25	5	30	100	64.97	0.92	6.94	2.6	1.7	0.32	15.9	-22	Clear	None
13:30	5	35	100	64.98	1.06	6.94	2.66	1.53	0.31	15.9	-24.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up

Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-130			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	63.0 degrees F and Clear. The wind is blowing S at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	67.39	**Total Depth (ft-bmp)**	70.3	**Water Column (ft)**	2.91	**Gallons in Well**	0.47
Purge Start	12:50	**Pump Intake (ft-bmp)**	69.5	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:45	**Volumes Purged**	3.09	**Sample ID**	MW-20-130	**Sampled by**	Billy Cobern
Sample Time	13:45	**Gallons Purged**	1.45	**Replicate/ Code No.**	DUP-02_110322	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:55	0	0	100	68.00	0.13	6.96	1.46	41.9	2.48	16.2	-10.8	Orange	None
13:00	5	5	100	68.00	0.26	6.95	1.45	38.5	2.33	16.6	-7.7	Orange	None
13:05	5	10	100	68.00	0.40	6.94	1.45	30.7	2.24	16.9	-4.4	Orange	None
13:10	5	15	100	68.00	0.53	6.94	1.44	26.3	2.27	17.5	-2.5	Orange	None
13:15	5	20	100	68.00	0.66	6.94	1.45	24.1	2.2	17.9	0.9	Orange	None
13:20	5	25	100	68.00	0.79	6.93	1.45	19.8	2.01	18.2	2.9	Orange	None
13:25	5	30	100	68.00	0.92	6.93	1.45	16.1	1.95	18.4	3.7	Orange	None
13:30	5	35	100	68.00	1.06	6.93	1.45	13.2	1.91	18.4	3.9	Orange	None
13:35	5	40	100	68.00	1.19	6.93	1.45	10.3	2.03	18.4	4.1	Orange	None
13:40	5	45	100	68.00	1.32	6.93	1.45	10.8	1.96	18.4	4.4	Orange	None
13:45	5	50	100	68.00	1.45	6.93	1.45	10.5	1.92	18.4	4.8	Orange	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	6	HCL
PFAS	250 mL Plastic	4	None

Comments: Cannot measure drawdown past 68' due to pump interference. Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant-2
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-131			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	55.9 degrees F and Partly Cloudy. The wind is blowing S at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.64	**Total Depth (ft-bmp)**	8.63	**Water Column (ft)**	2.99	**Gallons in Well**	0.49
Purge Start	08:35	**Pump Intake (ft-bmp)**	7.63	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	09:15	**Volumes Purged**	4.31	**Sample ID**	MW-20-131_111022	**Sampled by**	Austin Westhuis
Sample Time	09:05	**Gallons Purged**	1.59	**Replicate/ Code No.**	Dup-09_111022	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:40	0	0	200	5.97	0.26	7.18	4.42	3.18	1.09	15.8	92	Clear	None
08:45	5	5	200	5.97	0.53	7.16	4.57	1.51	0.29	15.9	80.2	Clear	None
08:50	5	10	200	5.97	0.79	7.16	4.59	1.36	0.26	15.9	77.9	Clear	None
08:55	5	15	200	5.97	1.06	7.14	4.65	1.3	0.15	15.9	66.5	Clear	None
09:00	5	20	200	5.97	1.32	7.14	4.66	1.21	0.16	16	61.2	Clear	None
09:05	5	25	200	5.97	1.59	7.14	4.66	1.13	0.15	16	57.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	4	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-20-132			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.0 degrees F and Mostly Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.10	**Total Depth (ft-bmp)**	10.75	**Water Column (ft)**	4.65	**Gallons in Well**	0.76
Purge Start	15:01	**Pump Intake (ft-bmp)**	8.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	16:17	**Volumes Purged**	2.36	**Sample ID**	MW-20-132_110922	**Sampled by**	Cooper Osgood
Sample Time	16:15	**Gallons Purged**	1.8	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:09	0	0	100	6.10	0.21	7.09	6.5	579	1.77	15.9	110.7	Clear	None
15:14	5	5	100	6.10	0.34	7.15	6.52	256	1.6	15.9	82.4	Clear	None
15:19	5	10	100	6.15	0.48	7.15	6.53	178	1.58	15.8	68.9	Clear	None
15:24	5	15	100	6.16	0.61	7.15	6.53	136	1.6	15.8	60.9	Clear	None
15:29	5	20	100	6.16	0.74	7.15	6.57	114	1.35	15.7	52.4	Clear	None
15:34	5	25	100	6.20	0.87	7.13	6.6	90.7	1.09	15.7	44.6	Clear	None
15:39	5	30	100	6.20	1.00	7.13	6.61	61.2	0.9	15.7	36.6	Clear	None
15:44	5	35	100	6.22	1.14	7.12	6.61	50	0.73	15.7	32.3	Clear	None
15:49	5	40	100	6.22	1.27	7.12	6.61	40	0.55	15.7	27.7	Clear	None
15:54	5	45	100	6.22	1.40	7.11	6.61	21.8	0.36	15.7	22.6	Clear	None
15:59	5	50	100	6.25	1.53	7.11	6.6	8.11	0.31	15.7	18.4	Clear	None
16:04	5	55	100	6.25	1.66	7.11	6.59	0.39	0.26	15.7	14.1	Clear	None
16:09	5	60	100	6.25	1.80	7.11	6.59	0.02	0.22	15.6	10.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Do not stable turb. Not stable sampled after 60 min

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing Mi
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: no
Well Locked at Departure: no
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-133			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.0 degrees F and Mostly Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	12.68	**Total Depth (ft-bmp)**	18.75	**Water Column (ft)**	6.07	**Gallons in Well**	0.99
Purge Start	13:50	**Pump Intake (ft-bmp)**	16	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:15	**Volumes Purged**	0.67	**Sample ID**	MW-21-133_110922	**Sampled by**	Billy Cobern
Sample Time	14:15	**Gallons Purged**	0.66	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:55	0	0	100	13.24	0.13	7.08	0.94	10.7	0.61	15.4	58.5	Clear	None
14:00	5	5	100	13.39	0.26	6.97	0.94	9.06	0.36	15.6	50.9	Clear	None
14:05	5	10	100	13.54	0.40	6.94	0.95	8.78	0.33	15.6	45.5	Clear	None
14:10	5	15	100	13.69	0.53	6.92	0.96	8.15	0.32	15.7	40.9	Clear	None
14:15	5	20	100	13.86	0.66	6.91	0.96	8.34	0.31	15.7	37.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-134			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.0 degrees F and Mostly Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	15.19	**Total Depth (ft-bmp)**	20.05	**Water Column (ft)**	4.86	**Gallons in Well**	0.79
Purge Start	14:40	**Pump Intake (ft-bmp)**	19	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	15:10	**Volumes Purged**	1.00	**Sample ID**	MW-21-134_110922	**Sampled by**	Billy Cobern
Sample Time	15:10	**Gallons Purged**	0.79	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:45	0	0	100	15.99	0.13	7.24	0.86	9.51	4.3	15.9	82	Clear	None
14:50	5	5	100	16.31	0.26	7.21	0.89	7.79	1.23	15.8	71.8	Clear	None
14:55	5	10	100	16.60	0.40	7.19	0.84	7.62	0.84	15.6	65.4	Clear	None
15:00	5	15	100	16.89	0.53	7.18	0.83	7.14	0.61	15.5	60.1	Clear	None
15:05	5	20	100	17.16	0.66	7.18	0.82	6.92	0.58	15.5	56.7	Clear	None
15:10	5	25	100	17.42	0.79	7.17	0.81	6.82	0.56	15.6	51.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-135			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.0 degrees F and Mostly Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	25.64	**Total Depth (ft-bmp)**	29.55	**Water Column (ft)**	3.91	**Gallons in Well**	0.64
Purge Start	15:30	**Pump Intake (ft-bmp)**	28.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	16:00	**Volumes Purged**	1.24	**Sample ID**	MW-21-135_110922	**Sampled by**	Billy Cobern
Sample Time	16:00	**Gallons Purged**	0.79	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:35	0	0	100	26.12	0.13	7.32	0.95	7.62	0.82	14.4	74.8	Clear	None
15:40	5	5	100	26.63	0.26	7.3	0.94	5.83	0.47	14.4	69.4	Clear	None
15:45	5	10	100	26.99	0.40	7.28	0.93	5.22	0.38	14.3	66.2	Clear	None
15:50	5	15	100	27.39	0.53	7.27	0.93	5.58	0.32	14.3	63.9	Clear	None
15:55	5	20	100	27.65	0.66	7.25	0.93	5.09	0.32	14.2	62	Clear	None
16:00	5	25	100	27.98	0.79	7.23	0.93	5.27	0.31	14.2	60.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-136			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	55.9 degrees F and Partly Cloudy. The wind is blowing S at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.62	**Total Depth (ft-bmp)**	13.7	**Water Column (ft)**	5.08	**Gallons in Well**	0.83
Purge Start	08:30	**Pump Intake (ft-bmp)**	11.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	09:10	**Volumes Purged**	1.27	**Sample ID**	MW-21-136	**Sampled by**	Billy Cobern
Sample Time	09:10	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:35	0	0	100	8.95	0.13	7.16	0.92	14.9	0.61	15.3	63.3	Clear	None
08:40	5	5	100	8.95	0.26	7.15	0.92	12.6	0.4	15.3	62.9	Clear	None
08:45	5	10	100	8.95	0.40	7.15	0.92	10.3	0.37	15.4	64.1	Clear	None
08:50	5	15	100	8.95	0.53	7.16	0.92	9.58	0.42	15.5	19	Clear	None
08:55	5	20	100	8.95	0.66	7.15	0.92	9.03	0.34	15.5	-25.5	Clear	None
09:00	5	25	100	8.95	0.79	7.15	0.92	8.78	0.32	15.5	-33.5	Clear	None
09:05	5	30	100	8.95	0.92	7.15	0.92	8.34	0.31	15.5	-37.8	Clear	None
09:10	5	35	100	8.95	1.06	7.15	0.92	8.27	0.32	15.5	-37	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-137			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	61.0 degrees F and Clear. The wind is blowing S/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.92	**Total Depth (ft-bmp)**	11.5	**Water Column (ft)**	1.58	**Gallons in Well**	0.26
Purge Start	09:30	**Pump Intake (ft-bmp)**	11	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:05	**Volumes Purged**	3.56	**Sample ID**	MW-21-137_111022	**Sampled by**	Billy Cobern
Sample Time	10:05	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:35	0	0	100	10.12	0.13	6.82	1.01	14	0.45	15.7	80.6	Clear	None
09:40	5	5	100	10.19	0.26	6.83	1.01	10.3	0.43	15.6	87.9	Clear	None
09:45	5	10	100	10.19	0.40	6.81	1.01	9.23	0.4	15.6	95.6	Clear	None
09:50	5	15	100	10.19	0.53	6.78	1.01	9.12	0.39	15.6	103.9	Clear	None
09:55	5	20	100	10.19	0.66	6.77	1.01	8.82	0.25	15.7	106.9	Clear	None
10:00	5	25	100	10.19	0.79	6.77	1.01	8.62	0.25	15.7	107.2	Clear	None
10:05	5	30	100	10.19	0.92	6.77	1.01	8.2	0.26	15.7	107.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-138			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.0 degrees F and Clear. The wind is blowing S/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	21.44	**Total Depth (ft-bmp)**	28.65	**Water Column (ft)**	7.21	**Gallons in Well**	1.17
Purge Start	10:20	**Pump Intake (ft-bmp)**	26	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:50	**Volumes Purged**	0.56	**Sample ID**	MW-21-138_111022	**Sampled by**	Billy Cobern
Sample Time	10:45	**Gallons Purged**	0.66	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:25	0	0	100	21.94	0.13	6.9	1.61	7.91	0.31	15.7	-48.7	Clear	None
10:30	5	5	100	22.35	0.26	6.9	16	6.87	0.32	15.7	-48.1	Clear	None
10:35	5	10	100	22.74	0.40	6.9	1.59	6.42	0.32	15.9	-44.7	Clear	None
10:40	5	15	100	23.12	0.53	6.9	1.58	5.92	0.32	16	-42.3	Clear	None
10:45	5	20	100	23.49	0.66	6.9	1.57	5.91	0.32	16	-41.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments: Didn't meet drawdown requirements

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-139			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	37.9 degrees F and Fog/Mist. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	3.60	**Total Depth (ft-bmp)**	15.36	**Water Column (ft)**	11.76	**Gallons in Well**	1.91
Purge Start	08:50	**Pump Intake (ft-bmp)**	13.4	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:00	**Volumes Purged**	1.83	**Sample ID**	MW-21-139_110222	**Sampled by**	Cooper Osgood
Sample Time	09:55	**Gallons Purged**	3.5	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
08:51	0	0	150	3.60	0.04	8.64	1.63	0.02	0.69	12.8	114.1	Clear	None
08:56	5	5	150	3.90	0.24	8.65	1.53	0.02	0.37	13.6	88.5	Clear	None
09:01	5	10	150	3.90	0.44	8.48	1.49	0.02	0.32	14	82.4	Clear	None
09:06	5	15	150	3.90	0.63	8.26	1.44	0.02	0.28	14.1	77.4	Clear	None
09:11	5	20	150	4.49	0.83	8.06	1.38	0.02	0.22	14.6	68.4	Clear	None
09:16	5	25	150	4.52	1.03	7.96	1.32	0.02	0.2	14.7	57.6	Clear	None
09:21	5	30	150	4.52	1.23	7.98	1.32	0.02	0.2	14.6	52.7	Clear	None
09:26	5	35	150	4.52	1.43	7.87	1.28	0.02	0.07	14.8	44.8	Clear	None
09:31	5	40	150	4.75	1.62	7.87	1.28	0.02	0.17	14.9	37.3	Clear	None
09:36	5	45	150	4.75	1.82	7.83	1.27	0.02	0.15	15	35.2	Clear	None
09:41	5	50	150	4.78	2.02	7.84	1.28	0.02	0.2	15	32.9	Clear	None
09:46	5	55	150	4.80	2.22	7.83	1.28	0.02	0.12	15	30.3	Clear	None
09:51	5	60	150	4.81	2.42	7.8	1.28	0.02	0.14	15.1	26.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260D SIM	40 mL Glass	3	HCL
PFAS	250 mL Plastic	2	None

Comments: Sampled after 60min DO not stable

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-140			**Date**	11/4/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	57.0 degrees F and Mostly Clear. The wind is blowing S at 12.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	68.33	**Total Depth (ft-bmp)**	75.97	**Water Column (ft)**	7.64	**Gallons in Well**	1.24
Purge Start	08:55	**Pump Intake (ft-bmp)**	73.47	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	09:40	**Volumes Purged**	0.96	**Sample ID**	MW-21-140_110422	**Sampled by**	Austin Westhuis
Sample Time	09:35	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:00	0	0	100	68.50	0.13	6.68	0.82	286	1.39	13.4	110	Clear	None
09:05	5	5	100	68.62	0.26	6.81	0.82	78.1	0.83	13.4	72.4	Clear	None
09:10	5	10	100	68.66	0.40	6.86	0.82	21.4	0.55	13.4	52.3	Clear	None
09:15	5	15	100	68.66	0.53	6.88	0.82	17.6	0.42	13.4	42.5	Clear	None
09:20	5	20	100	68.66	0.66	6.89	0.82	13.2	0.39	13.4	35.3	Clear	None
09:25	5	25	100	68.66	0.79	6.91	0.82	8.9	0.3	13.4	22.4	Clear	None
09:30	5	30	100	68.66	0.92	6.92	0.82	8.49	0.31	13.4	19.4	Clear	None
09:35	5	35	100	68.66	1.06	6.94	0.82	8.22	0.32	13.4	16.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL VOA	3	HCl

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-141			**Date**	11/4/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	68.0 degrees F and Mostly Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	77.65	**Total Depth (ft-bmp)**	79.7	**Water Column (ft)**	2.05	**Gallons in Well**	0.33
Purge Start	13:35	**Pump Intake (ft-bmp)**	79.2	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:15	**Volumes Purged**	3.20	**Sample ID**	MW-21-141_110422	**Sampled by**	Austin Westhuis
Sample Time	14:10	**Gallons Purged**	0.92	**Replicate/ Code No.**	MS/MSD	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:40	0	0	100	77.65	0.13	6.64	0.94	114	0.65	14.5	44.5	Clear	None
13:45	5	5	100	77.65	0.26	6.82	0.9	62.5	0.3	14.7	15.1	Clear	None
13:50	5	10	100	77.65	0.40	6.89	0.9	22.4	0.3	14.8	2.4	Clear	None
13:55	5	15	100	77.65	0.53	6.93	0.89	13.3	0.19	14.9	-9.5	Clear	None
14:00	5	20	100	77.65	0.66	6.96	0.87	4.3	0.18	15	-16.4	Clear	None
14:05	5	25	100	77.65	0.79	6.96	0.87	3.82	0.18	15	-18.9	Clear	None
14:10	5	30	100	77.65	0.92	6.96	0.87	3.69	0.18	15.1	-21.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL VOA	9	HCl

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-21-142			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing S at 3.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	67.07	**Total Depth (ft-bmp)**	78.8	**Water Column (ft)**	11.73	**Gallons in Well**	1.91
Purge Start	11:15	**Pump Intake (ft-bmp)**	76.3	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:05	**Volumes Purged**	0.69	**Sample ID**	MW-21-142_110222	**Sampled by**	Austin Westhuis
Sample Time	12:00	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:20	0	0	100	67.07	0.13	7.1	1.73	704	1.57	13.7	-21.4	Clear	None
11:25	5	5	100	67.07	0.26	7.01	1.82	514	1.07	13.7	-39.8	Clear	None
11:30	5	10	100	67.07	0.40	7	1.83	448	1.01	13.7	-43.9	Clear	None
11:35	5	15	100	67.07	0.53	6.99	1.84	189	1.04	13.8	-48.8	Clear	None
11:40	5	20	100	67.07	0.66	6.98	1.85	120	0.84	13.9	-52.1	Clear	None
11:45	5	25	100	67.07	0.79	6.97	1.85	113	0.88	13.9	-52.9	Clear	None
11:50	5	30	100	67.07	0.92	6.94	1.88	91.3	0.55	14.2	-56.5	Clear	None
11:55	5	35	100	67.07	1.06	6.92	1.91	88.2	0.53	14.2	-56.9	Clear	None
12:00	5	40	100	67.07	1.06	6.92	1.91	82.4	0.51	14.3	-59.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260B SIMS	40 mL VOA	3	HCl

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-143			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.0 degrees F and Clear. The wind is blowing S/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	17.48	**Total Depth (ft-bmp)**	31	**Water Column (ft)**	13.52	**Gallons in Well**	2.20
Purge Start	11:10	**Pump Intake (ft-bmp)**	28.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:45	**Volumes Purged**	0.42	**Sample ID**	MW-22-143_111022	**Sampled by**	Billy Cobern
Sample Time	11:45	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:15	0	0	100	17.55	0.13	7.03	3.22	8.95	0.48	16.9	-82.4	Clear	None
11:20	5	5	100	17.55	0.26	7.04	3.21	7.45	0.36	17	-84.2	Clear	None
11:25	5	10	100	17.55	0.40	7.04	3.22	6.82	0.29	17	-85	Clear	None
11:30	5	15	100	17.55	0.53	7.04	3.21	6.15	0.25	16.8	-85.4	Clear	None
11:35	5	20	100	17.55	0.66	7.04	3.21	6.06	0.23	17.1	-85.7	Clear	None
11:40	5	25	100	17.55	0.79	7.04	3.21	5.89	0.22	17	-85.6	Clear	None
11:45	5	30	100	17.55	0.92	7.04	3.21	5.78	0.21	17	-85.5	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-144			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Clear. The wind is blowing SW at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	13.90	**Total Depth (ft-bmp)**	24.05	**Water Column (ft)**	10.15	**Gallons in Well**	1.65
Purge Start	13:05	**Pump Intake (ft-bmp)**	21.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:40	**Volumes Purged**	0.56	**Sample ID**	MW-22-144_111022	**Sampled by**	Billy Cobern
Sample Time	13:40	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:10	0	0	100	14.20	0.13	7.12	1.08	36.1	0.6	17.4	58.8	Clear	None
13:15	5	5	100	14.20	0.26	7.1	1.1	18.7	0.32	17.3	56.9	Clear	None
13:20	5	10	100	14.20	0.40	7.1	1.11	14.1	0.24	17.7	55.6	Clear	None
13:25	5	15	100	14.20	0.53	7.09	1.14	10.6	0.22	17.9	55.9	Clear	None
13:30	5	20	100	14.20	0.66	7.08	1.15	9.64	0.2	17.7	57.1	Clear	None
13:35	5	25	100	14.20	0.79	7.08	1.16	9.19	0.21	17.8	57	Clear	None
13:40	5	30	100	14.20	0.92	7.08	1.16	8.82	0.19	17.7	57.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-145			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	70.0 degrees F and Clear. The wind is blowing S/SW at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	13.70	**Total Depth (ft-bmp)**	14.8	**Water Column (ft)**	1.10	**Gallons in Well**	0.18
Purge Start	12:10	**Pump Intake (ft-bmp)**	14.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:50	**Volumes Purged**	5.87	**Sample ID**	MW-22-145_111022	**Sampled by**	Billy Cobern
Sample Time	12:50	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:15	0	0	100	13.79	0.13	7.09	1.28	50.7	0.91	17	-29.2	Clear	None
12:20	5	5	100	13.79	0.26	7.09	1.29	30.7	0.52	16.8	-16.3	Clear	None
12:25	5	10	100	13.79	0.40	7.08	1.29	22.2	0.42	16.9	-12	Clear	None
12:30	5	15	100	13.79	0.53	7.08	1.29	15.4	0.39	16.8	-3.8	Clear	None
12:35	5	20	100	13.79	0.66	7.07	1.28	10.8	0.37	16.6	-2.2	Clear	None
12:40	5	25	100	13.79	0.79	7.08	1.28	8.61	0.39	16.9	0.9	Clear	None
12:45	5	30	100	13.79	0.92	7.07	1.28	8.04	0.42	17.1	-0.9	Clear	None
12:50	5	35	100	13.79	1.06	7.07	1.28	7.71	0.43	17.1	-0.6	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-146			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.9 degrees F and Clear. The wind is blowing S/SW at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.68	**Total Depth (ft-bmp)**	9.9	**Water Column (ft)**	1.22	**Gallons in Well**	0.20
Purge Start	14:00	**Pump Intake (ft-bmp)**	9.5	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:30	**Volumes Purged**	3.96	**Sample ID**	MW-22-146_111022	**Sampled by**	Billy Cobern
Sample Time	14:30	**Gallons Purged**	0.79	**Replicate/ Code No.**	DUP-10_111022	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:05	0	0	100	8.94	0.13	7.37	1.13	21.9	1.01	15.8	-76.8	Clear	None
14:10	5	5	100	9.01	0.26	7.28	1.12	16.7	1.6	15.6	-25.8	Clear	None
14:15	5	10	100	9.01	0.40	7.22	1.12	9.8	2.39	15.6	-7.5	Clear	None
14:20	5	15	100	9.01	0.53	7.22	1.11	9.61	2.11	15.7	-2.5	Clear	None
14:25	5	20	100	9.01	0.66	7.21	1.11	9.63	2.05	15.7	1.2	Clear	None
14:30	5	25	100	9.01	0.79	7.2	1.1	9.24	1.98	15.7	4.2	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	4	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-147			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.9 degrees F and Clear. The wind is blowing S/SW at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	9.75	**Total Depth (ft-bmp)**	12.2	**Water Column (ft)**	2.45	**Gallons in Well**	0.40
Purge Start	13:40	**Pump Intake (ft-bmp)**	11.2	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	14:05	**Volumes Purged**	3.30	**Sample ID**	MW-22-147_111022	**Sampled by**	Austin Westhuis
Sample Time	14:00	**Gallons Purged**	1.06	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:45	0	0	200	10.20	0.26	7.14	1.58	1.78	1.43	16.3	68.7	Clear	None
13:50	5	5	200	10.20	0.53	7.14	1.61	1.51	1.8	16.3	61.6	Clear	None
13:55	5	10	200	10.20	0.79	7.14	1.62	1.44	1.8	16.2	59.3	Clear	None
14:00	5	15	200	10.20	1.06	7.14	1.62	1.4	1.84	16.2	54.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount

Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-148			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	73.0 degrees F and Clear. The wind is blowing SW at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	24.92	**Total Depth (ft-bmp)**	29.29	**Water Column (ft)**	4.37	**Gallons in Well**	0.71
Purge Start	12:40	**Pump Intake (ft-bmp)**	27.29	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:25	**Volumes Purged**	3.35	**Sample ID**	MW-22-148_111022	**Sampled by**	Austin Westhuis
Sample Time	13:10	**Gallons Purged**	1.59	**Replicate/ Code No.**	MS/MSD	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:45	0	0	200	25.54	0.26	7.24	0.88	3.34	0.36	15.6	36.8	Clear	None
12:50	5	5	200	26.09	0.53	7.14	0.88	2.61	0.34	15.6	48	Clear	None
12:55	5	10	200	26.29	0.79	7.18	0.89	2.21	0.79	15.5	47.6	Clear	None
13:00	5	15	200	26.29	1.06	7.2	0.9	1.81	0.9	15.5	47.6	Clear	None
13:05	5	20	200	26.29	1.32	7.2	0.89	1.4	0.88	15.3	46	Clear	None
13:10	5	25	200	26.29	1.59	7.19	0.89	1.12	0.85	15.3	44.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	6	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-149			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	70.0 degrees F and Clear. The wind is blowing S/SW at 13.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.58	**Total Depth (ft-bmp)**	9.92	**Water Column (ft)**	3.34	**Gallons in Well**	0.54
Purge Start	11:50	**Pump Intake (ft-bmp)**	8.92	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:20	**Volumes Purged**	2.94	**Sample ID**	MW-22-149_111022	**Sampled by**	Austin Westhuis
Sample Time	12:15	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:55	0	0	200	6.82	0.26	7.34	0.68	1.78	4.52	16.8	-51.5	Clear	None
12:00	5	5	200	6.82	0.53	7.21	0.63	1.34	4.35	16.8	-33.8	Clear	None
12:05	5	10	200	6.82	0.79	7.16	0.6	1.13	4.3	16.8	-14.8	Clear	None
12:10	5	15	200	6.82	1.06	7.17	0.6	1.08	4.22	16.9	-7.2	Clear	None
12:15	5	20	200	6.82	1.32	7.2	0.6	0.91	4.08	17	-5.1	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-150			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.0 degrees F and Clear. The wind is blowing S/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.13	**Total Depth (ft-bmp)**	17.94	**Water Column (ft)**	11.81	**Gallons in Well**	1.92
Purge Start	11:00	**Pump Intake (ft-bmp)**	15.44	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:35	**Volumes Purged**	0.96	**Sample ID**	MW-22-150_111022	**Sampled by**	Austin Westhuis
Sample Time	11:30	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:05	0	0	200	6.13	0.26	7.26	4.97	4.41	1.08	16.2	13	Clear	None
11:10	5	5	200	6.94	0.53	7.28	4.93	2.14	0.3	16.2	12.1	Clear	None
11:15	5	10	200	7.38	0.79	7.36	4.87	1.71	0.24	16.2	9.8	Clear	None
11:20	5	15	200	7.88	1.06	7.41	4.86	1.43	0.24	16.2	6.4	Clear	None
11:25	5	20	200	9.39	1.32	7.41	4.85	1.22	0.24	16.2	1.6	Clear	None
11:30	5	25	200	9.63	1.59	7.41	4.85	1.08	0.23	16.2	-1.7	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-151			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.0 degrees F and Clear. The wind is blowing S/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	6.71	**Total Depth (ft-bmp)**	14.91	**Water Column (ft)**	8.20	**Gallons in Well**	1.33
Purge Start	10:20	**Pump Intake (ft-bmp)**	12.51	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:50	**Volumes Purged**	1.19	**Sample ID**	MW-22-151_111022	**Sampled by**	Austin Westhuis
Sample Time	10:45	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:25	0	0	200	7.49	0.26	6.89	0.75	3.09	0.66	17.3	33.6	Clear	None
10:30	5	5	200	7.89	0.53	6.82	2.56	1.29	0.14	17.4	0.2	Clear	None
10:35	5	10	200	8.10	0.79	6.85	2.51	1.2	0.14	17.4	-15	Clear	None
10:40	5	15	200	8.13	1.06	6.88	2.46	1.06	0.14	17.4	-23.9	Clear	None
10:45	5	20	200	8.14	1.32	6.88	2.48	0.96	0.13	17.3	-24.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-152			**Date**	11/10/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	61.0 degrees F and Clear. The wind is blowing S/SW at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.31	**Total Depth (ft-bmp)**	14.89	**Water Column (ft)**	6.58	**Gallons in Well**	1.07
Purge Start	09:30	**Pump Intake (ft-bmp)**	12.39	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:05	**Volumes Purged**	1.73	**Sample ID**	MW-22-152_111022	**Sampled by**	Austin Westhuis
Sample Time	10:00	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:35	0	0	200	8.47	0.26	7.02	1.01	9.76	0.28	16	16	Clear	None
09:40	5	5	200	8.47	0.26	6.99	1	5.44	0.16	16.1	23.6	Clear	None
09:45	5	10	200	8.47	0.79	7	1	2.61	0.12	16.2	24.5	Clear	None
09:50	5	15	200	8.47	1.06	7	1	2.11	0.09	16.2	25.4	Clear	None
09:55	5	20	200	8.47	1.32	7	1	1.61	0.09	16.2	26.1	Clear	None
10:00	5	25	200	8.47	1.59	7	1	1.49	0.09	16.1	26.3	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-153			**Date**	10/14/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	46.0 degrees F and Cloudy. The wind is blowing SW at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	11.12	**Total Depth (ft-bmp)**	31.18	**Water Column (ft)**	20.06	**Gallons in Well**	3.26
Purge Start	12:10	**Pump Intake (ft-bmp)**	28.68	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:55	**Volumes Purged**	0.73	**Sample ID**	MW-22-153_101422	**Sampled by**	Austin Westhuis
Sample Time	12:50	**Gallons Purged**	2.38	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:15	0	0	200	11.16	0.26	7.13	1.49	104	0.28	14.33	-60.6	--	--
12:20	5	5	200	11.16	0.53	7.13	1.5	70.39	0.19	14.21	-62.9	--	--
12:25	5	10	200	11.16	0.79	7.13	1.5	39.11	0.16	14.19	-64.1	--	--
12:30	5	15	200	11.16	1.06	7.13	1.49	19.24	0.15	14.13	-65.2	--	--
12:35	5	20	200	11.16	1.32	7.13	1.49	12.65	0.13	14.22	-65.9	--	--
12:40	5	25	200	11.16	1.59	7.13	1.49	11.5	0.13	14.25	-66.3	--	--
12:45	5	30	200	11.16	1.85	7.13	1.49	11.22	0.13	14.2	-66.2	--	--
12:50	5	35	200	11.16	2.11	7.13	1.49	11.01	0.12	14.25	-66.3	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-153			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.9 degrees F and Clear. The wind is blowing S/SE at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	11.10	**Total Depth (ft-bmp)**	31.15	**Water Column (ft)**	20.05	**Gallons in Well**	3.26
Purge Start	16:01	**Pump Intake (ft-bmp)**	28.95	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	17:09	**Volumes Purged**	0.61	**Sample ID**	MW-22-153_110222	**Sampled by**	Cooper Osgood
Sample Time	17:05	**Gallons Purged**	2	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:04	0	0	120	11.10	0.10	7.16	1.44	29.3	0.55	17.6	22.3		
16:09	5	5	120	11.10	0.25	7.2	1.44	34.2	0.21	17	1.6		
16:14	5	10	120	11.10	0.41	7.2	1.43	36.4	0.17	16.7	-7.1		
16:19	5	15	120	11.10	0.57	7.2	1.43	40	0.13	16.9	-16.5		
16:24	5	20	120	11.10	0.73	7.2	1.43	40	0.17	16.7	-22.1		
16:29	5	25	120	11.10	0.89	7.2	1.44	40	0.16	16.5	-27.7		
16:34	5	30	120	11.10	1.05	7.19	1.48	40	0.15	16.6	-32.3		
16:39	5	35	120	11.10	1.20	7.17	1.65	19.8	0.13	16.5	-39.5		
16:44	5	40	120	11.10	1.36	7.15	1.71	5.52	0.13	16.4	-45.5		
16:49	5	45	120	11.10	1.52	7.15	1.77	5.47	0.13	16.4	-51.9		
16:54	5	50	120	11.10	1.68	7.13	1.8	0.02	0.13	16.4	-56.2		
16:59	5	55	120	11.10	1.84	7.14	1.82	0.02	0.15	16.4	-58.9		
17:04	5	60	120	11.10	2.00	7.14	1.84	0.02	0.15	16.4	-61.4		

Constituent Sampled	Container	Number	Preservative
VOCs 8260B SIMS	40 mL Glass	3	HCL

Comments: Sampled at 60 min DO not stable

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Lansing, Mi
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

30112892, MW-22-154, 2022-10-14, RACER Trust, RACER Lansing GWS 2022

Created	2022-10-14 18:56:47 UTC by Austin Westhuis
Updated	2022-10-14 19:17:18 UTC by Austin Westhuis
Location	42.73907780185597, -84.57947610885331
Status	QC Complete
Note: This app is for sampling that is completed using a pump or bailer and not hydrasleeve or PDB	
Note: Please make sure to sync frequently throughout your work day when possible.	
Have you read the Quality Procedure (QP) and/or Technical Guidance Instruction (TGI) relevant to this use case?	Yes
Selecting "Yes" confirms your digital signature as having read the QP and/or TGI relevant to this use case.	
Project Number	30112892
Client	RACER Trust
Project Name / Location	RACER Lansing GWS 2022
Well ID	MW-22-154
Date	2022-10-14
Time In	14:40
Sampler Name	Austin Westhuis
Are you connected to the internet via data plan or WiFi?	Yes
Click here to get weather data from National Weather Service (NWS) for your current location. It may take a few seconds to retrieve and populate the data from NWS.	N/A
Weather from NWS	52.0 degrees F and Cloudy. The wind is blowing SW at 15.0 mph.
Note: You have selected to bring in weather data from NWS. Please review and/or confirm the weather data prior to submitting (ensure wind speed, temperature, etc. is of reasonable value and in the units required by project).	
Weather Calculation	NA
Is well able to be sampled?	Yes

Evacuation Details

Is Well Head PID Reading required?	No
Measuring Point (mp) Description	Top of Inner Casing
Casing Diameter (inches)	2
Well Casing Material	PVC
Static Water Level (ft-bmp)	6.38
Total Depth (ft-bmp)	10.57
Water Column	4.19
Gallons in Well	0.68
Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 1 cubic inch = 0.004329 gallons 0.5" diameter = 0.01 gal/ft = 37.85 mL/ft 1" diameter = 0.04 gal/ft = 151.4 mL/ft 2" diameter = 0.16 gal/ft = 605.66 mL/ft 3" diameter = 0.37 gal/ft = 1400.6 mL/ft 4" diameter = 0.65 gal/ft = 2460 mL/ft	
Purge Method	Low-Flow
Purge Equipment	Peristaltic
Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	8.57
Water Quality Meter Make/Model	YSI Professional Plus

Serial Number of Water Quality Meter	862050
Are you using the Groundwater Sampling TGI to stabilize parameters?	Yes
Purge Start (Pump On)	14:50

@14:55, DTW:6.41, pH:6.92, temp:15.92, cond:5.67, turb:3.28, DO:0.75, redox:39.7

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Reading Time	14:55
Minutes Elapsed between readings	0
Total Elapsed Minutes (during parameter readings)	0
Total Elapsed Minutes from Purge Start Time	5
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	6.41
Milliliters Purged (total)	1000
Theoretical Total Volume Purged	1000 milliliters purged
pH	6.92
Conductivity (mS/cm)	5.67
Turbidity (NTU)	3.28
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.75
Temperature (Degrees Celsius)	15.92
Redox (ORP mV)	39.7
parameters	@14:55, DTW:6.41, pH:6.92, temp:15.92, cond:5.67, turb:3.28, DO:0.75, redox:39.7
Are you collecting an additional groundwater parameter not listed above?	No

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:00, DTW:6.41, pH:6.94, temp:15.85, cond:5.51, turb:3.01, DO:0.73, redox:56.8

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Reading Time	15:00
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	5
Total Elapsed Minutes from Purge Start Time	10
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	6.41
Milliliters Purged (total)	2000
Theoretical Total Volume Purged	2000 milliliters purged
pH	6.94
Conductivity (mS/cm)	5.51
Turbidity (NTU)	3.01

Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.73
Temperature (Degrees Celsius)	15.85
Redox (ORP mV)	56.8
parameters	@15:00, DTW:6.41, pH:6.94, temp:15.85, cond:5.51, turb:3.01, DO:0.73, redox:56.8
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: not stable cond: not stable turb: not stable DO: not stable temp: not stable ORP: not stable time elapsed: 5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:05, DTW:6.41, pH:6.95, temp:15.9, cond:5.46, turb:2.9, DO:0.71, redox:59.1

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Reading Time	15:05
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	10
Total Elapsed Minutes from Purge Start Time	15
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	6.41
Milliliters Purged (total)	3000
Theoretical Total Volume Purged	3000 milliliters purged
pH	6.95
Conductivity (mS/cm)	5.46
Turbidity (NTU)	2.9
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.71
Temperature (Degrees Celsius)	15.9
Redox (ORP mV)	59.1
parameters	@15:05, DTW:6.41, pH:6.95, temp:15.9, cond:5.46, turb:2.9, DO:0.71, redox:59.1
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: stable cond: not stable turb: stable DO: stable temp: stable ORP: not stable time elapsed: 10

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@15:10, DTW:6.41, pH:6.94, temp:15.94, cond:5.46, turb:2.35, DO:0.71, redox:61.3

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Reading Time	15:10
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	15
Total Elapsed Minutes from Purge Start Time	20

Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	6.41
Milliliters Purged (total)	4000
Theoretical Total Volume Purged	4000 milliliters purged
pH	6.94
Conductivity (mS/cm)	5.46
Turbidity (NTU)	2.35
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.71
Temperature (Degrees Celsius)	15.94
Redox (ORP mV)	61.3
parameters	@15:10, DTW:6.41, pH:6.94, temp:15.94, cond:5.46, turb:2.35, DO:0.71, redox:61.3
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	You may sample the well.
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@15:15, DTW:6.41, pH:6.94, temp:15.91, cond:5.47, turb:2.3, DO:0.7, redox:62.1

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Reading Time	15:15
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	20
Total Elapsed Minutes from Purge Start Time	25
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	6.41
Milliliters Purged (total)	5000
Theoretical Total Volume Purged	5000 milliliters purged
pH	6.94
Conductivity (mS/cm)	5.47
Turbidity (NTU)	2.3
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.7
Temperature (Degrees Celsius)	15.91
Redox (ORP mV)	62.1
parameters	@15:15, DTW:6.41, pH:6.94, temp:15.91, cond:5.47, turb:2.3, DO:0.7, redox:62.1
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	You may sample the well.
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

Sample Start Time	15:15
Purge End (Pump Off)	15:20
Total Volume Measured (units)	Milliliters
Total Milliliters Purged	6000
Well Volumes Purged	2.33

Sample Information

Did the well go dry during purging?	No
Sample ID	MW-22-154_101422
Sample Time	15:15
Sample Date	2022-10-14
Sample Equipment	Peristaltic
Sample Type	Grab
Color	Clear
Notable Odors	None
Replicate Type	Not Applicable

VOCs, 40 mL Glass, 3

Well-ClientName	MW-22-154RACER Lansing GWS 2022
Constituent Sampled	VOCs
Container Type	40 mL Glass
Number of Containers	3
Preservative	HCL
Field Filtered?	No
Total Count of Bottles Collected	3
Time Out	15:20

Well Information

Is the well damaged?	No
Well Completion	Flush mount
Well Location	See figure.
Condition of Well	Good condition
Well Locked at Arrival	Yes
Lock Functioning	Yes
Well Locked at Departure	Yes
Key Number to Well	2035
Access to well maintained	Yes
Well housing and pad in good shape	Yes
Well properly labeled	Yes
Have you performed work in accordance with the applicable QP/TGI?	Yes
Unique Sample ID	30112892-MW-22-154_101422-20221014

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-22-155			**Date**	10/14/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	43.0 degrees F and Cloudy. The wind is blowing S/SW at 11.4 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	12.41	**Total Depth (ft-bmp)**	31.43	**Water Column (ft)**	19.02	**Gallons in Well**	3.09
Purge Start	11:05	**Pump Intake (ft-bmp)**	28.93	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	11:55	**Volumes Purged**	0.77	**Sample ID**	MW-22-155_101422	**Sampled by**	Austin Westhuis
Sample Time	11:50	**Gallons Purged**	2.38	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:10	0	0	200	12.50	0.26	7.2	1.48	664.04	0.12	13.84	-83.1	--	--
11:20	10	10	200	12.50	0.79	7.19	1.48	369.72	0.1	13.82	-85.3	--	--
11:25	5	15	200	12.50	1.06	7.18	1.48	181.22	0.06	13.74	-85.3	--	--
11:30	5	20	200	12.50	1.32	7.18	1.48	53.11	0.06	13.85	-85.6	--	--
11:35	5	25	200	12.50	1.59	7.17	1.48	21.03	0.06	13.85	-85.5	--	--
11:40	5	30	200	12.50	1.85	7.17	1.48	17.94	0.06	13.61	-85.7	--	--
11:45	5	35	200	12.50	2.11	7.17	1.48	17.11	0.06	13.56	-85.6	--	--
11:50	5	40	200	12.50	2.38	7.17	1.49	16.85	0.06	13.57	-85	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-156			**Date**	10/14/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	48.9 degrees F and Mostly Cloudy. The wind is blowing S at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	13.57	**Total Depth (ft-bmp)**	31.06	**Water Column (ft)**	17.49	**Gallons in Well**	2.84
Purge Start	13:05	**Pump Intake (ft-bmp)**	28.56	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	13:40	**Volumes Purged**	0.65	**Sample ID**	MW-22-156_101422	**Sampled by**	Austin Westhuis
Sample Time	13:35	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
13:10	0	0	200	13.61	0.26	7.11	1.64	57.93	0.19	15.22	-58.2	--	--
13:15	5	5	200	13.61	0.53	7.12	1.49	25.28	0.13	15.32	-62.4	--	--
13:20	5	10	200	13.61	0.79	7.14	1.39	16.43	0.11	15.14	-63.7	--	--
13:25	5	15	200	13.61	1.06	7.15	1.35	13.28	0.11	15.16	-65	--	--
13:30	5	20	200	13.61	1.32	7.17	1.34	12.75	0.11	15.1	-66.6	--	--
13:35	5	25	200	13.61	1.59	7.18	1.32	12.03	0.11	15.1	-69.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot

1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location:	See figure.	Well Locked at Arrival:	yes
Condition of Well:	Good condition	Well Locked at Departure:	yes
Well Completion:	Stick-up	Key Number To Well:	2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute

mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

Groundwater Sampling Form

Project Number	30112892	**Well ID**	MW-22-157			**Date**	10/14/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	41.0 degrees F and Cloudy.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	3.08	**Total Depth (ft-bmp)**	27.61	**Water Column (ft)**	24.53	**Gallons in Well**	3.99
Purge Start	09:50	**Pump Intake (ft-bmp)**	25.11	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	10:35	**Volumes Purged**	0.60	**Sample ID**	MW-22-157_101422	**Sampled by**	Austin Westhuis
Sample Time	10:25	**Gallons Purged**	2.38	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:05	0	0	200	3.08	0.79	7.13	1.41	25.96	0.12	15.38	-88.2	--	--
10:10	5	5	200	3.08	1.06	7.13	1.4	24.12	0.12	15.22	-89	--	--
10:15	5	10	200	3.08	1.32	7.14	1.39	21.14	0.09	15.32	-88.2	--	--
10:20	5	15	200	3.08	1.59	7.14	1.38	20.65	0.09	15.37	-87.8	--	--
10:25	5	20	200	3.08	1.85	7.14	1.36	20.01	0.09	15.38	-87.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 2035

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = millivolts
°F = degrees Fahrenheit
°C = degrees Celsius

30112892, MW-22-158, 2022-12-15, RACER Trust, RACER Lansing Plant 6 PFAS GWS

Created	2022-12-15 16:17:15 UTC by Austin Westhuis
Updated	2022-12-20 15:10:36 UTC by Kaitlyn Hunt
Location	42.7336145193, -84.5750435908
Status	QC Complete

This app is being archived as of Q1 2023 and will be replaced with an improved version. Please contact your task manager to ensure your team is onboarded.

Note: This app is for sampling that is completed using a pump or bailer and not hydrasleeve or PDB

Note: Please make sure to sync frequently throughout your work day when possible.

Have you read the Quality Procedure (QP) and/or Technical Guidance Instruction (TGI) relevant to this use case?	Yes

Selecting "Yes" confirms your digital signature as having read the QP and/or TGI relevant to this use case.

Select Project Number	30112892, RACER Trust, RACER Lansing 2022
Project Number	30112892
Client	RACER Trust
Project Name / Location	RACER Lansing Plant 6 PFAS GWS
Well ID	MW-22-158
Date	2022-12-15
Time In	11:00
Sampler Name	Austin Westhuis
Are you connected to the internet via data plan or WiFi?	Yes
Click here to get weather data from National Weather Service (NWS) for your current location. It may take a few seconds to retrieve and populate the data from NWS.	N/A
Weather from NWS	42.1 degrees F and Cloudy.

Note: You have selected to bring in weather data from NWS. Please review and/or confirm the weather data prior to submitting (ensure wind speed, temperature, etc. is of reasonable value and in the units required by project).

Weather Calculation	NA
Is well able to be sampled?	Yes

Evacuation Details

Is Well Head PID Reading required?	No
Measuring Point (mp) Description	Top of Inner Casing
Casing Diameter (inches)	2
Well Casing Material	PVC
Static Water Level (ft-bmp)	14.9
Total Depth (ft-bmp)	20.15
Water Column	5.249999999999998
Gallons in Well	0.85

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 1 cubic inch = 0.004329 gallons 0.5" diameter = 0.01 gal/ft = 37.85 mL/ft 1" diameter = 0.04 gal/ft = 151.4 mL/ft 2" diameter = 0.16 gal/ft = 605.66 mL/ft 3" diameter = 0.37 gal/ft = 1400.6 mL/ft 4" diameter = 0.65 gal/ft = 2460 mL/ft

Purge Method	Low-Flow
Purge Equipment	Peristaltic

Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	17.65
Water Quality Meter Make/Model	YSI Professional Plus
Serial Number of Water Quality Meter	19J103977
Are you using the Groundwater Sampling TGI to stabilize parameters?	Yes
Purge Start (Pump On)	11:15

@11:20, DTW:15.22, pH:7.14, temp:13.5, cond:3.37, turb:10.9, DO:2.81, redox:232.3

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:20
Minutes Elapsed between readings	0
Total Elapsed Minutes (during parameter readings)	0
Total Elapsed Minutes from Purge Start Time	5
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.22
Milliliters Purged (total)	1000
Theoretical Total Volume Purged	1000 milliliters purged
pH	7.14
Conductivity (mS/cm)	3.37
Turbidity (NTU)	10.9
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	2.81
Temperature (Degrees Celsius)	13.5
Redox (ORP mV)	232.3
parameters	@11:20, DTW:15.22, pH:7.14, temp:13.5, cond:3.37, turb:10.9, DO:2.81, redox:232.3
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: not stable cond: not stable turb: not stable DO: not stable temp: not stable ORP: not stable time elapsed: 1440

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:25, DTW:15.25, pH:7.15, temp:13.6, cond:3.31, turb:4.14, DO:2.72, redox:225.5

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:25
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	5
Total Elapsed Minutes from Purge Start Time	10
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.25
Milliliters Purged (total)	2000

Theoretical Total Volume Purged	2000 milliliters purged
pH	7.15
Conductivity (mS/cm)	3.31
Turbidity (NTU)	4.14
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	2.72
Temperature (Degrees Celsius)	13.6
Redox (ORP mV)	225.5
parameters	@11:25, DTW:15.25, pH:7.15, temp:13.6, cond:3.31, turb:4.14, DO:2.72, redox:225.5
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: not stable cond: not stable turb: not stable DO: not stable temp: not stable ORP: not stable time elapsed: 5
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@11:30, DTW:15.25, pH:7.15, temp:13.5, cond:3.31, turb:2.63, DO:2.77, redox:224.2

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:30
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	10
Total Elapsed Minutes from Purge Start Time	15
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.25
Milliliters Purged (total)	3000
Theoretical Total Volume Purged	3000 milliliters purged
pH	7.15
Conductivity (mS/cm)	3.31
Turbidity (NTU)	2.63
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	2.77
Temperature (Degrees Celsius)	13.5
Redox (ORP mV)	224.2
parameters	@11:30, DTW:15.25, pH:7.15, temp:13.5, cond:3.31, turb:2.63, DO:2.77, redox:224.2
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: stable cond: stable turb: not stable DO: stable temp: stable ORP: stable time elapsed: 10
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@11:35, DTW:15.25, pH:7.15, temp:13.5, cond:3.29, turb:2.25, DO:2.67, redox:214.1

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS

Reading Time	11:35
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	15
Total Elapsed Minutes from Purge Start Time	20
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.25
Milliliters Purged (total)	4000
Theoretical Total Volume Purged	4000 milliliters purged
pH	7.15
Conductivity (mS/cm)	3.29
Turbidity (NTU)	2.25
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	2.67
Temperature (Degrees Celsius)	13.5
Redox (ORP mV)	214.1
parameters	@11:35, DTW:15.25, pH:7.15, temp:13.5, cond:3.29, turb:2.25, DO:2.67, redox:214.1
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: stable cond: stable turb: not stable DO: stable temp: stable ORP: not stable time elapsed: 15

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:15.25, pH:7.15, temp:13.4, cond:3.29, turb:1.95, DO:2.61, redox:210.1

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:40
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	20
Total Elapsed Minutes from Purge Start Time	25
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.25
Milliliters Purged (total)	5000
Theoretical Total Volume Purged	5000 milliliters purged
pH	7.15
Conductivity (mS/cm)	3.29
Turbidity (NTU)	1.95
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	2.61
Temperature (Degrees Celsius)	13.4
Redox (ORP mV)	210.1
parameters	@11:40, DTW:15.25, pH:7.15, temp:13.4, cond:3.29, turb:1.95, DO:2.61, redox:210.1

Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: stable cond: stable turb: stable DO: stable temp: stable ORP: not stable time elapsed: 20
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	

@11:45, DTW:15.25, pH:7.15, temp:13.5, cond:3.29, turb:1.76, DO:2.58, redox:206.9

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:45
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	25
Total Elapsed Minutes from Purge Start Time	30
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.25
Milliliters Purged (total)	6000
Theoretical Total Volume Purged	6000 milliliters purged
pH	7.15
Conductivity (mS/cm)	3.29
Turbidity (NTU)	1.76
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	2.58
Temperature (Degrees Celsius)	13.5
Redox (ORP mV)	206.9
parameters	@11:45, DTW:15.25, pH:7.15, temp:13.5, cond:3.29, turb:1.76, DO:2.58, redox:206.9
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	You may sample the well.
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Sample Start Time	11:45
Purge End (Pump Off)	11:50
Total Volume Measured (units)	Milliliters
Total Milliliters Purged	7000
Well Volumes Purged	2.18

Sample Information

Did the well go dry during purging?	No
Sample ID	MW-22-158_121522
Sample Time	11:45
Sample Date	2022-12-15
Sample Equipment	Peristaltic
Sample Type	Grab

Color	Clear
Notable Odors	None
Replicate Type	Not Applicable

PFAS, 250mL HDPE Plastic, 2

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Constituent Sampled	PFAS
Container Type	250mL HDPE Plastic
Number of Containers	2
Preservative	None
Field Filtered?	No
Total Count of Bottles Collected	2
Time Out	11:50

Well Information

Is the well damaged?	No
Well Completion	Flush mount
Well Location	See figure.
Condition of Well	Good condition
Well Locked at Arrival	Yes
Lock Functioning	Yes
Well Locked at Departure	Yes
Key Number to Well	2035
Access to well maintained	Yes
Well housing and pad in good shape	Yes
Well properly labeled	Yes
Have you performed work in accordance with the applicable QP/TGI?	Yes
Unique Sample ID	30112892-MW-22-158_121522-20221215

30112892, MW-22-160, 2022-12-13, RACER Trust, RACER Lansing Plant 6 PFAS GWS

Created	2022-12-13 16:15:40 UTC by Austin Westhuis
Updated	2023-01-19 21:12:59 UTC by Kaitlyn Hunt
Location	42.7346695494, -84.5739744791
Status	QC Complete

This app is being archived as of Q1 2023 and will be replaced with an improved version. Please contact your task manager to ensure your team is onboarded.

Note: This app is for sampling that is completed using a pump or bailer and not hydrasleeve or PDB

Note: Please make sure to sync frequently throughout your work day when possible.

Have you read the Quality Procedure (QP) and/or Technical Guidance Instruction (TGI) relevant to this use case?	Yes

Selecting "Yes" confirms your digital signature as having read the QP and/or TGI relevant to this use case.

Select Project Number	30112892, RACER Trust, RACER Lansing 2022
Project Number	30112892
Client	RACER Trust
Project Name / Location	RACER Lansing Plant 6 PFAS GWS
Well ID	MW-22-160
Date	2022-12-13
Time In	11:00
Sampler Name	Austin Westhuis
Are you connected to the internet via data plan or WiFi?	Yes
Click here to get weather data from National Weather Service (NWS) for your current location. It may take a few seconds to retrieve and populate the data from NWS.	N/A
Weather from NWS	30.9 degrees F and Cloudy. The wind is blowing E at 12.8 mph.

Note: You have selected to bring in weather data from NWS. Please review and/or confirm the weather data prior to submitting (ensure wind speed, temperature, etc. is of reasonable value and in the units required by project).

Weather Calculation	NA
Is well able to be sampled?	Yes

Evacuation Details

Is Well Head PID Reading required?	No
Measuring Point (mp) Description	Top of Inner Casing
Casing Diameter (inches)	2
Well Casing Material	PVC
Static Water Level (ft-bmp)	15
Total Depth (ft-bmp)	18.15
Water Column	3.1499999999999986
Gallons in Well	0.51

Reference Note: Well Volume Calculation [$\pi r^2 h$, where h= 1foot] Well radius (inch):Volume (Gal./foot):Volume (mL/foot) 1 cubic inch = 0.004329 gallons 0.5" diameter = 0.01 gal/ft = 37.85 mL/ft 1" diameter = 0.04 gal/ft = 151.4 mL/ft 2" diameter = 0.16 gal/ft = 605.66 mL/ft 3" diameter = 0.37 gal/ft = 1400.6 mL/ft 4" diameter = 0.65 gal/ft = 2460 mL/ft

Purge Method	Low-Flow
Purge Equipment	Peristaltic

Sample Method	Low-Flow
Sample Depth (ft-bmp) (e.g. pump intake)	17.15
Water Quality Meter Make/Model	YSI Professional Plus
Serial Number of Water Quality Meter	19J103977
Are you using the Groundwater Sampling TGI to stabilize parameters?	Yes
Purge Start (Pump On)	11:10

@11:15, DTW:15.03, pH:6.92, temp:12.9, cond:1.13, turb:142, DO:0.49, redox:143.1

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:15
Minutes Elapsed between readings	0
Total Elapsed Minutes (during parameter readings)	0
Total Elapsed Minutes from Purge Start Time	5
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.03
Milliliters Purged (total)	1000
Theoretical Total Volume Purged	1000 milliliters purged
pH	6.92
Conductivity (mS/cm)	1.13
Turbidity (NTU)	142
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.49
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	143.1
parameters	@11:15, DTW:15.03, pH:6.92, temp:12.9, cond:1.13, turb:142, DO:0.49, redox:143.1
Are you collecting an additional groundwater parameter not listed above?	No

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:20, DTW:15.03, pH:6.93, temp:12.9, cond:1.13, turb:112, DO:0.47, redox:125

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:20
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	5
Total Elapsed Minutes from Purge Start Time	10
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.03
Milliliters Purged (total)	2000
Theoretical Total Volume Purged	2000 milliliters purged
pH	6.93

Conductivity (mS/cm)	1.13
Turbidity (NTU)	112
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.47
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	125
parameters	@11:20, DTW:15.03, pH:6.93, temp:12.9, cond:1.13, turb:112, DO:0.47, redox:125
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: not stable cond: not stable turb: not stable DO: not stable temp: not stable ORP: not stable time elapsed: 5

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:25, DTW:15.03, pH:6.94, temp:12.9, cond:1.13, turb:27.4, DO:0.38, redox:88.4

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:25
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	10
Total Elapsed Minutes from Purge Start Time	15
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.03
Milliliters Purged (total)	3000
Theoretical Total Volume Purged	3000 milliliters purged
pH	6.94
Conductivity (mS/cm)	1.13
Turbidity (NTU)	27.4
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.38
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	88.4
parameters	@11:25, DTW:15.03, pH:6.94, temp:12.9, cond:1.13, turb:27.4, DO:0.38, redox:88.4
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: stable cond: stable turb: not stable DO: not stable temp: stable ORP: not stable time elapsed: 10

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:30, DTW:15.03, pH:6.94, temp:13, cond:1.13, turb:6.61, DO:0.34, redox:69

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:30
Minutes Elapsed between readings	5

Total Elapsed Minutes (during parameter readings)	15
Total Elapsed Minutes from Purge Start Time	20
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.03
Milliliters Purged (total)	4000
Theoretical Total Volume Purged	4000 milliliters purged
pH	6.94
Conductivity (mS/cm)	1.13
Turbidity (NTU)	6.61
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.34
Temperature (Degrees Celsius)	13
Redox (ORP mV)	69
parameters	@11:30, DTW:15.03, pH:6.94, temp:13, cond:1.13, turb:6.61, DO:0.34, redox:69
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: stable cond: stable turb: not stable DO: not stable temp: stable ORP: not stable time elapsed: 15

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:35, DTW:15.03, pH:6.95, temp:12.9, cond:1.13, turb:2.21, DO:0.32, redox:58.7

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:35
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	20
Total Elapsed Minutes from Purge Start Time	25
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.03
Milliliters Purged (total)	5000
Theoretical Total Volume Purged	5000 milliliters purged
pH	6.95
Conductivity (mS/cm)	1.13
Turbidity (NTU)	2.21
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.32
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	58.7
parameters	@11:35, DTW:15.03, pH:6.95, temp:12.9, cond:1.13, turb:2.21, DO:0.32, redox:58.7
Are you collecting an additional groundwater parameter not listed above?	No

Stabilization Criteria	Continue purging, the parameters are not stable. pH: stable cond: stable turb: not stable DO: not stable temp: stable ORP: not stable time elapsed: 20

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:40, DTW:15.03, pH:6.96, temp:12.9, cond:1.13, turb:1.87, DO:0.31, redox:56.3

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:40
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	25
Total Elapsed Minutes from Purge Start Time	30
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.03
Milliliters Purged (total)	6000
Theoretical Total Volume Purged	6000 milliliters purged
pH	6.96
Conductivity (mS/cm)	1.13
Turbidity (NTU)	1.87
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.31
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	56.3
parameters	@11:40, DTW:15.03, pH:6.96, temp:12.9, cond:1.13, turb:1.87, DO:0.31, redox:56.3
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	Continue purging, the parameters are not stable. pH: stable cond: stable turb: not stable DO: stable temp: stable ORP: not stable time elapsed: 25

Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit

@11:45, DTW:15.03, pH:6.95, temp:12.9, cond:1.13, turb:1.69, DO:0.31, redox:54.8

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Reading Time	11:45
Minutes Elapsed between readings	5
Total Elapsed Minutes (during parameter readings)	30
Total Elapsed Minutes from Purge Start Time	35
Purge Rate measured in:	mL/min
Rate (mL/min)	200
Depth to Water (ft)	15.03
Milliliters Purged (total)	7000
Theoretical Total Volume Purged	7000 milliliters purged
pH	6.95
Conductivity (mS/cm)	1.13

Turbidity (NTU)	1.69
Is the turbidity reading outside the range of the meter?	No
Dissolved Oxygen (mg/L)	0.31
Temperature (Degrees Celsius)	12.9
Redox (ORP mV)	54.8
parameters	@11:45, DTW:15.03, pH:6.95, temp:12.9, cond:1.13, turb:1.69, DO:0.31, redox:54.8
Are you collecting an additional groundwater parameter not listed above?	No
Stabilization Criteria	You may sample the well.
Well is considered stabilized and ready for sample collection when the following is met for three consecutive readings collected at 3 to 5 minute intervals: -turbidity remains within 10% (or within 1 NTU if turbidity is <10NTU) -specific conductance and temp remain within 3% -ORP within + or - 10 mV -DO within 10% -pH within 0.1 unit	
Sample Start Time	11:45
Purge End (Pump Off)	11:55
Total Volume Measured (units)	Milliliters
Total Milliliters Purged	9000
Well Volumes Purged	4.66

Sample Information

Did the well go dry during purging?	No
Sample ID	MW-22-160_121322
Sample Time	11:45
Sample Date	2022-12-13
Sample Equipment	Peristaltic
Sample Type	Grab
Color	Clear
Notable Odors	None
Replicate Type	Dup
Replicate ID (e.g. Dup)	DUP-01_121322

PFAS, 250mL HDPE Plastic, 4

Well-ClientName	MW-22-160RACER Lansing Plant 6 PFAS GWS
Constituent Sampled	PFAS
Container Type	250mL HDPE Plastic
Number of Containers	4
Preservative	None
Field Filtered?	No
Total Count of Bottles Collected	4
Time Out	11:55

Well Information

Is the well damaged?	No
Well Completion	Flush mount
Well Location	See figure.
Condition of Well	Good condition

Well Locked at Arrival	No
Lock Functioning	Yes
Well Locked at Departure	Yes
Key Number to Well	2035
Access to well maintained	Yes
Well housing and pad in good shape	Yes
Well properly labeled	Yes
Photo of Well	
Have you performed work in accordance with the applicable QP/TGI?	Yes
Unique Sample ID	30112892-MW-22-160_121322-20221213

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-23			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	37.0 degrees F and Clear. The wind is blowing E/NE at 5.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	49.06	**Total Depth (ft-bmp)**	65.6	**Water Column (ft)**	16.54	**Gallons in Well**	2.69
Purge Start	09:45	**Pump Intake (ft-bmp)**	63.1	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:00	**Volumes Purged**	0.74	**Sample ID**	MW-23_110822	**Sampled by**	Austin Westhuis
Sample Time	10:55	**Gallons Purged**	1.85	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:50	0	0	100	49.45	0.13	11.28	0.84	786	4.06	13.1	-91.4	Clear	None
09:55	5	5	100	49.55	0.26	10.96	0.68	1010	4.53	13.3	-54.4	Clear	None
10:00	5	10	100	49.55	0.40	9.71	0.78	712	3.4	13.3	-37.6	Clear	None
10:05	5	15	100	49.55	0.53	9.54	0.85	484	2.16	13.2	-18.4	Clear	None
10:10	5	20	100	49.55	0.66	9.38	0.88	291	1.99	13.4	-15.1	Clear	None
10:15	5	25	100	49.55	0.79	9.03	0.94	116	1.55	13.3	-9.4	Clear	None
10:20	5	30	100	49.55	0.92	8.71	1.01	57.5	1.24	13.3	-7.7	Clear	None
10:25	5	35	100	49.55	1.06	8.59	1.03	22.7	1.15	13.4	-8	Clear	None
10:30	5	40	100	49.55	1.19	8.16	1.09	3.89	0.81	13.3	-10.3	Clear	None
10:35	5	45	100	49.55	1.32	7.9	1.12	2.08	0.61	13.4	-17.2	Clear	None
10:40	5	50	100	49.55	1.45	7.75	1.14	1.73	0.56	13.4	-24	Clear	None
10:45	5	55	100	49.55	1.59	7.64	1.17	1.54	0.5	13.4	-34.8	Clear	None
10:50	5	60	100	49.55	1.72	7.61	1.18	1.49	0.49	13.4	-39.5	Clear	None
10:55	5	65	100	49.55	1.85	7.6	1.18	1.21	0.47	13.3	-40.4	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	MW-91-2R			**Date**	11/8/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	46.9 degrees F and Clear. The wind is blowing E/NE at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	57.84	**Total Depth (ft-bmp)**	83.71	**Water Column (ft)**	25.87	**Gallons in Well**	4.20
Purge Start	11:35	**Pump Intake (ft-bmp)**	81.21	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	12:30	**Volumes Purged**	0.35	**Sample ID**	MW-91-2R_110822	**Sampled by**	Austin Westhuis
Sample Time	12:25	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:40	0	0	100	57.84	0.13	7.22	1.73	420	0.57	13.8	-75.8	Clear	None
11:45	5	5	100	57.84	0.26	7.2	1.79	224	0.24	13.8	-83.1	Clear	None
11:50	5	10	100	57.84	0.40	7.19	1.82	115	0.18	13.7	-84.8	Clear	None
11:55	5	15	100	57.84	0.53	7.18	1.83	65.3	0.19	13.6	-85.7	Clear	None
12:00	5	20	100	57.84	0.66	7.17	1.84	14.7	0.19	13.8	-87.2	Clear	None
12:05	5	25	100	57.84	0.79	7.17	1.84	11.6	0.19	13.7	-87.6	Clear	None
12:10	5	30	100	57.84	0.92	7.17	1.84	7.54	0.16	13.6	-87.8	Clear	None
12:15	5	35	100	57.84	1.06	7.17	1.84	6.63	0.17	13.5	-87.5	Clear	None
12:20	5	40	100	57.84	1.19	7.16	1.84	6.12	0.16	13.6	-87.1	Clear	None
12:25	5	45	100	57.84	1.32	7.17	1.84	5.83	0.17	13.6	-87.9	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250mL HDPE Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	P6-SB-07			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	64.0 degrees F and Cloudy. The wind is blowing S at 6.9 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	8.00	**Total Depth (ft-bmp)**	23.6	**Water Column (ft)**	15.60	**Gallons in Well**	2.53
Purge Start	16:25	**Pump Intake (ft-bmp)**	21	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	17:00	**Volumes Purged**	0.37	**Sample ID**	P6-SB-07_110922	**Sampled by**	Billy Cobern
Sample Time	17:00	**Gallons Purged**	0.92	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:30	0	0	100	8.12	0.13	7.68	0.595	13.9	2.43	15.3	83.6	Clear	None
16:35	5	5	100	8.12	0.26	7.66	0.592	12.4	2.32	15.3	82.9	Clear	None
16:40	5	10	100	8.12	0.40	7.65	0.592	11.3	2.32	15.5	81.4	Clear	None
16:45	5	15	100	8.12	0.53	7.64	0.592	10.3	2.34	15.4	81.4	Clear	None
16:50	5	20	100	8.12	0.66	7.64	0.592	9.82	2.3	15.4	81.5	Clear	None
16:55	5	25	100	8.12	0.79	7.64	0.592	9.26	2.49	15.4	81.5	Clear	None
17:00	5	30	100	8.12	0.92	7.64	0.592	9.1	2.31	15.4	81.6	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 6
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	PW-14-01			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	71.1 degrees F and Clear. The wind is blowing SW at 16.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	6	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	66.04	**Total Depth (ft-bmp)**	81.82	**Water Column (ft)**	15.78	**Gallons in Well**	23.08
Purge Start	16:10	**Pump Intake (ft-bmp)**	79.32	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	16:40	**Volumes Purged**	0.03	**Sample ID**	PW-14-01_110322	**Sampled by**	Austin Westhuis
Sample Time	16:35	**Gallons Purged**	0.66	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
16:15	0	0	100	66.04	0.13	7.41	3.89	4.86	9.19	15.5	-40.7	Clear	None
16:20	5	5	100	66.04	0.26	7.43	3.89	4.36	9.13	15.4	-29.7	Clear	None
16:25	5	10	100	66.04	0.40	7.45	3.89	4.01	9.11	15.3	-19.2	Clear	None
16:30	5	15	100	66.04	0.53	7.46	3.89	3.79	8.99	15.3	-11.2	Clear	None
16:35	5	20	100	66.04	0.66	7.46	3.88	3.53	8.9	15.3	-10.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane, 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	PW-14-02			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Haze. The wind is blowing S at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	6	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.98	**Total Depth (ft-bmp)**	85.22	**Water Column (ft)**	21.24	**Gallons in Well**	31.06
Purge Start	10:50	**Pump Intake (ft-bmp)**	82.72	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:55	**Volumes Purged**	0.06	**Sample ID**	PW-14-02_110322	**Sampled by**	Austin Westhuis
Sample Time	11:50	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:55	0	0	100	63.98	0.13	7.13	2.35	32.2	4.32	14.9	112.1	Clear	None
11:00	5	5	100	63.98	0.26	7.12	2.34	21.1	4.39	14.8	65.1	Clear	None
11:05	5	10	100	63.98	0.40	7.15	2.34	11.9	4.59	14.8	50.7	Clear	None
11:10	5	15	100	63.98	0.53	7.17	2.33	4.61	5.02	14.9	40.8	Clear	None
11:15	5	20	100	63.98	0.66	7.2	2.32	3.89	5.25	15	33	Clear	None
11:20	5	25	100	63.98	0.79	7.23	2.31	3.12	5.55	14.9	30.6	Clear	None
11:25	5	30	100	63.98	0.92	7.27	2.3	2.71	6.29	15	28.8	Clear	None
11:30	5	35	100	63.98	1.06	7.28	2.3	2.34	6.64	15	29.1	Clear	None
11:35	5	40	100	63.98	1.19	7.33	2.29	2.01	7.18	15	30.6	Clear	None
11:40	5	45	100	63.98	1.32	7.33	2.29	2.01	7.18	15	30.6	Clear	None
11:45	5	50	100	63.98	1.45	7.35	2.31	1.9	7.53	15.1	31.3	Clear	None
11:50	5	55	100	63.98	1.59	7.41	2.28	2.16	8.2	15	32.9	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs, 1,4-Dioxane, 8270D SIM	40 mL Glass	3	HCL

Comments: Well did not meet stabilization criteria. Well located next to an active sparge system. Collected groundwater sample after one hour of purging.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	PW-14-03			**Date**	11/5/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	63.0 degrees F and Partly Cloudy. The wind is blowing S at 16.1 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	69.38	**Total Depth (ft-bmp)**	94.3	**Water Column (ft)**	24.92	**Gallons in Well**	4.05
Purge Start	14:00	**Pump Intake (ft-bmp)**	91.8	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	14:40	**Volumes Purged**	0.52	**Sample ID**	PW-14-03_110522	**Sampled by**	Austin Westhuis
Sample Time	14:35	**Gallons Purged**	0.92	**Replicate/ Code No.**	Dup-12_110522	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:05	0	0	100	69.38	0.13	6.89	3.2	179	5.63	16.6	46.4	Clear	None
14:10	5	5	100	69.38	0.26	6.91	3.19	122	6.01	16.7	47.3	Clear	None
14:15	5	10	100	69.38	0.40	6.92	3.2	108	5.97	16.6	50.8	Clear	None
14:20	5	15	100	69.38	0.53	6.92	3.19	101	5.58	16.4	52.2	Clear	None
14:25	5	20	100	69.38	0.66	6.92	3.2	92.4	5.55	16.4	53.7	Clear	None
14:30	5	25	100	69.38	0.79	6.91	3.2	90.2	5.53	16.4	56.4	Clear	None
14:35	5	30	100	69.38	0.92	6.9	3.2	84.8	5.53	16.4	56.4	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane, 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up

Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-14-02			**Date**	11/3/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	66.9 degrees F and Clear. The wind is blowing S/SE at 10.3 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	62.68	**Total Depth (ft-bmp)**	71.6	**Water Column (ft)**	8.92	**Gallons in Well**	1.45
Purge Start	09:10	**Pump Intake (ft-bmp)**	69.1	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	10:15	**Volumes Purged**	1.18	**Sample ID**	TW-14-02_110322	**Sampled by**	Austin Westhuis
Sample Time	10:10	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:15	0	0	100	62.68	0.13	7.44	4.85	1100	13.16	14.9	232.1	Clear	None
09:20	5	5	100	62.68	0.26	7.72	4.84	866	12.78	14.8	224	Clear	None
09:25	5	10	100	62.68	0.40	7.77	4.87	811	13.62	14.8	221.7	Clear	None
09:30	5	15	100	62.68	0.53	7.84	4.87	633	13.25	14.9	217.6	Clear	None
09:35	5	20	100	62.68	0.66	7.88	4.87	489	11.29	15	214.2	Clear	None
09:40	5	25	100	62.68	0.79	7.89	4.87	366	12.86	15	212.7	Clear	None
09:45	5	30	100	62.68	0.92	7.9	4.87	303	11.58	15	210.8	Clear	None
09:50	5	35	100	62.68	1.06	7.91	4.87	276	12.47	15.1	209	Clear	None
09:55	5	40	100	62.68	1.19	7.91	4.87	255	12.24	15.1	208.9	Clear	None
10:00	5	45	100	62.68	1.32	7.92	4.87	227	12.48	15.1	207.8	Clear	None
10:05	5	50	100	62.68	1.45	7.87	4.87	168	13.73	15	206.5	Clear	None
10:10	5	55	100	62.68	1.59	7.71	4.87	239	13.03	15	206.5	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs, 1,4-Dioxane, 8270D SIM	40 mL Glass	3	HCL

Comments: Well did not meet stabilization criteria. Well located next to an active sparge system. Collected groundwater sample after one hour of purging.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.

Condition of Well: Good condition

Well Completion: Stick-up

Well Locked at Arrival: yes

Well Locked at Departure: yes

Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter

mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-14-06			**Date**	11/7/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	48.9 degrees F and Clear.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	64.70	**Total Depth (ft-bmp)**	86.5	**Water Column (ft)**	21.80	**Gallons in Well**	3.54
Purge Start	10:35	**Pump Intake (ft-bmp)**	84	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	11:35	**Volumes Purged**	0.45	**Sample ID**	TW-14-06_110722	**Sampled by**	Billy Cobern
Sample Time	11:35	**Gallons Purged**	1.59	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:40	0	0	100	64.22	0.13	7.34	3.39	631	11.9	12.3	95.7	Clear	None
10:45	5	5	100	64.70	0.26	7.11	3.37	607	10.52	12	114.2	Clear	None
10:50	5	10	100	64.98	0.40	6.95	3.35	791	11.5	12.1	132.3	Clear	None
10:55	5	15	100	65.04	0.53	6.94	3.35	581	10.44	12.1	135.8	Clear	None
11:00	5	20	100	65.04	0.66	6.94	3.36	549	10.27	12	138.2	Clear	None
11:05	5	25	100	65.15	0.79	6.94	3.34	511	9.95	12.2	144.2	Clear	None
11:10	5	30	100	65.33	0.92	6.94	3.34	428	9.96	12.3	145.5	Clear	None
11:15	5	35	100	65.45	1.06	6.95	3.35	581	10.07	12.4	146.8	Clear	None
11:20	5	40	100	65.62	1.19	6.95	3.33	412	10.39	12.6	148	Clear	None
11:25	5	45	100	65.70	1.32	6.96	3.33	404	9.75	12.7	149.2	Clear	None
11:30	5	50	100	65.84	1.45	6.96	3.33	361	9.57	12.7	149.5	Clear	None
11:35	5	55	100	65.96	1.59	6.96	3.33	313	9.53	12.7	149.7	Clear	None

Constituent Sampled	Container	Number	Preservative
T. Phosphorus,TKN	250 mL Plastic	1	H2SO4
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL
Nitrate/Nitrite	125 mL Plastic	1	None

Comments: Shut off plant 3 BioSparge system prior to gauging/sampling well. Didn't meet drawdown requirements. Turbidity didn't stabilize.

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 3
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-15-11			**Date**	11/5/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	62.1 degrees F and Cloudy and Windy. The wind is blowing S/SE at 20.8 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	2	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	68.55	**Total Depth (ft-bmp)**	87.03	**Water Column (ft)**	18.48	**Gallons in Well**	3.00
Purge Start	12:35	**Pump Intake (ft-bmp)**	84.53	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	13:35	**Volumes Purged**	0.53	**Sample ID**	TW-15-11_110522	**Sampled by**	Austin Westhuis
Sample Time	13:30	**Gallons Purged**	1.45	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:40	0	0	100	68.55	0.13	6.71	3.26	217	8.22	15.4	25	Clear	None
12:45	5	5	100	68.55	0.26	6.7	3.29	188	10.35	15.4	26.9	Clear	None
12:50	5	10	100	68.55	0.40	6.71	3.35	162	7.63	15.4	27.9	Clear	None
12:55	5	15	100	68.55	0.53	6.73	3.38	141	9.74	15.4	29.2	Clear	None
13:00	5	20	100	68.55	0.66	6.73	3.4	122	10.21	15.4	29.9	Clear	None
13:05	5	25	100	68.55	0.79	6.73	3.42	115	10.11	15.4	30.3	Clear	None
13:10	5	30	100	68.55	0.92	6.73	3.43	77.2	9.65	15.5	31.2	Clear	None
13:15	5	35	100	68.55	1.06	6.75	3.45	51.1	10.07	15.4	32.3	Clear	None
13:20	5	40	100	68.55	1.19	6.75	3.47	33	9.98	15.4	33.9	Clear	None
13:25	5	45	100	68.55	1.32	6.76	3.47	31.2	9.96	15.4	34.8	Clear	None
13:30	5	50	100	68.55	1.45	6.76	3.47	30.3	9.82	15.4	35.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: See figure.
Condition of Well: Good condition
Well Completion: Stick-up
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: 10G200

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	TW-15-12			**Date**	11/2/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	37.9 degrees F and Fog/Mist. The wind is blowing undefined at 0.0 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	63.42	**Total Depth (ft-bmp)**	76.8	**Water Column (ft)**	13.38	**Gallons in Well**	8.70
Purge Start	09:00	**Pump Intake (ft-bmp)**	74	**Purge Method**	Low-Flow	**Purge Equipment**	Bladder
Purge End	09:50	**Volumes Purged**	0.15	**Sample ID**	TW-15-12_110222	**Sampled by**	Billy Cobern
Sample Time	09:50	**Gallons Purged**	1.32	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:05	0	0	100	63.42	0.13	7.69	2.4	24.8	9.48	13.6	157.1	Clear	None
09:10	5	5	100	63.42	0.26	7.65	2.42	22.6	9.43	13.5	155.5	Clear	None
09:15	5	10	100	63.42	0.40	7.64	2.43	19.1	9.42	13.2	154.7	Clear	None
09:20	5	15	100	63.42	0.53	7.64	2.42	29.9	9.57	13.7	153	Clear	None
09:25	5	20	100	63.42	0.66	7.64	2.42	22.6	9.91	13.7	152.5	Clear	None
09:30	5	25	100	63.42	0.79	7.64	2.42	31.7	10.28	13.7	152.1	Clear	None
09:35	5	30	100	63.42	0.92	7.65	2.42	35.7	10.15	13.8	151.6	Clear	None
09:40	5	35	100	63.42	1.06	7.65	2.42	44.7	10.44	13.7	151.1	Clear	None
09:45	5	40	100	63.42	1.19	7.65	2.4	46.1	10.68	13.7	151	Clear	None
09:50	5	45	100	63.42	1.32	7.65	2.42	48.4	10.14	13.8	150.9	Clear	None

Constituent Sampled	Container	Number	Preservative
T. Phosphorus,TKN	250 mL Plastic	1	H2SO4
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL
Nitrate/Nitrite	125 mL Plastic	1	None

Comments: Bolts for lid are missing

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

Well Information

Well Location: Plant 2

Condition of Well: Good condition

Well Completion: Flush mount

Well Locked at Arrival: no

Well Locked at Departure: no

Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Groundwater Sampling Form

ARCADIS

Project Number	30112892	**Well ID**	UNK-15			**Date**	11/9/2022
Project Name/Location	RACER Lansing GWS 2022		**Weather(°F)**	It is Clear. The wind is blowing S at 9.2 mph.			
Measuring Pt. Description	Top of Inner Casing	**MP Elevation**		**Casing Diameter (in)**	4	**Well Casing Material**	PVC
Static Water Level (ft-bmp)	5.00	**Total Depth (ft-bmp)**	15.66	**Water Column (ft)**	10.66	**Gallons in Well**	6.93
Purge Start	11:58	**Pump Intake (ft-bmp)**	13.4	**Purge Method**	Low-Flow	**Purge Equipment**	Peristaltic
Purge End	12:24	**Volumes Purged**	0.10	**Sample ID**	UNK-15_110922	**Sampled by**	Cooper Osgood
Sample Time	12:20	**Gallons Purged**	0.72	**Replicate/ Code No.**	NA	**Sample Type**	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:00	0	0	175	0.50	0.09	8.37	0.69	6.04	2.03	16.1	62.8	Clear	None
12:05	5	5	150	1.50	0.29	8.35	0.67	0.02	1.25	15.8	64.8	Clear	None
12:10	5	10	175	1.60	0.52	8.35	0.67	0.02	1.27	15.6	65	Clear	None
12:15	5	15	150	1.90	0.72	8.38	0.67	0.02	1.27	15.7	64.8	Clear	None

Constituent Sampled	Container	Number	Preservative
PFAS	250 mL Plastic	2	None

Comments:

Well Casing Volume Conversion

Well diameter (inches) = gallons per foot — 1 = 0.04; 1.5 = 0.09; 2.5 = 0.26; 3.5 = 0.50; 6 = 1.47
1.25 = 0.06; 2 = 0.16; 3 = 0.37; 4 = 0.65

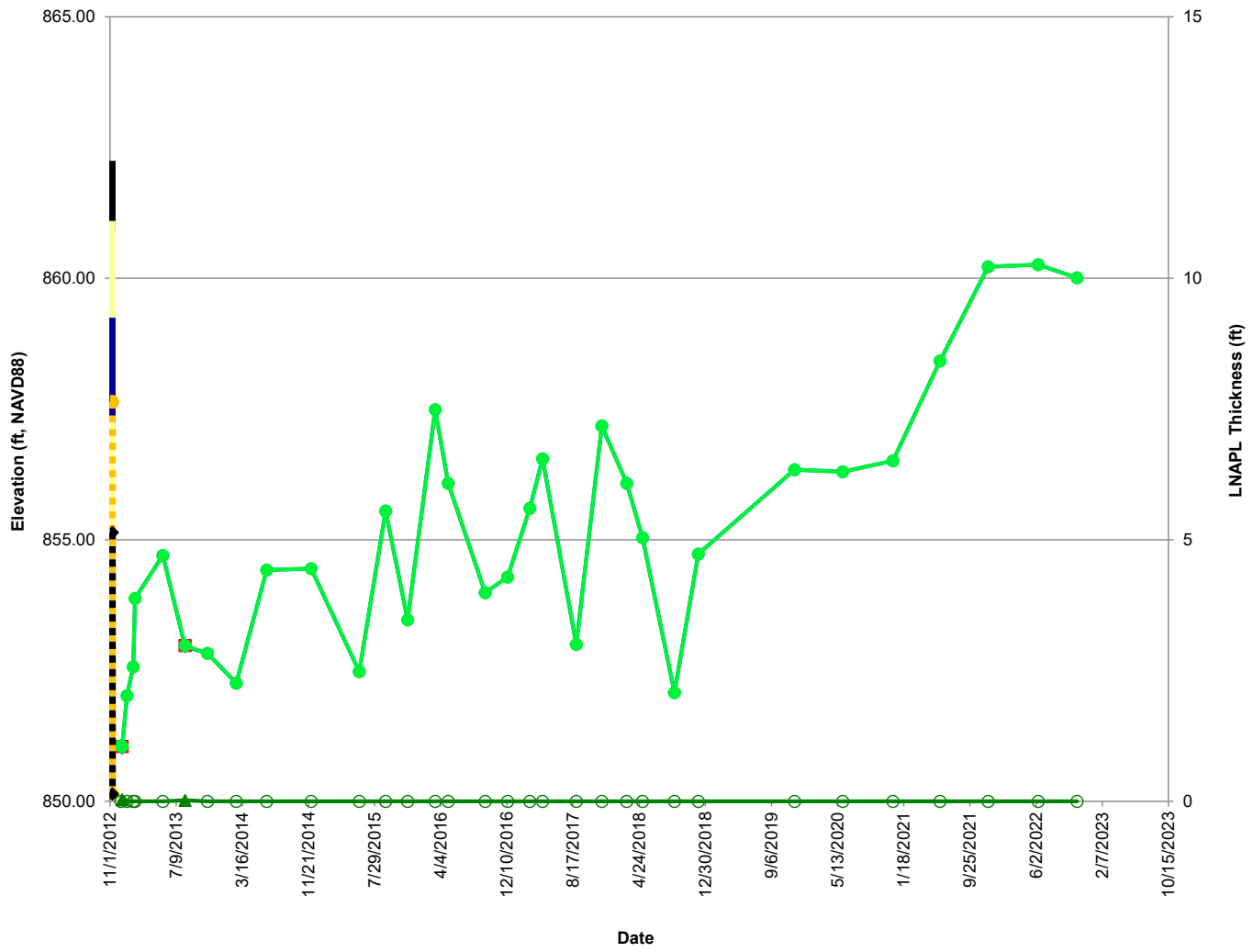
Well Information

Well Location: Lansing Mi
Condition of Well: Good condition
Well Completion: Flush mount
Well Locked at Arrival: yes
Well Locked at Departure: yes
Key Number To Well: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
mS/cm = milliSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
mV = milliv

Appendix D

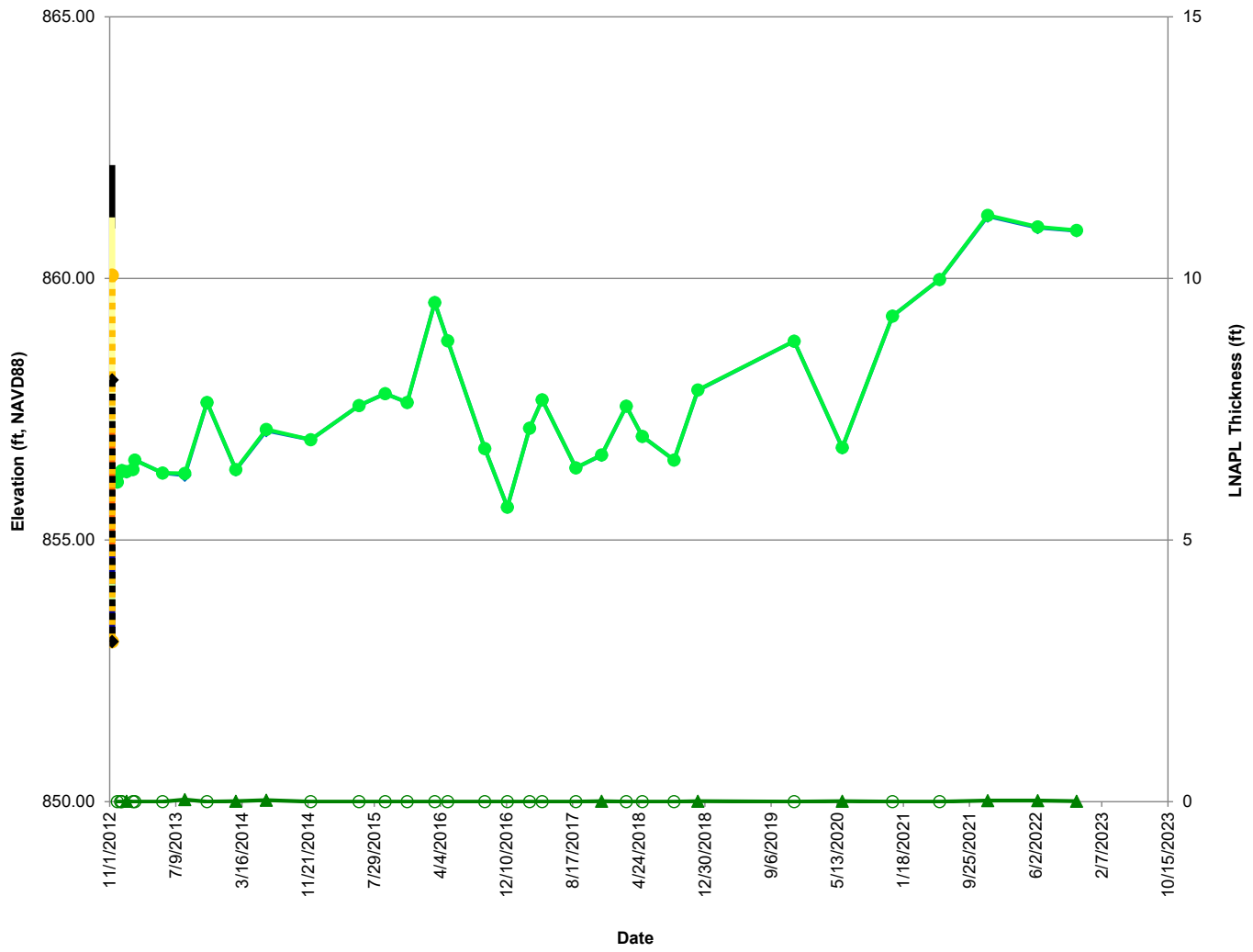
LNAPL Trend Graphs



RACER Lansing
Lansing, MI

LMW-12-01 LNAPL HYDROGRAPH

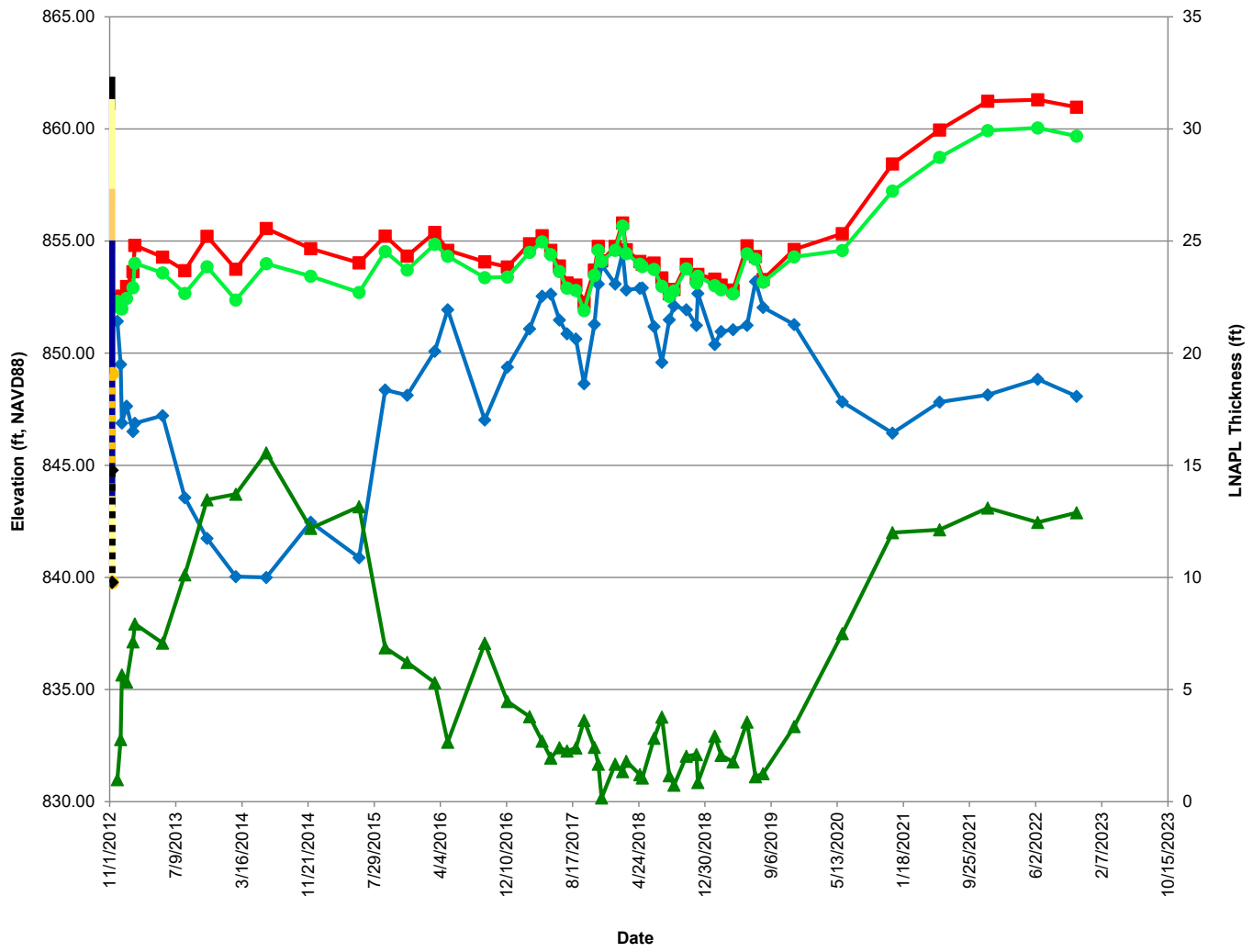
APPENDIX
D



RACER Lansing
Lansing, MI

LMW-12-03S LNAPL HYDROGRAPH

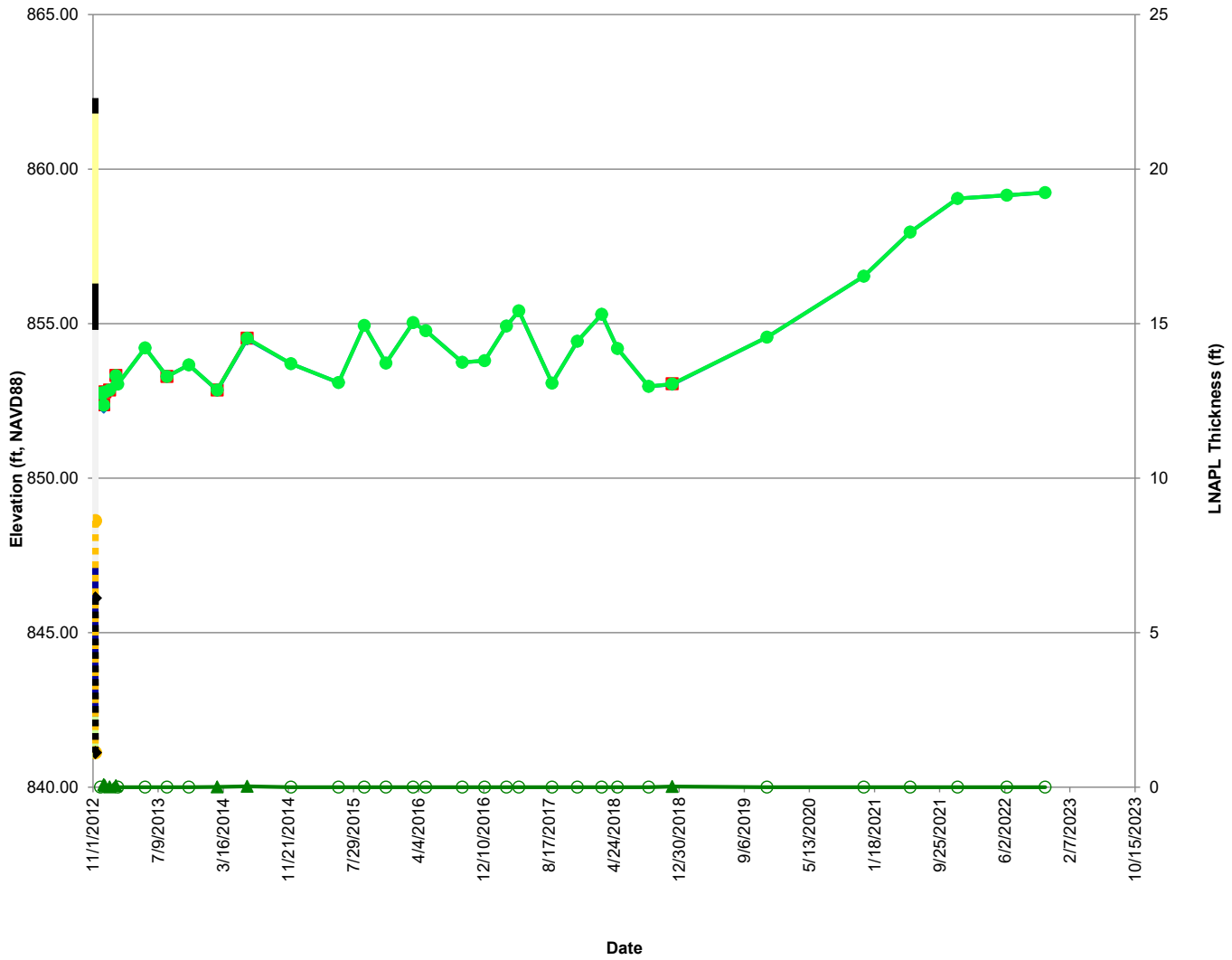
APPENDIX
D



RACER Lansing
Lansing, MI

LMW-12-03D LNAPL HYDROGRAPH

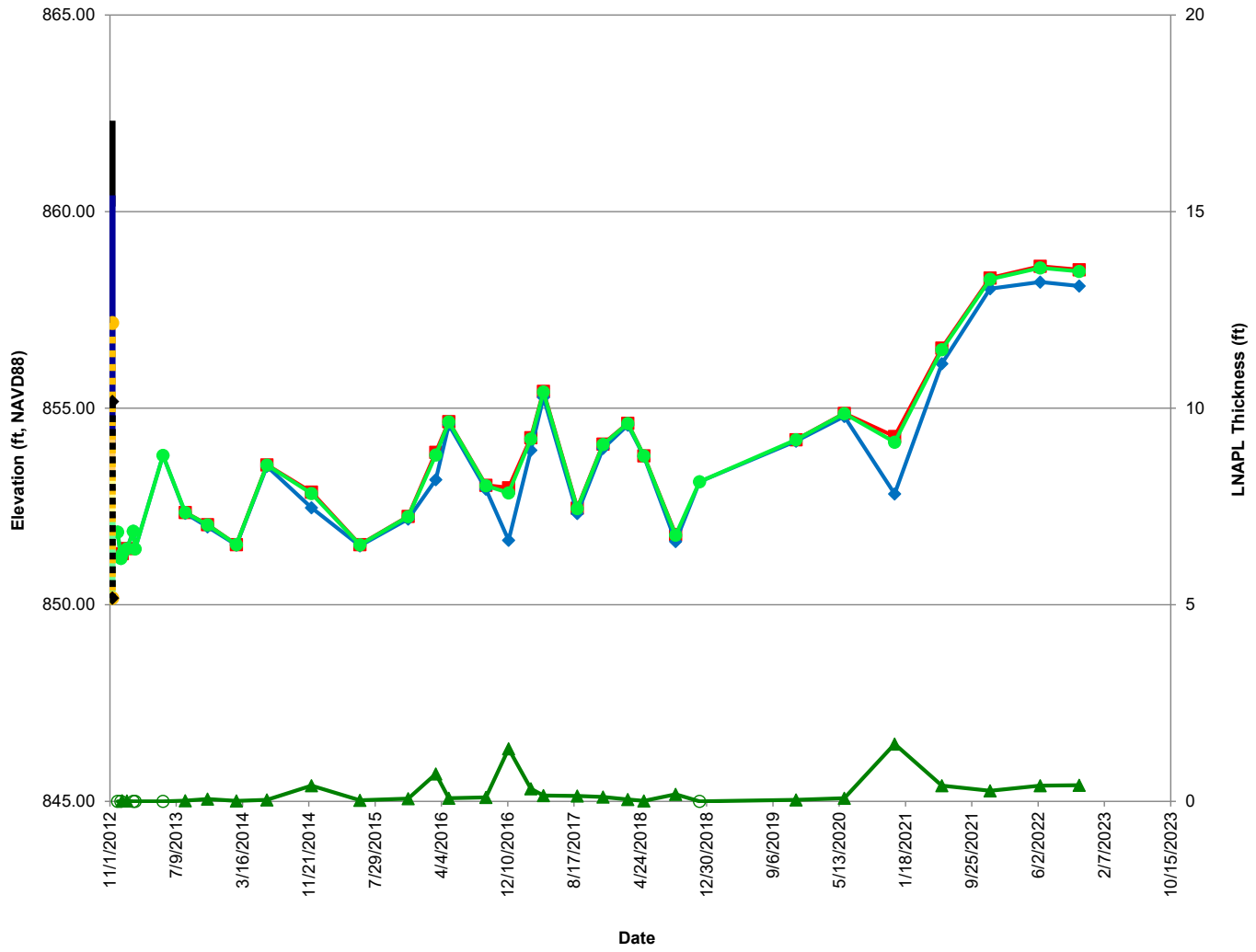
APPENDIX
D



RACER Lansing
Lansing, MI

LMW-12-04 LNAPL HYDROGRAPH

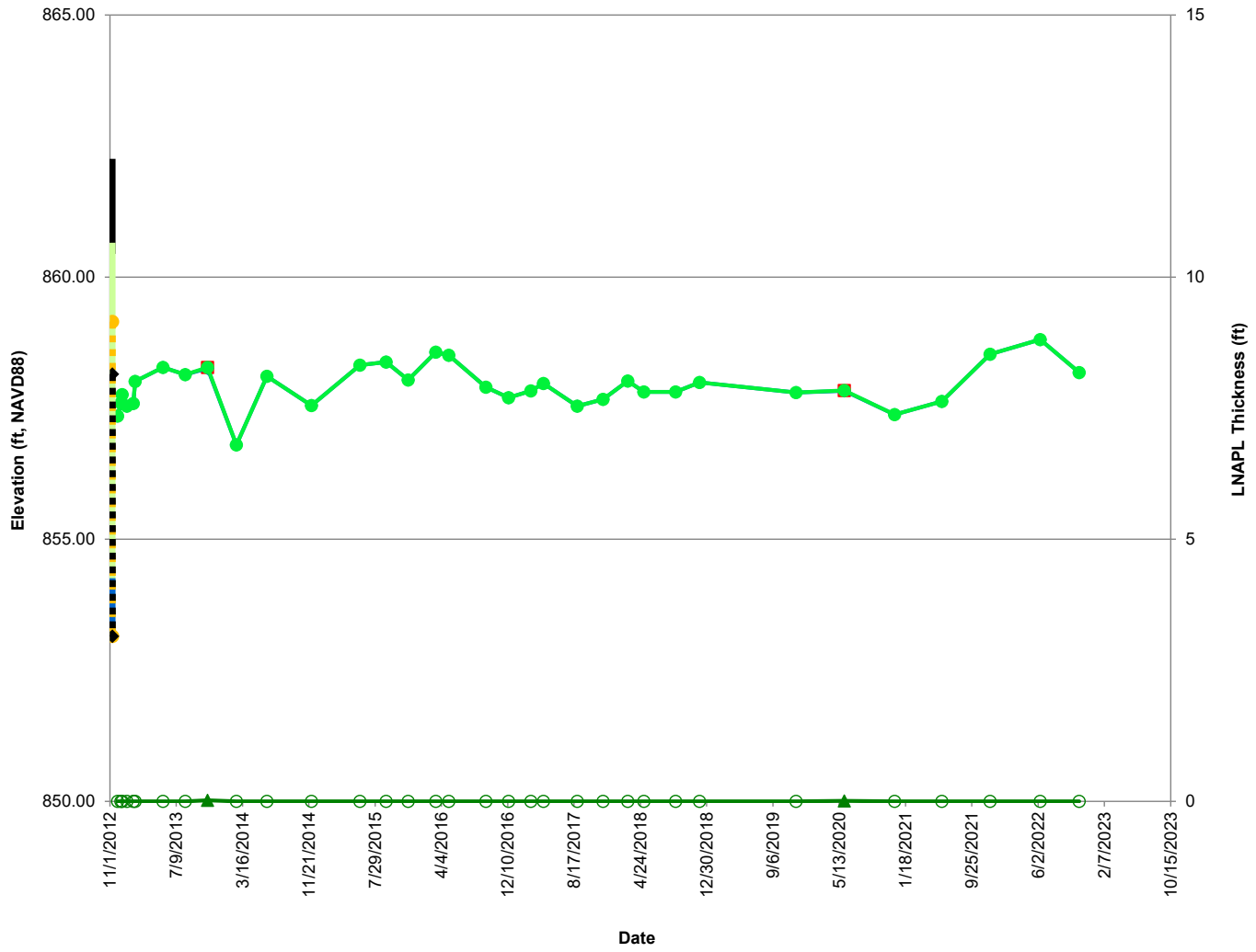
APPENDIX
D



RACER Lansing
Lansing, MI

LMW-12-05 LNAPL HYDROGRAPH

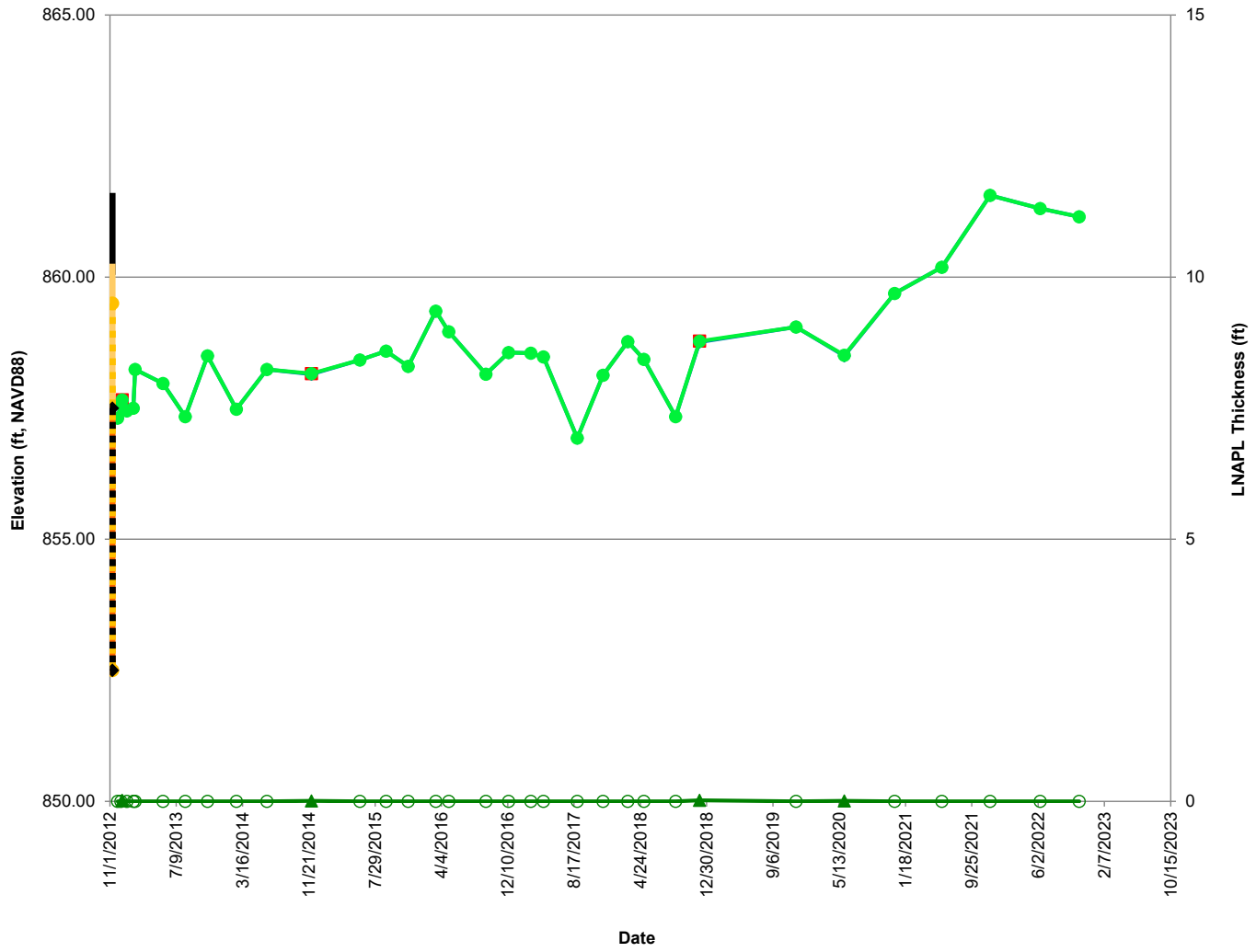
APPENDIX
D



RACER Lansing
Lansing, MI

LMW-12-06 LNAPL HYDROGRAPH

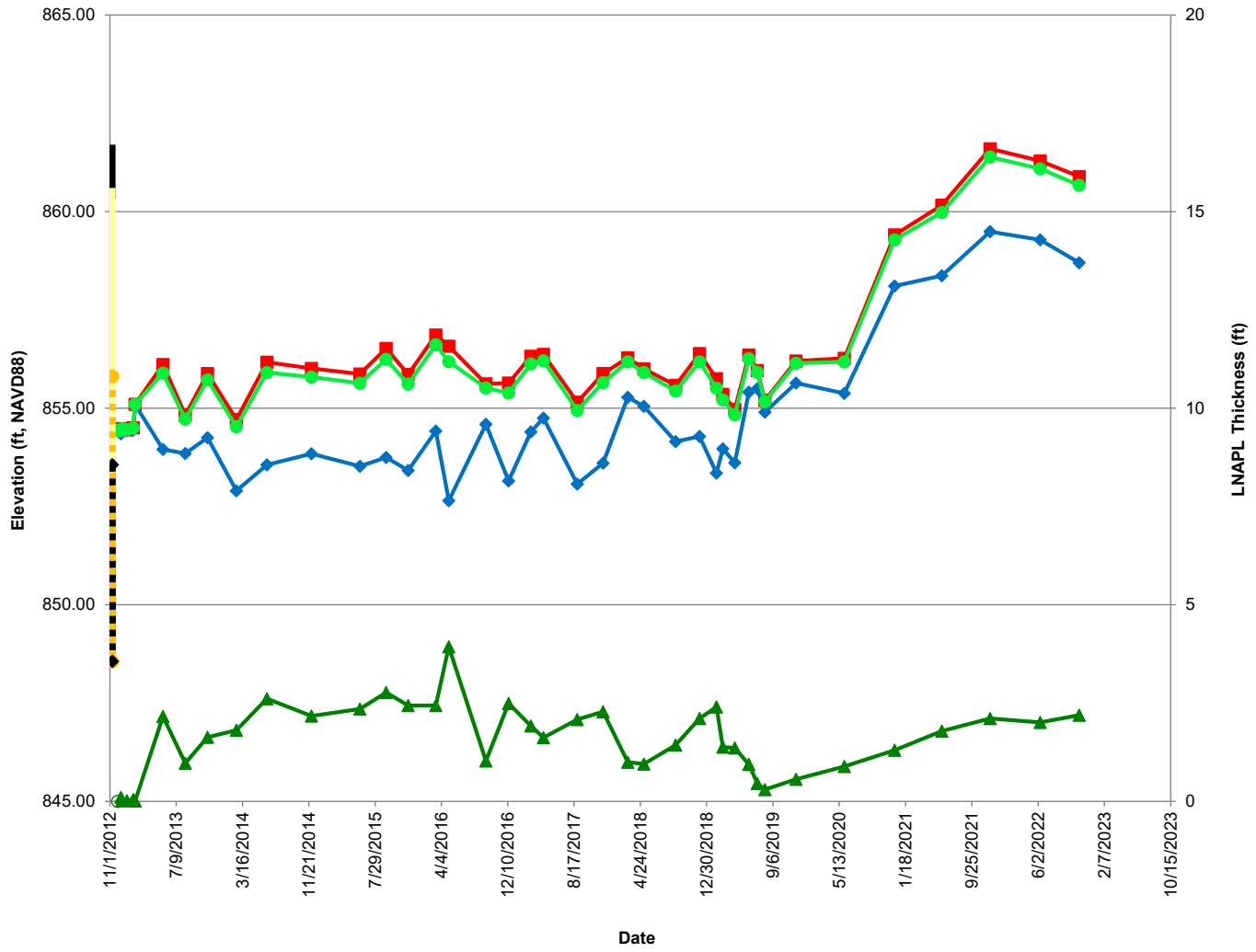
APPENDIX
D



RACER Lansing
Lansing, MI

LMW-12-07 LNAPL HYDROGRAPH

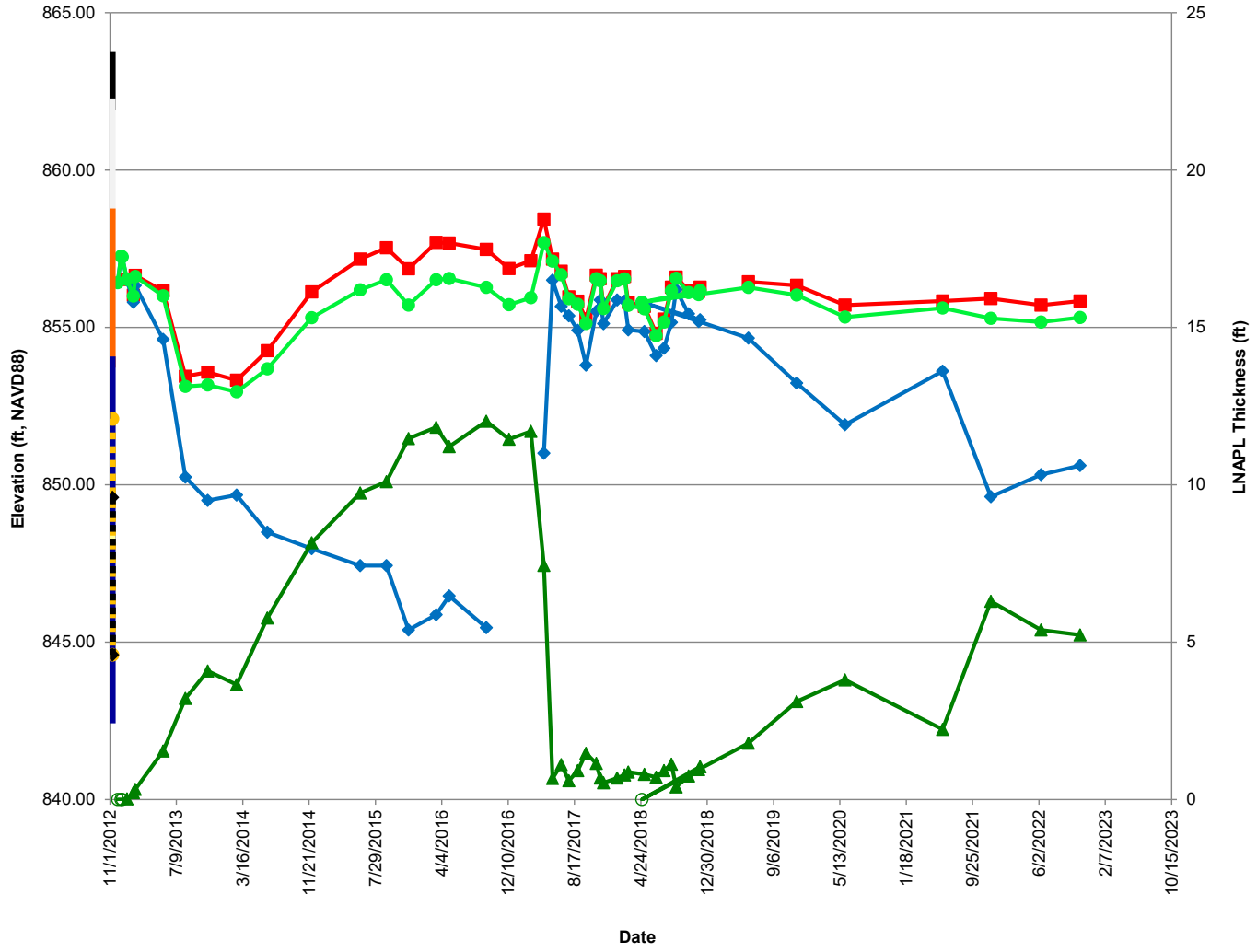
APPENDIX
D



RACER Lansing
Lansing, MI

LMW-12-08 LNAPL HYDROGRAPH

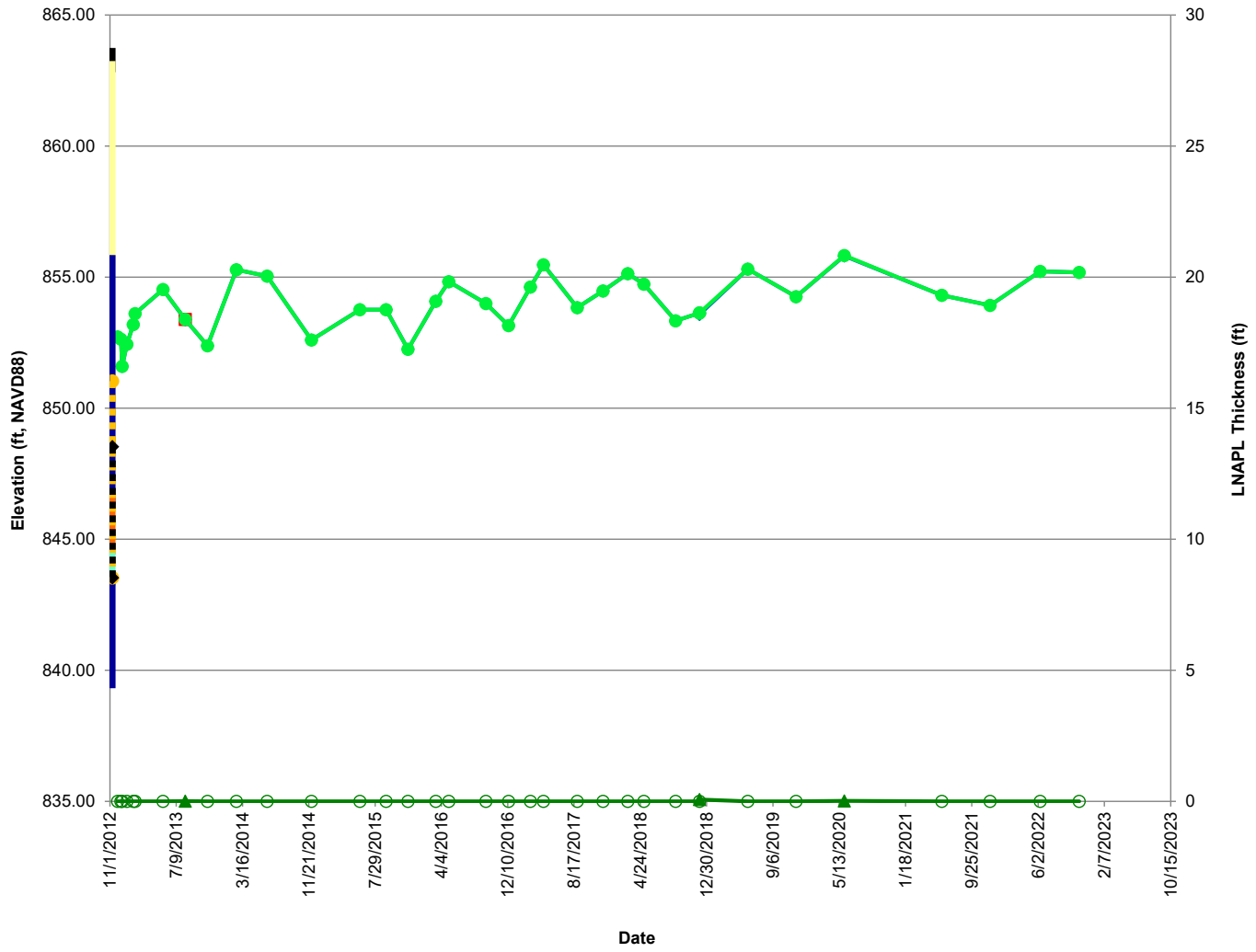
APPENDIX
D



RACER Lansing
Lansing, MI

LMW-12-10 LNAPL HYDROGRAPH

APPENDIX
D

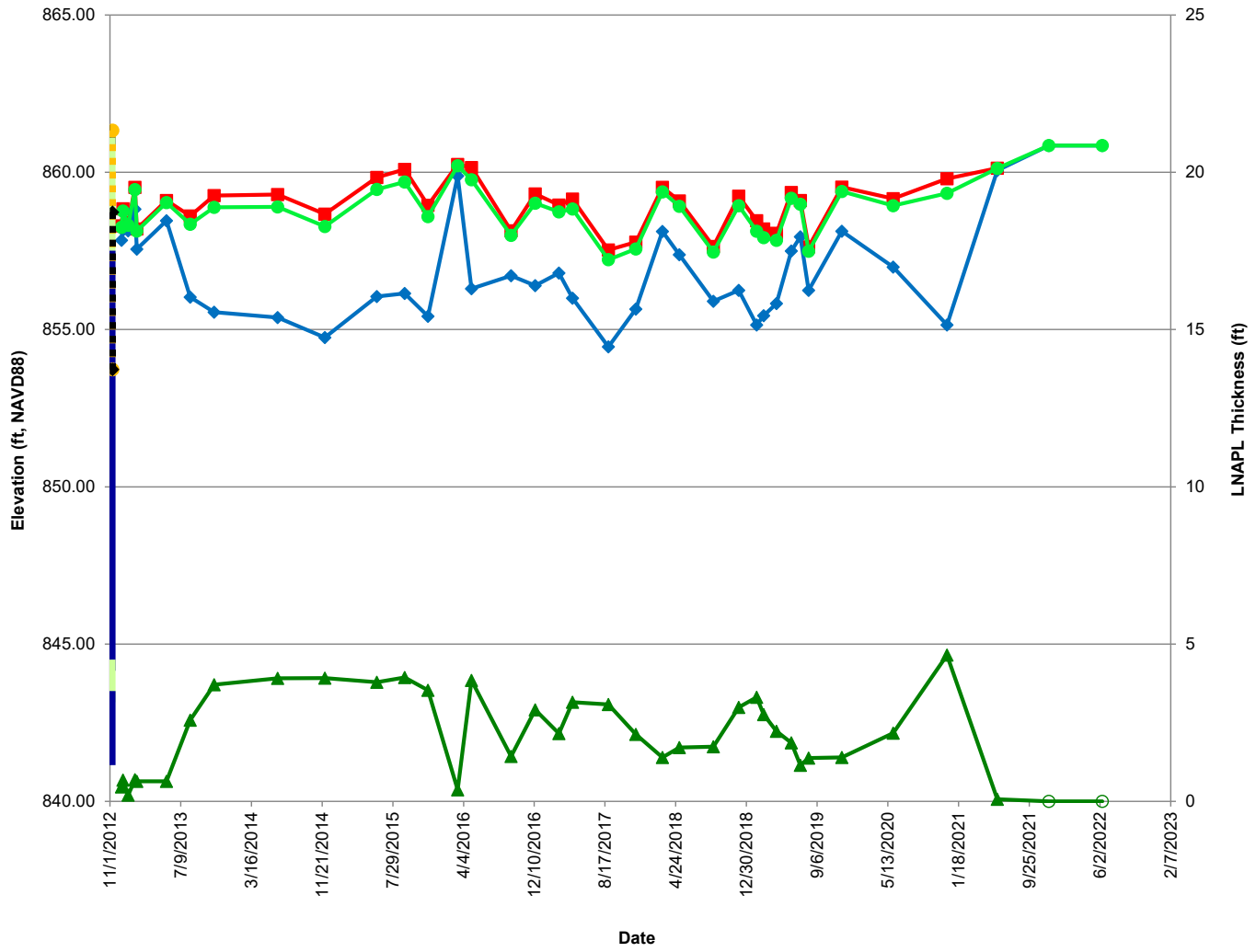


RACER Lansing
Lansing, MI

LMW-12-11 LNAPL HYDROGRAPH

APPENDIX
D

ARCADIS



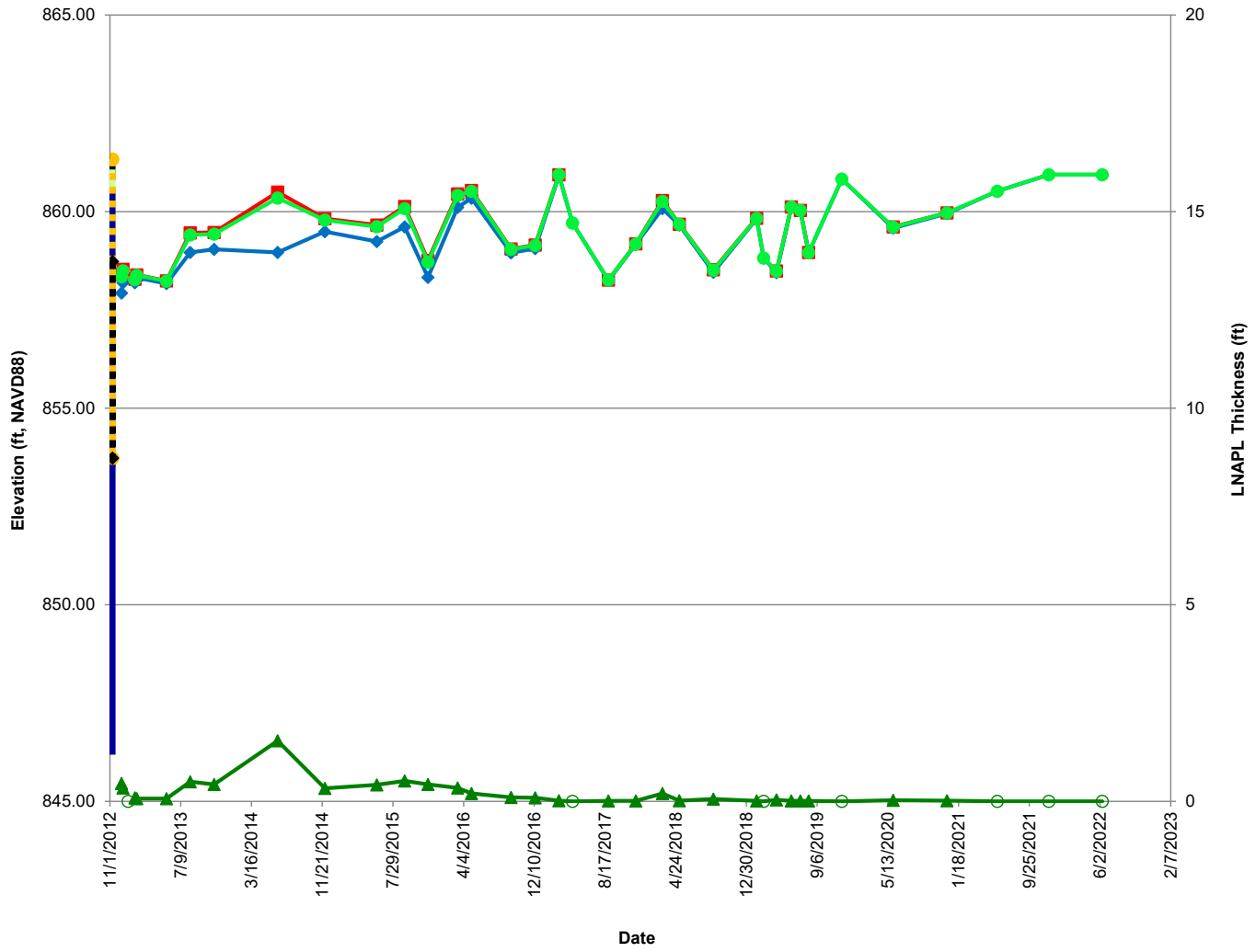
Air-NAPL Interface
NAPL-Water or Air-Water Interface
Potentiometric Surface
Concrete
Clay
Fine Sand
Filter Pack
Screened Interval
NAPL Thickness

RACER Lansing
Lansing, MI

PMW-01 LNAPL HYDROGRAPH

ARCADIS

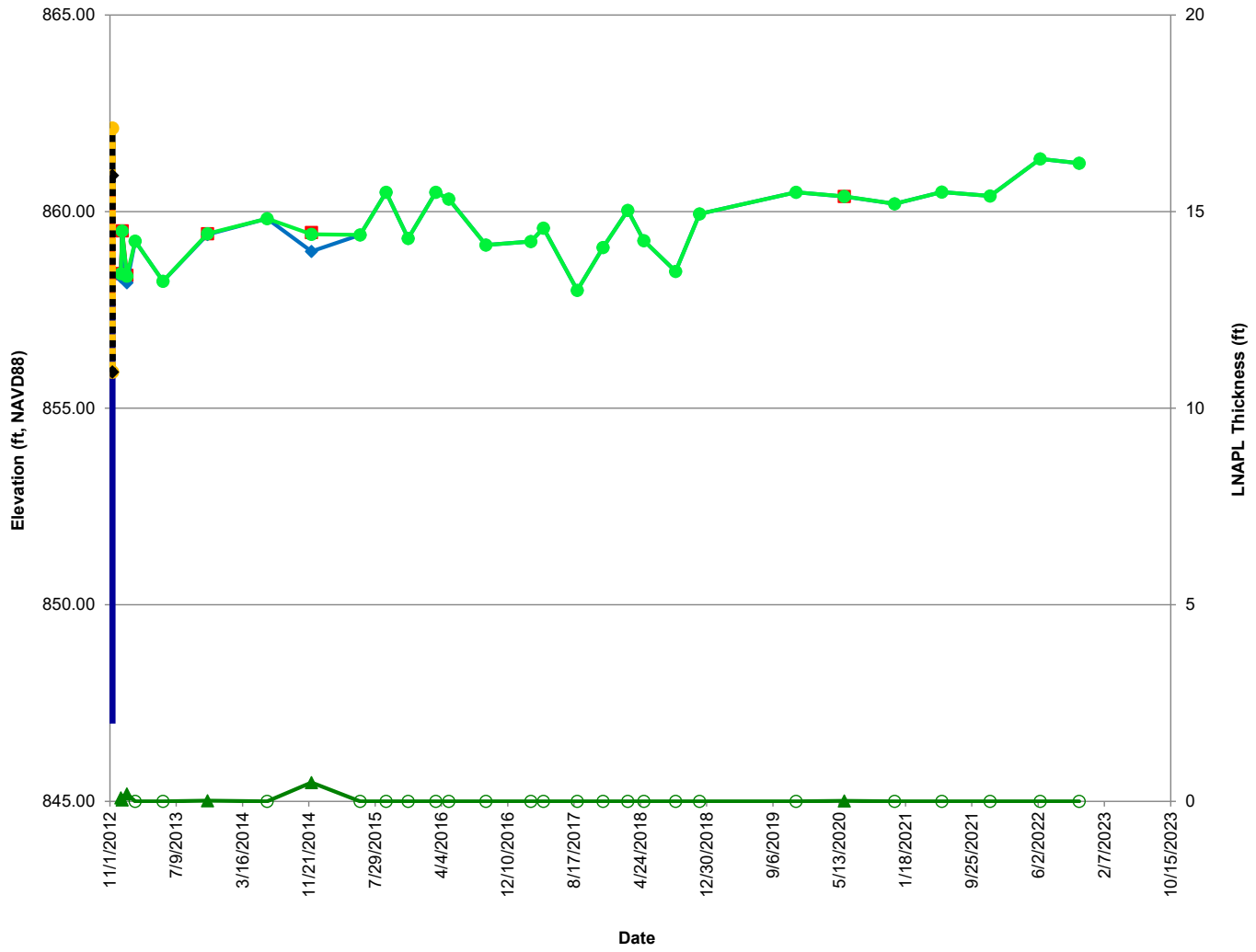
APPENDIX
D



RACER Lansing
Lansing, MI

PMW-02 LNAPL HYDROGRAPH

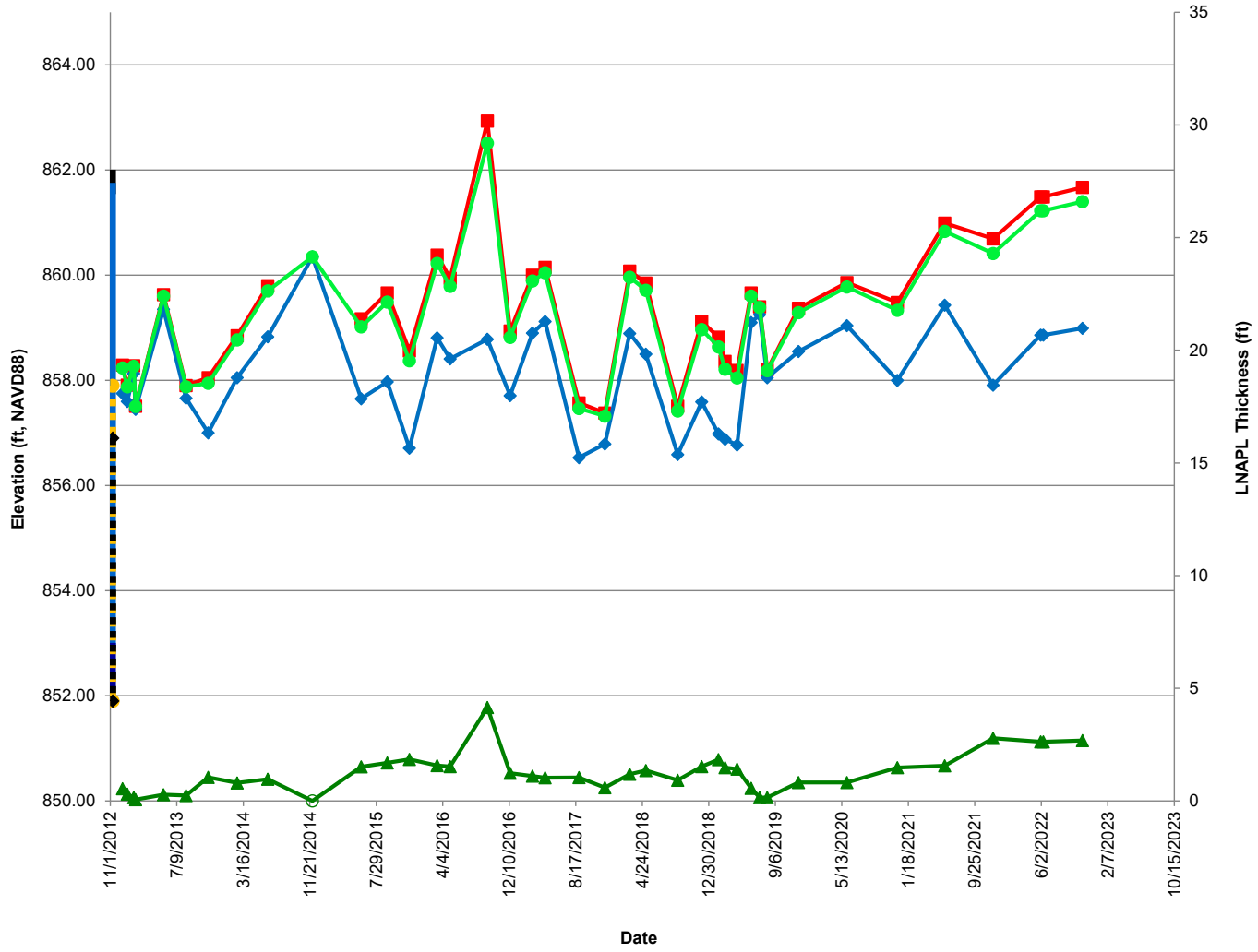
APPENDIX
D



RACER Lansing
Lansing, MI

PMW-03 LNAPL HYDROGRAPH

APPENDIX
D



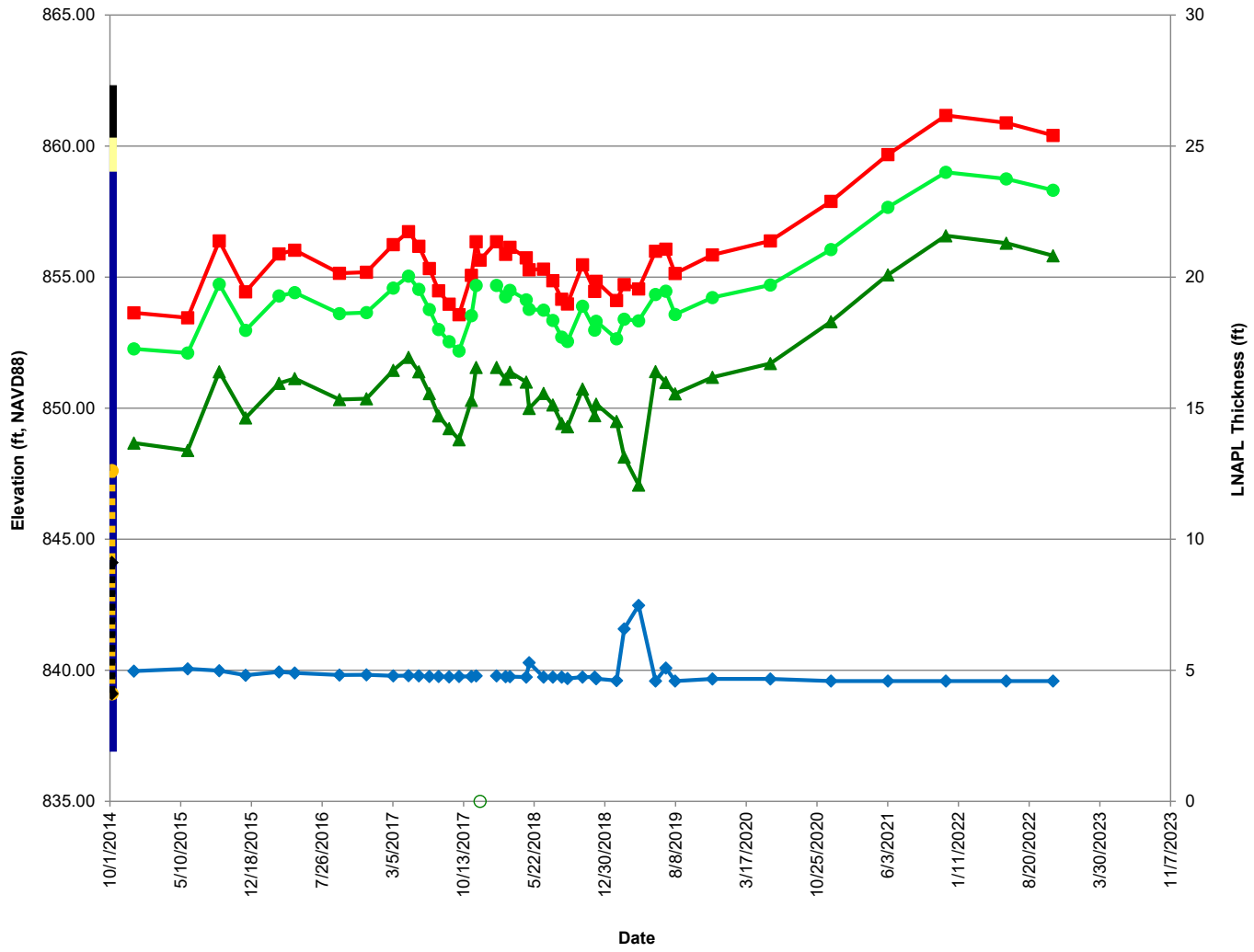
Air-NAPL Interface
NAPL-Water or Air-Water Interface
Potentiometric Surface
Concrete
Silty Clay
Clay
Filter Pack
Screened Interval
NAPL Thickness

RACER Lansing
Lansing, MI

P2-SB-37 LNAPL HYDROGRAPH

APPENDIX
D

ARCADIS

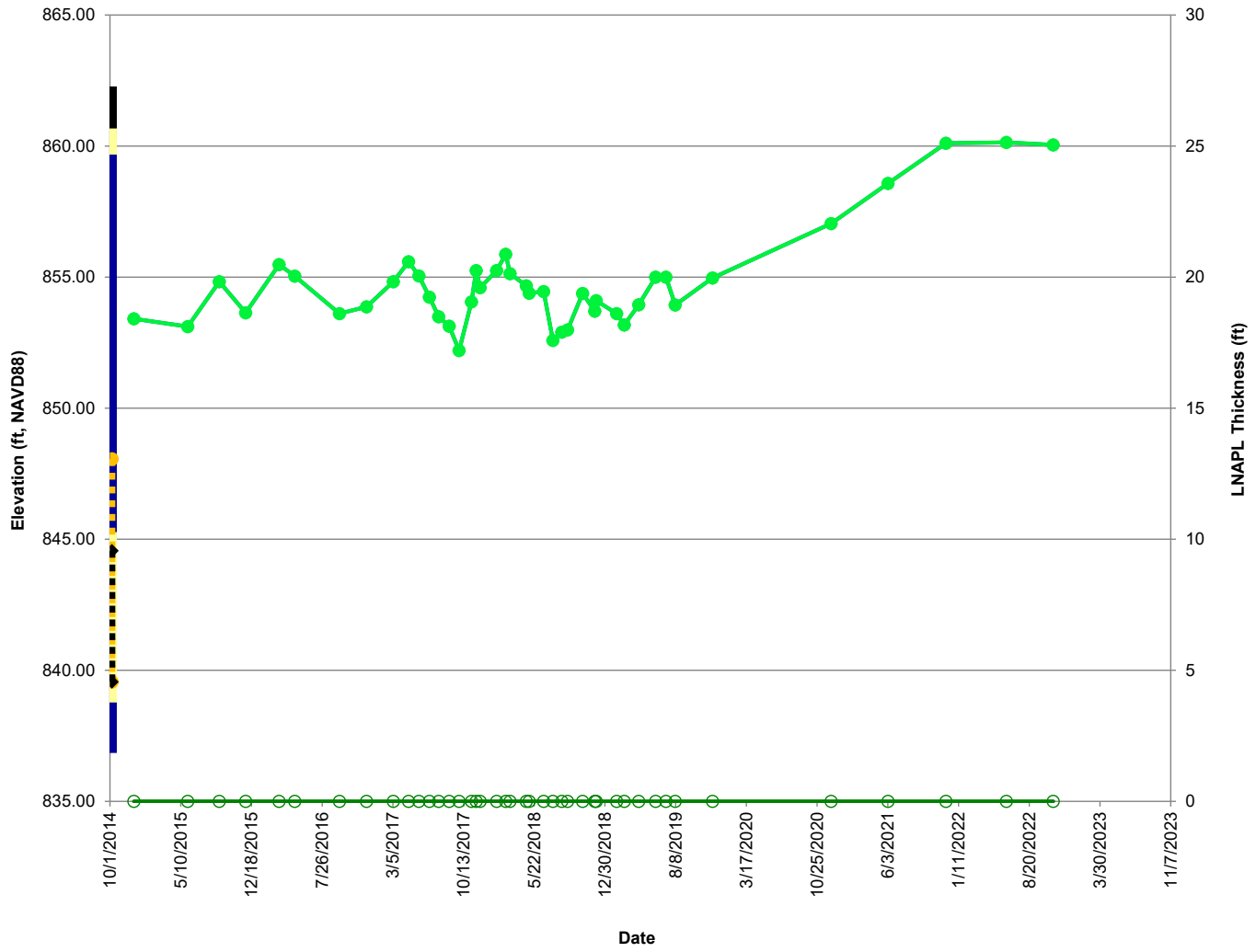


RACER Lansing
Lansing, MI

LMW-14-12D LNAPL HYDROGRAPH

ARCADIS

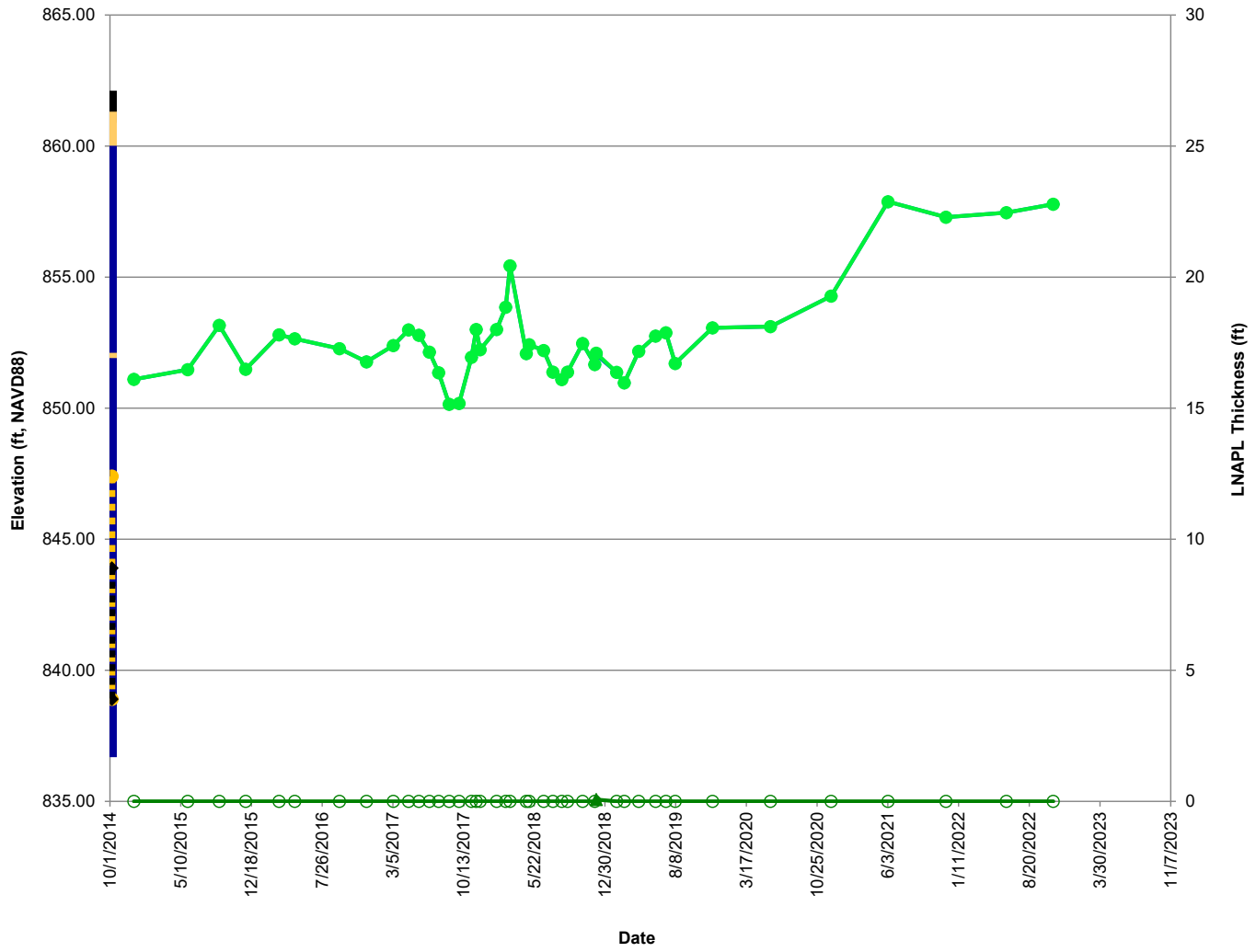
APPENDIX
D



RACER Lansing
Lansing, MI

LMW-14-13D LNAPL HYDROGRAPH

APPENDIX
D

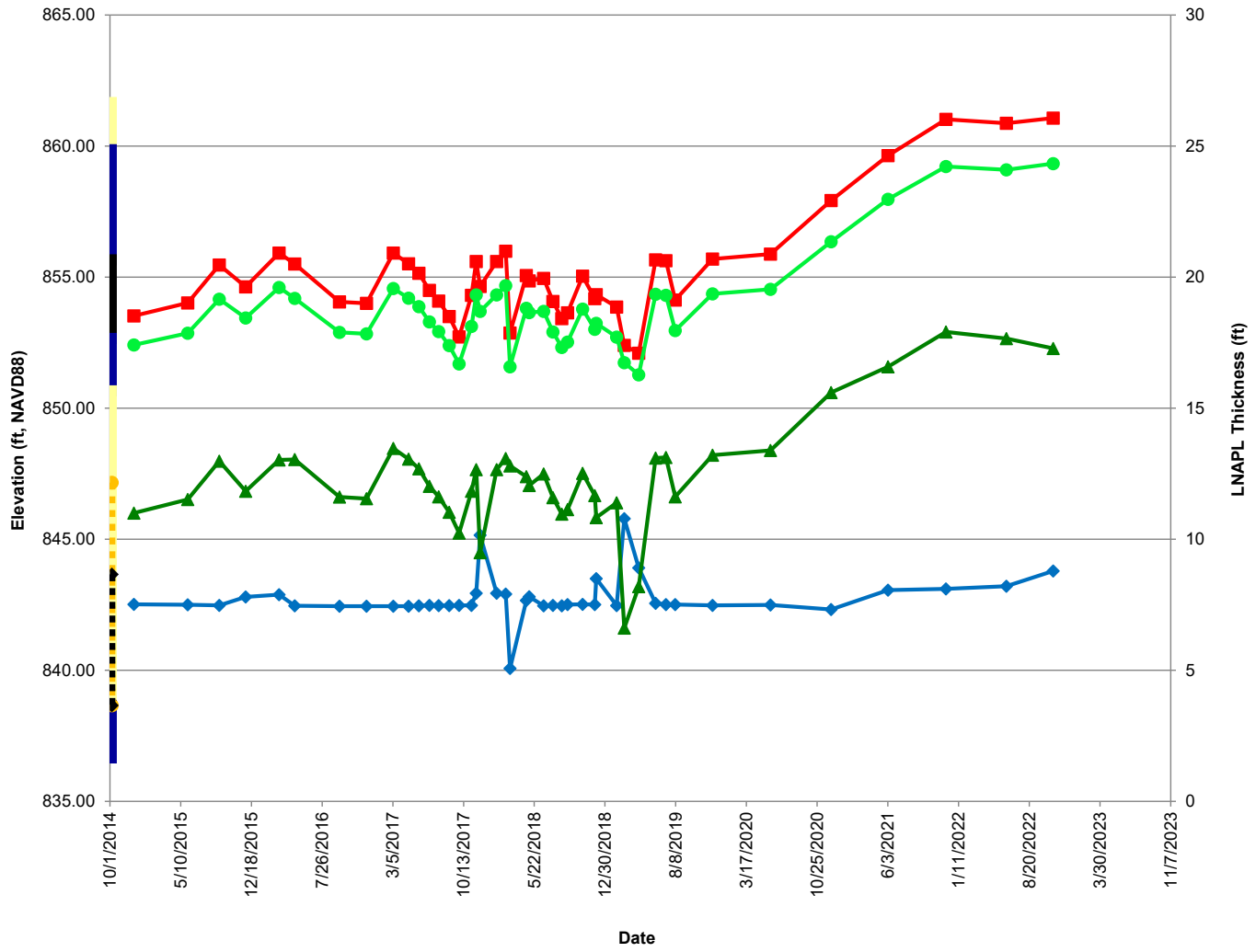


RACER Lansing
Lansing, MI

LMW-14-14D LNAPL HYDROGRAPH

APPENDIX
D

ARCADIS

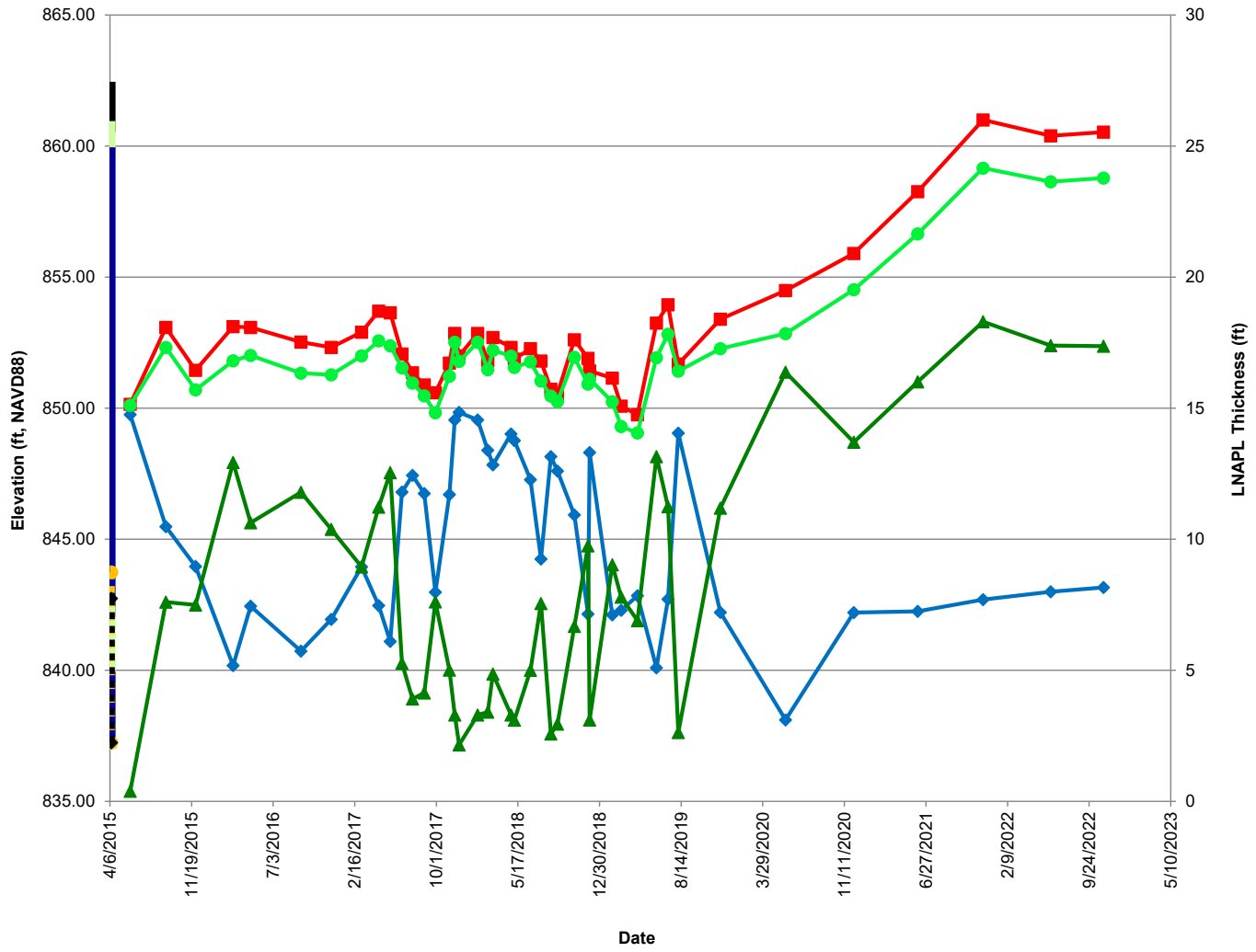


RACER Lansing
Lansing, MI

LMW-14-15D LNAPL HYDROGRAPH

ARCADIS

APPENDIX
D

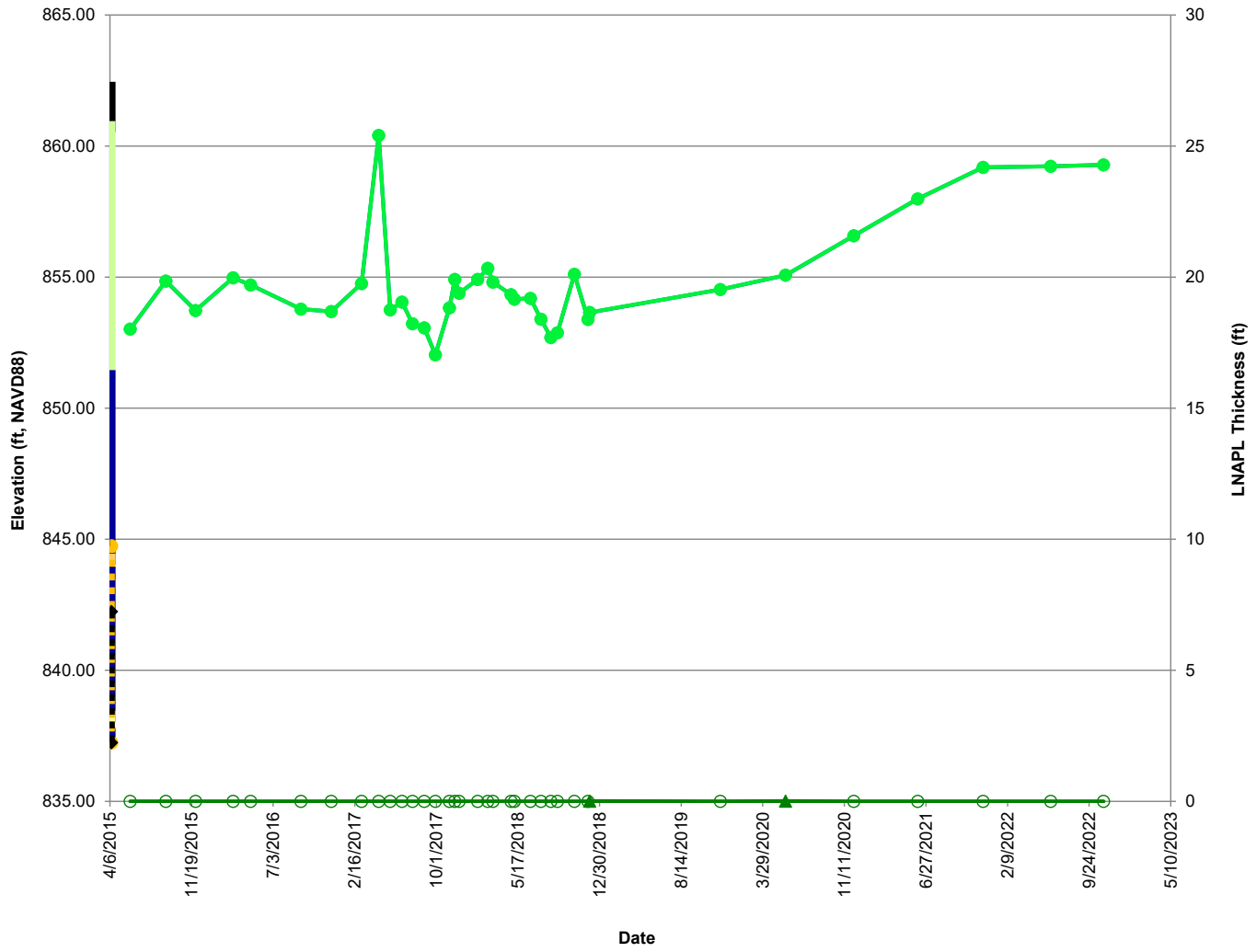


RACER Lansing
Lansing, MI

LMW-15-16D LNAPL HYDROGRAPH

APPENDIX
D

ARCADIS



RACER Lansing
Lansing, MI

LMW-15-17D LNAPL HYDROGRAPH

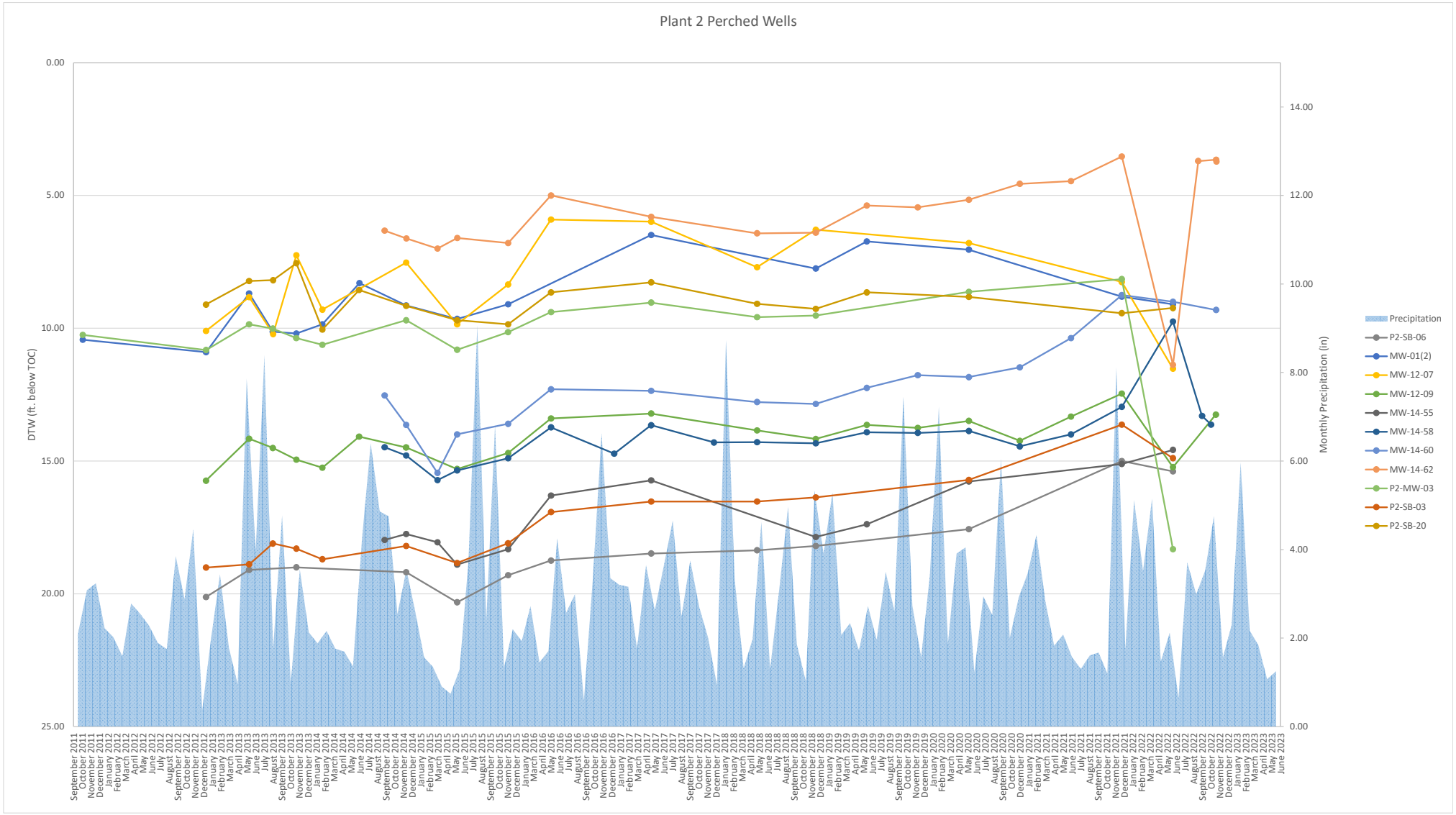
ARCADIS

APPENDIX
D

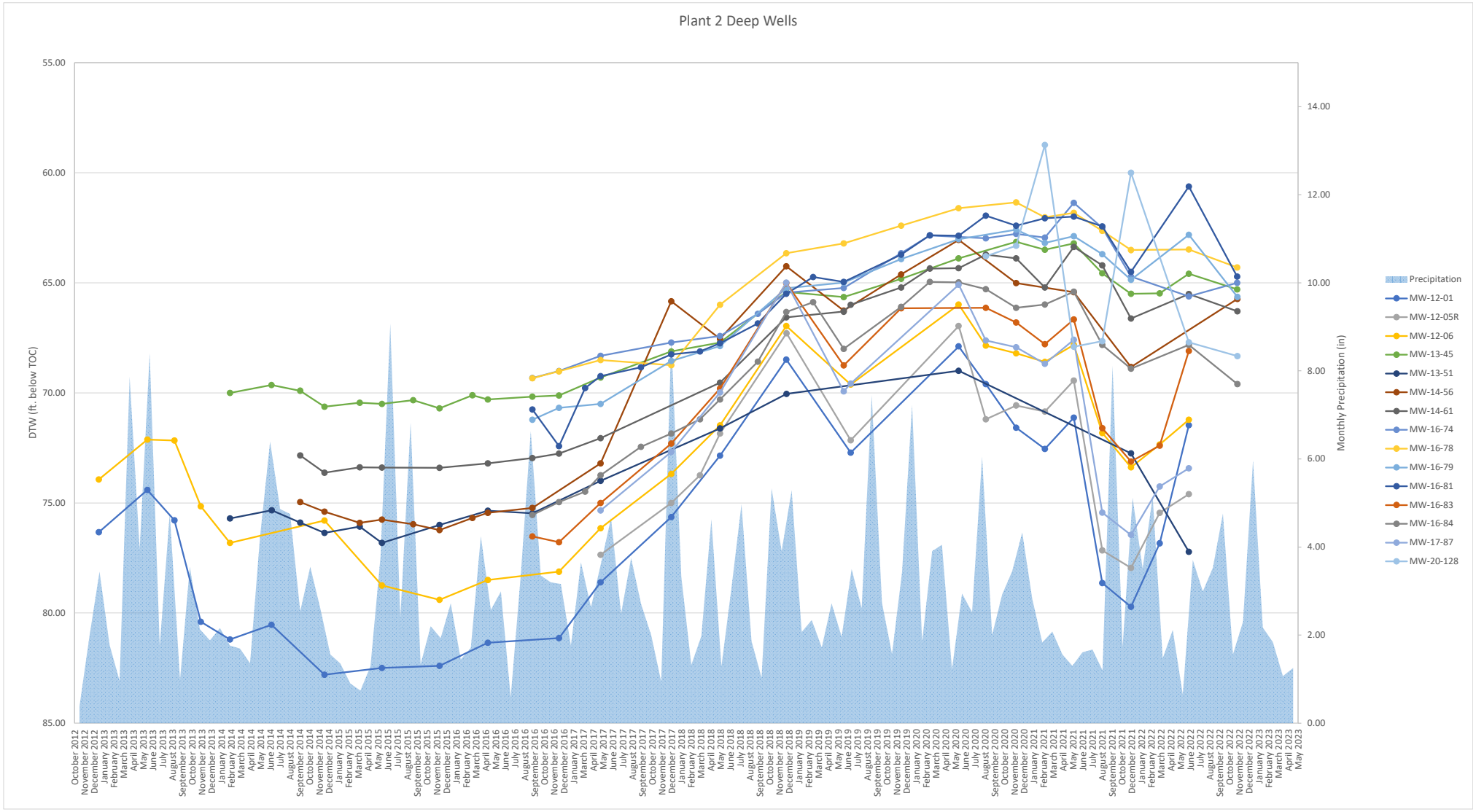
Appendix E

Groundwater Elevation Trend Hydrographs

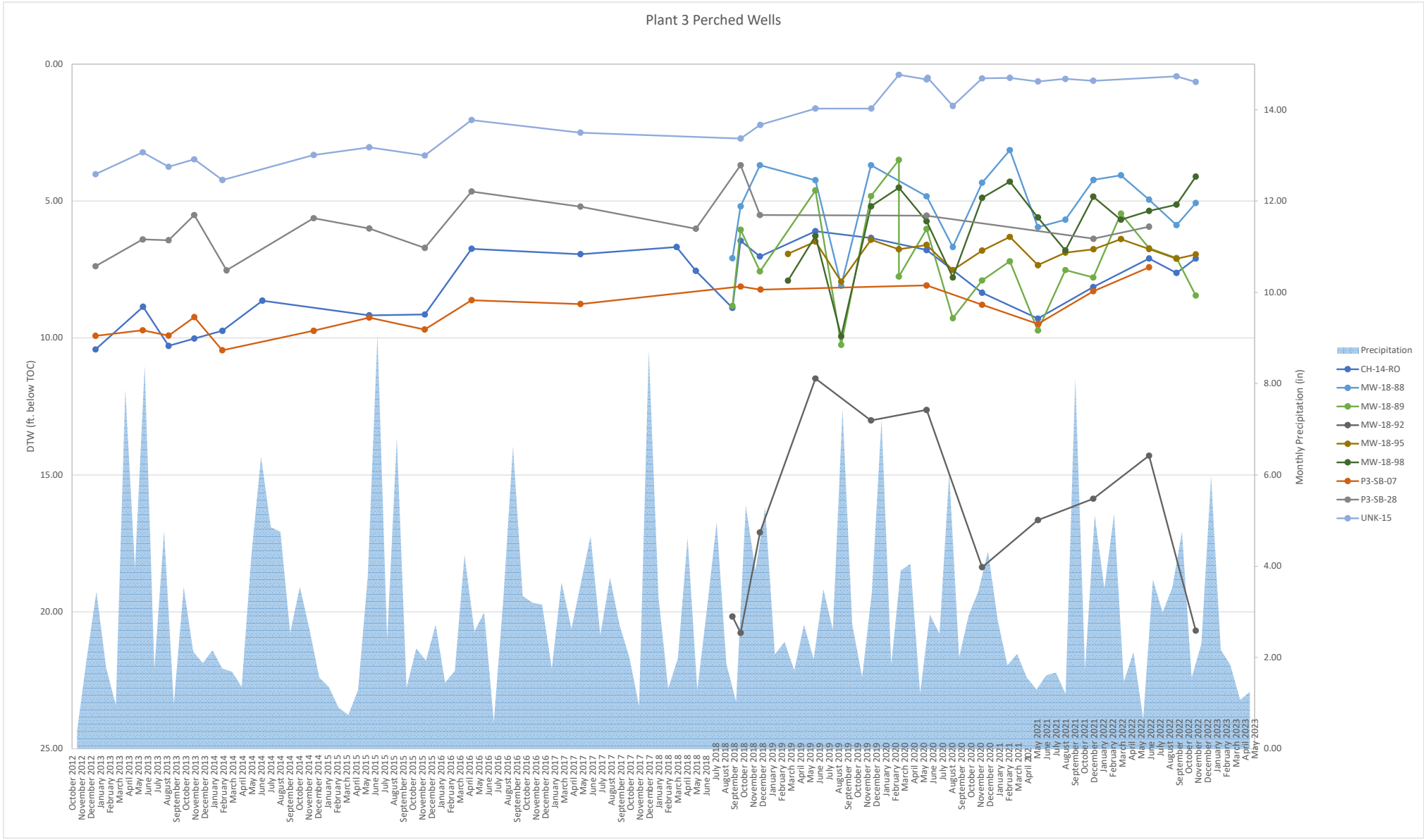
ARCADIS


Plant 2 Perched Wells
DTW (ft. below TOC)
Monthly Precipitation (in)
0.00
5.00
10.00
15.00
20.00
25.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Precipitation
P2-SB-06
MW-01(2)
MW-12-07
MW-12-09
MW-14-55
MW-14-58
MW-14-60
MW-14-62
P2-MW-03
P2-SB-03
P2-SB-20

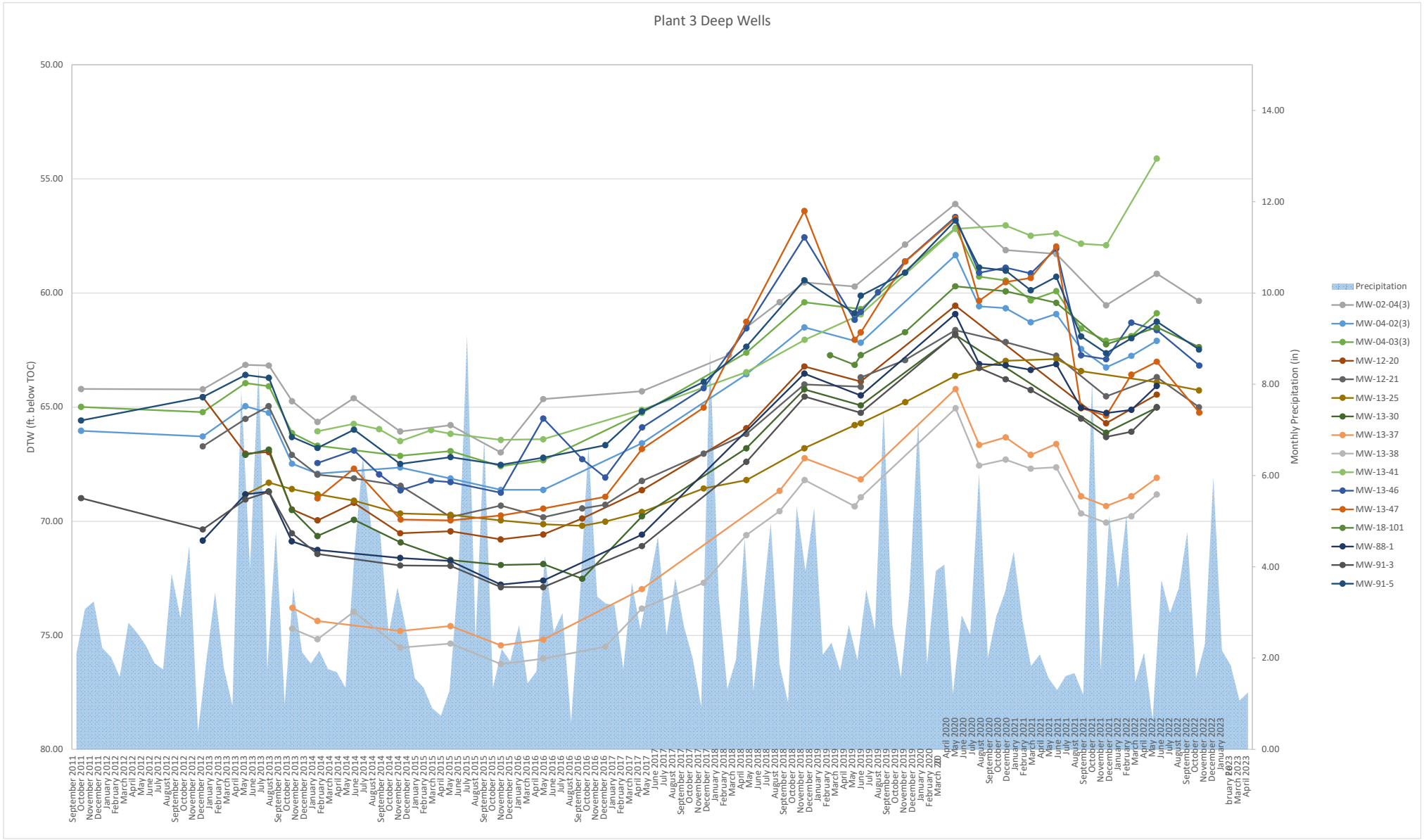
ARCADIS


Plant 2 Deep Wells
DTW (ft. below TOC)
Monthly Precipitation (in)
55.00
60.00
65.00
70.00
75.00
80.00
85.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Precipitation
MW-12-01
MW-12-05R
MW-12-06
MW-13-45
MW-13-51
MW-14-56
MW-14-61
MW-16-74
MW-16-78
MW-16-79
MW-16-81
MW-16-83
MW-16-84
MW-17-87
MW-20-128

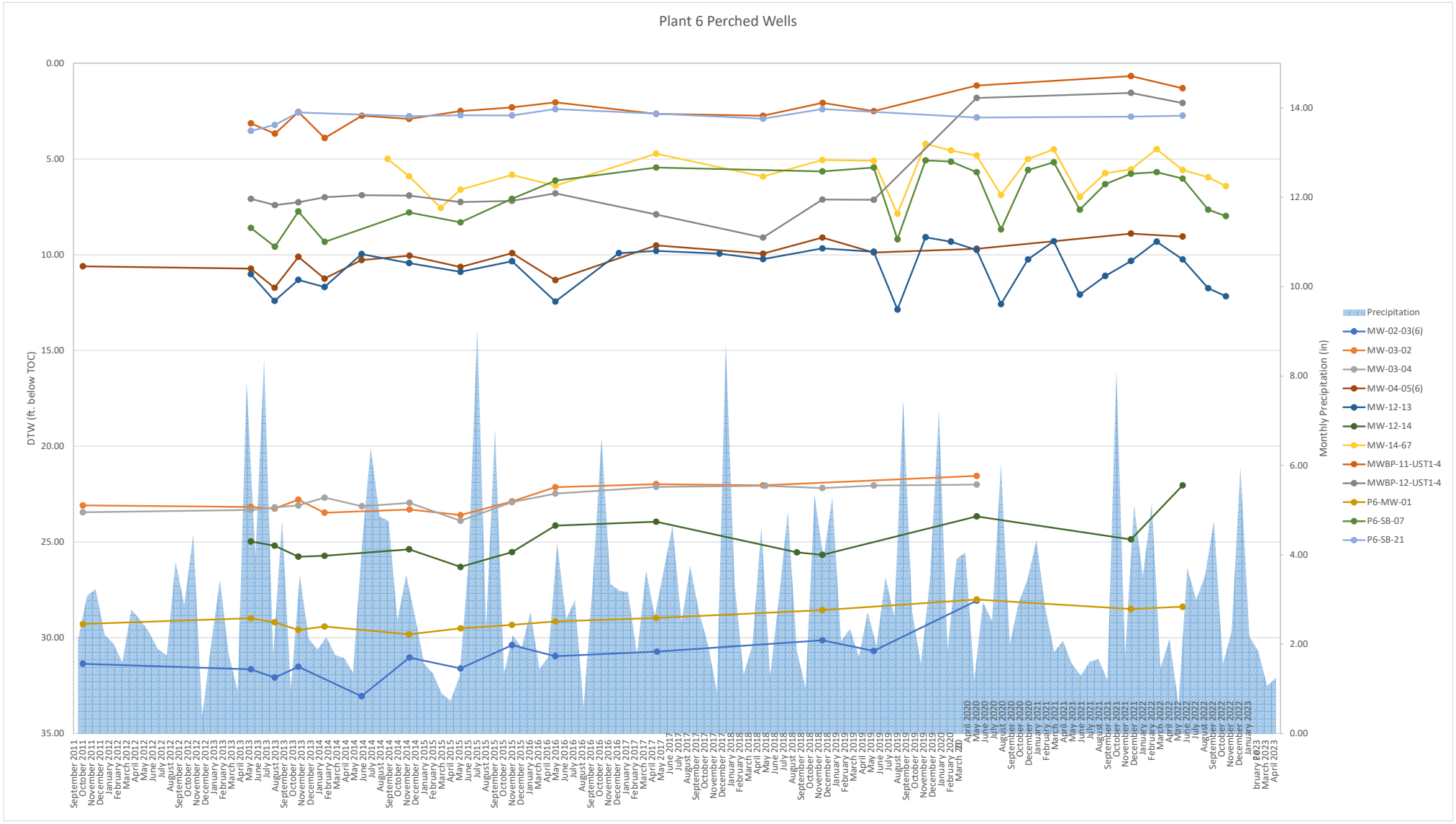
ARCADIS


Plant 3 Perched Wells
DTW (ft. below TOC)
Monthly Precipitation (in)
0.00
5.00
10.00
15.00
20.00
25.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Precipitation
CH-14-RO
MW-18-88
MW-18-89
MW-18-92
MW-18-95
MW-18-98
P3-SB-07
P3-SB-28
UNK-15

ARCADIS


Plant 3 Deep Wells
DTW (ft. below TOC)
Monthly Precipitation (in)
50.00
55.00
60.00
65.00
70.00
75.00
80.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Precipitation
MW-02-04(3)
MW-04-02(3)
MW-04-03(3)
MW-12-20
MW-12-21
MW-13-25
MW-13-30
MW-13-37
MW-13-38
MW-13-41
MW-13-46
MW-13-47
MW-18-101
MW-88-1
MW-91-3
MW-91-5

ARCADIS


Plant 6 Perched Wells
DTW (ft. below TOC)
Monthly Precipitation (in)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Precipitation
MW-02-03(6)
MW-03-02
MW-03-04
MW-04-05(6)
MW-12-13
MW-12-14
MW-14-67
MWBP-11-UST1-4
MWBP-12-UST1-4
P6-MW-01
P6-SB-07
P6-SB-21

Appendix F

Mann-Kendall Stability Analysis Trend Plots

APPENDIX F

MANN-KENDALL TREND ANALYSIS METHODOLOGY

A statistical analysis of concentration trends was performed using historical groundwater monitoring data. Mann-Kendall trend analysis was performed on datasets that met the following criteria:

1. A minimum of four sampling events have been completed.
2. A minimum of 65 percent (%) of results were above detection limits.
3. Exceedances of the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Non-Residential Drinking Water Criteria (EGLE 2018) were observed during at least one sampling event.
4. Most recent sample from the monitoring well was collected within the last five years.

The Mann-Kendall trend test is a nonparametric test that determines trend based on ranked data. As such, it is relatively insensitive to small datasets, outlier values, and nondetect concentrations, and does not require the data to fit a specific model. The basic Mann-Kendall trend test is performed by listing the concentrations of the constituent of interest in temporal order and computing the differences between a given measurement and earlier measurements (Gilbert 1987; USEPA 2009). Based on USEPA guidance, nondetect values are set to one value less than that of any detections (USEPA 2009).

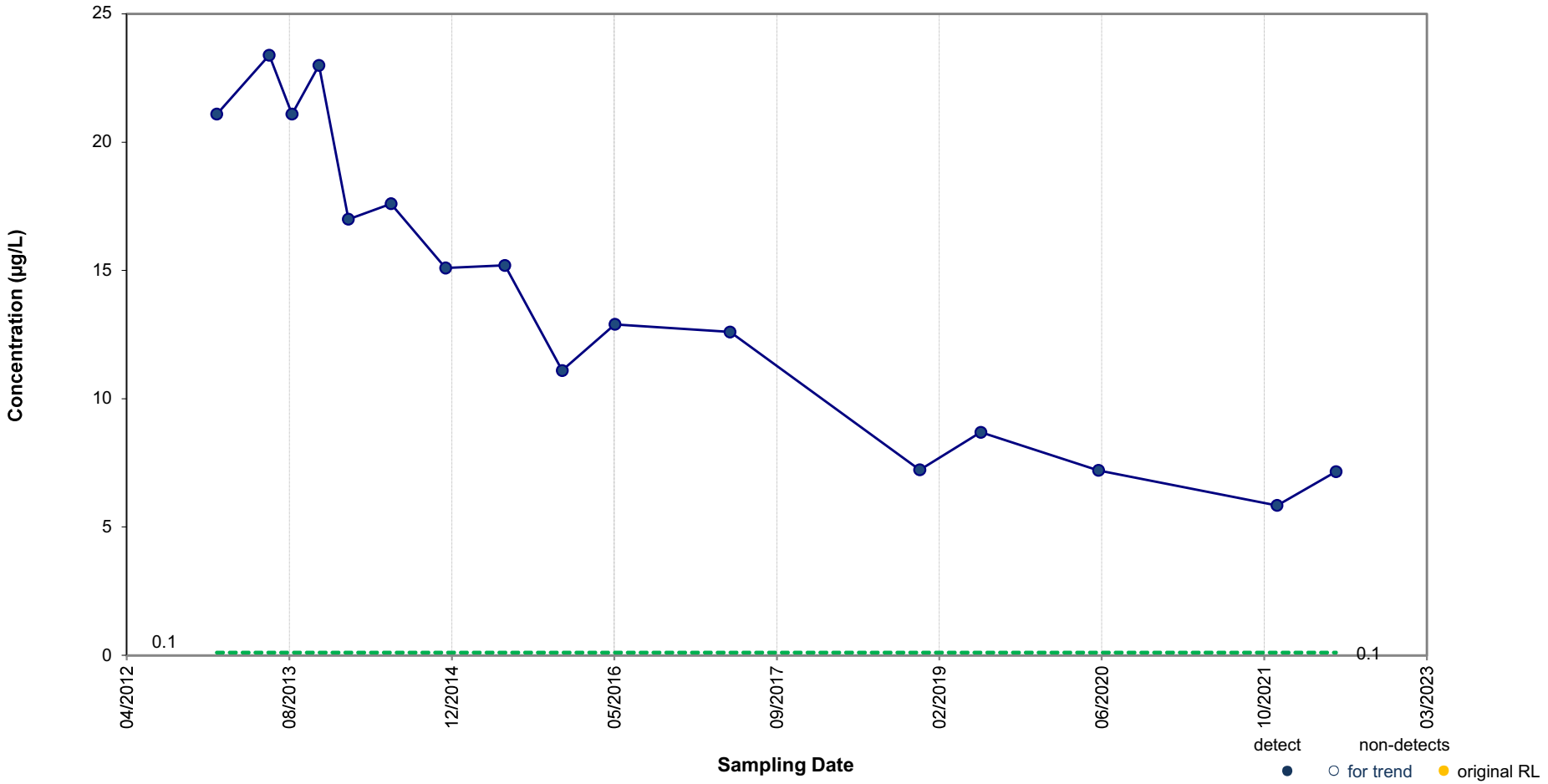
The Mann-Kendall test statistic (sum of trend [S]) is the difference between the number of strictly positive differences and the number of strictly negative differences. If S is positive, an increasing trend is indicated; if S is negative, a decreasing trend is indicated; and if S is near zero, no trend is apparent. Trends with positive or negative S-statistics were accepted as statistically significant for probability values (p-values) less than or equal to 0.1 (90% confidence level). The coefficient of variation (CV) is a quantitative measure that can be used to evaluate if concentrations are stable in cases where a statistically significant trend is not apparent. CV values near or greater than 1 indicate variability in concentrations through time or suggest an underlying trend that is not statistically significant. Lower CV values indicate that concentrations are stable through time. Where no significant trend was found, the trend determination presented was based on the sign and magnitude of the S-statistic, the CV value, and qualitative assessment of concentrations through time.

REFERENCES

EGLE. 2018. Part 201 Groundwater: Residential and Nonresidential Part 201 Generic Cleanup Criteria and Screening Levels. Michigan Department of Environment, Great Lakes, and Energy. June.

Gilbert, R.O. 1987. Statistical Methods for Environmental Pollution Monitoring. John Wiley and Sons, Inc. New York.

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Office of Resource Conservation and Recovery. Unified Guidance. EPA 530-R-09-007.



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

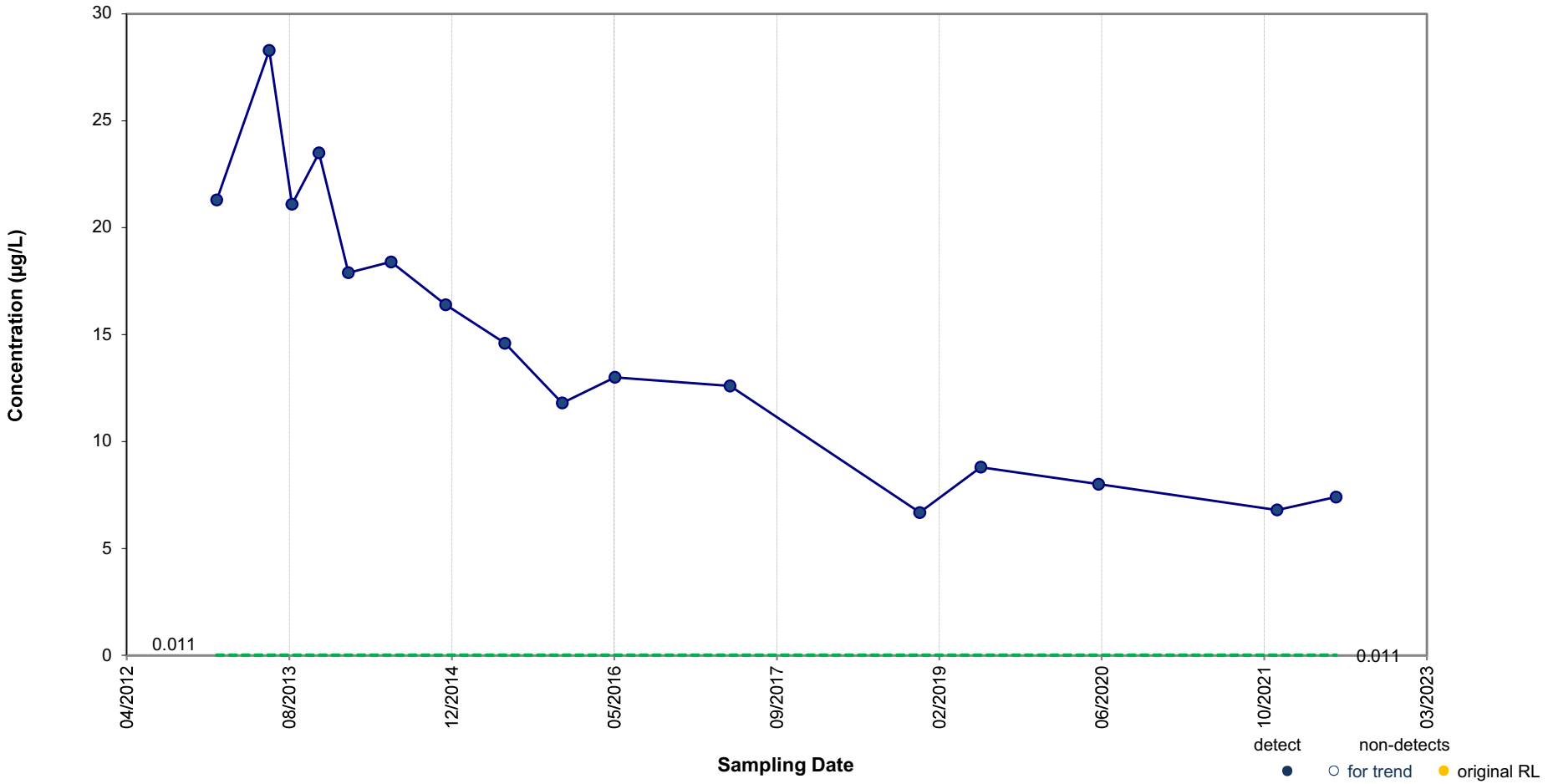
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: CH-14-RO, Chromium III

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

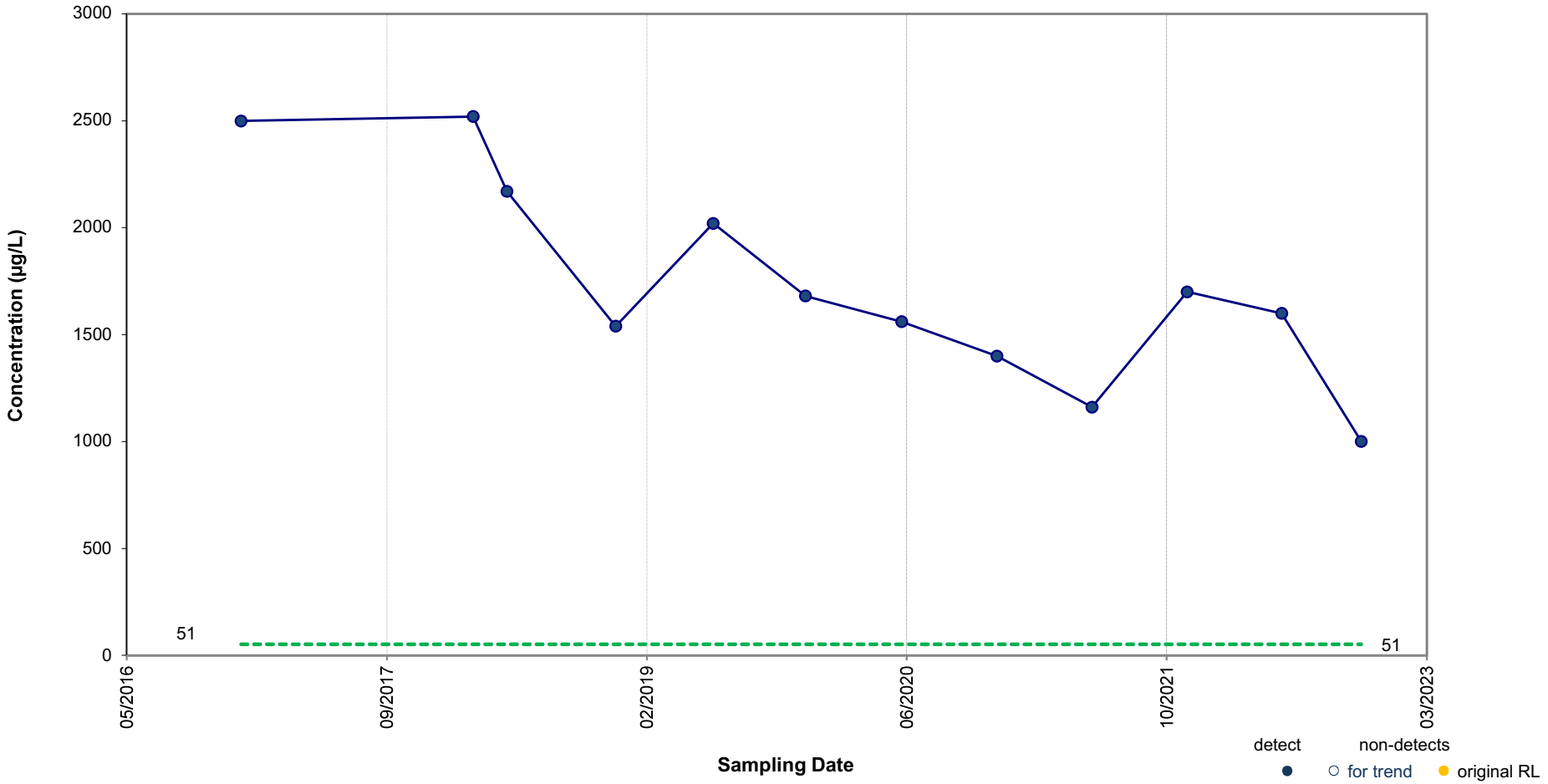
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: CH-14-RO, Chromium VI

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

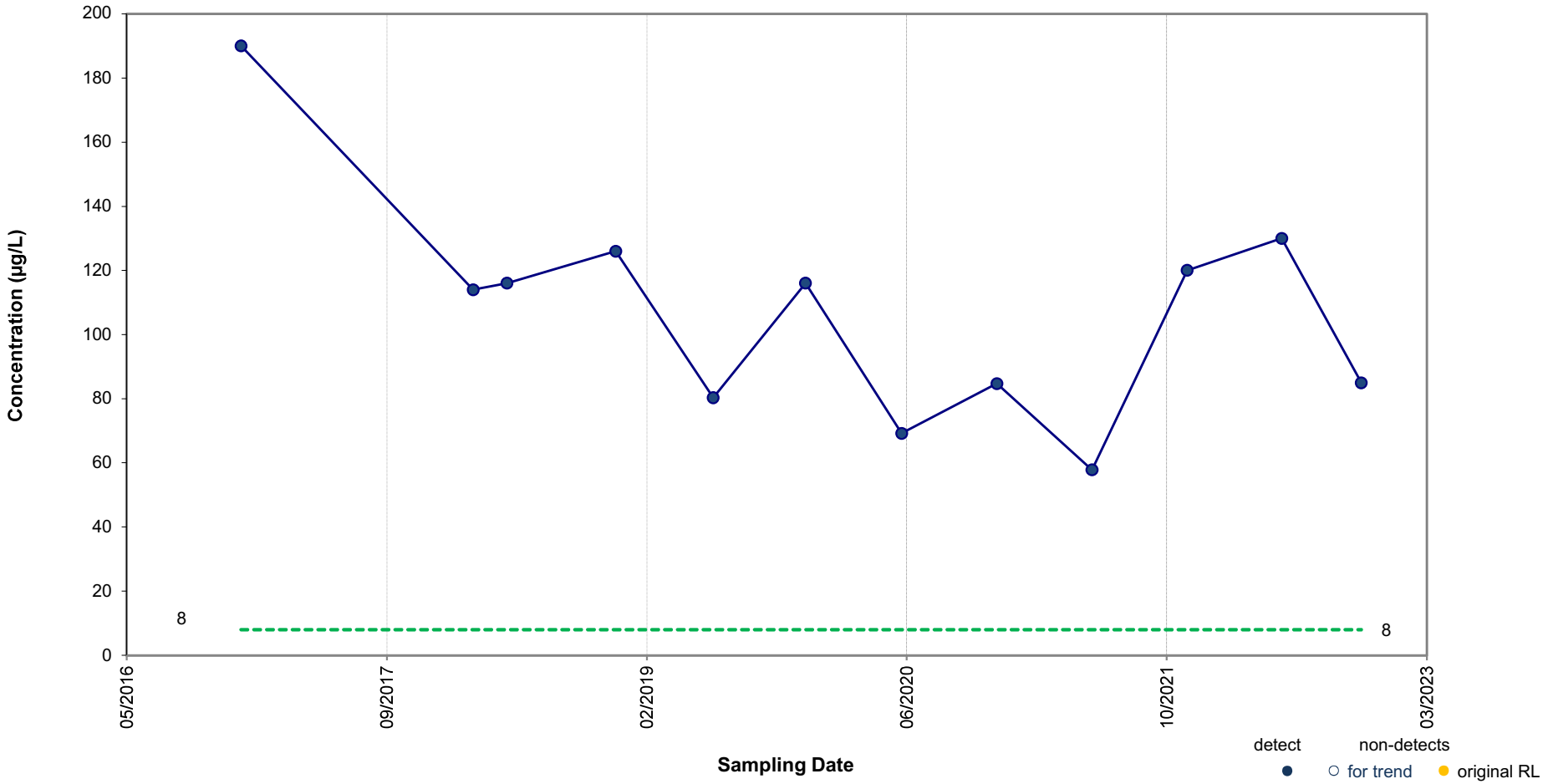
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: CH-14-RO, PFHxS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

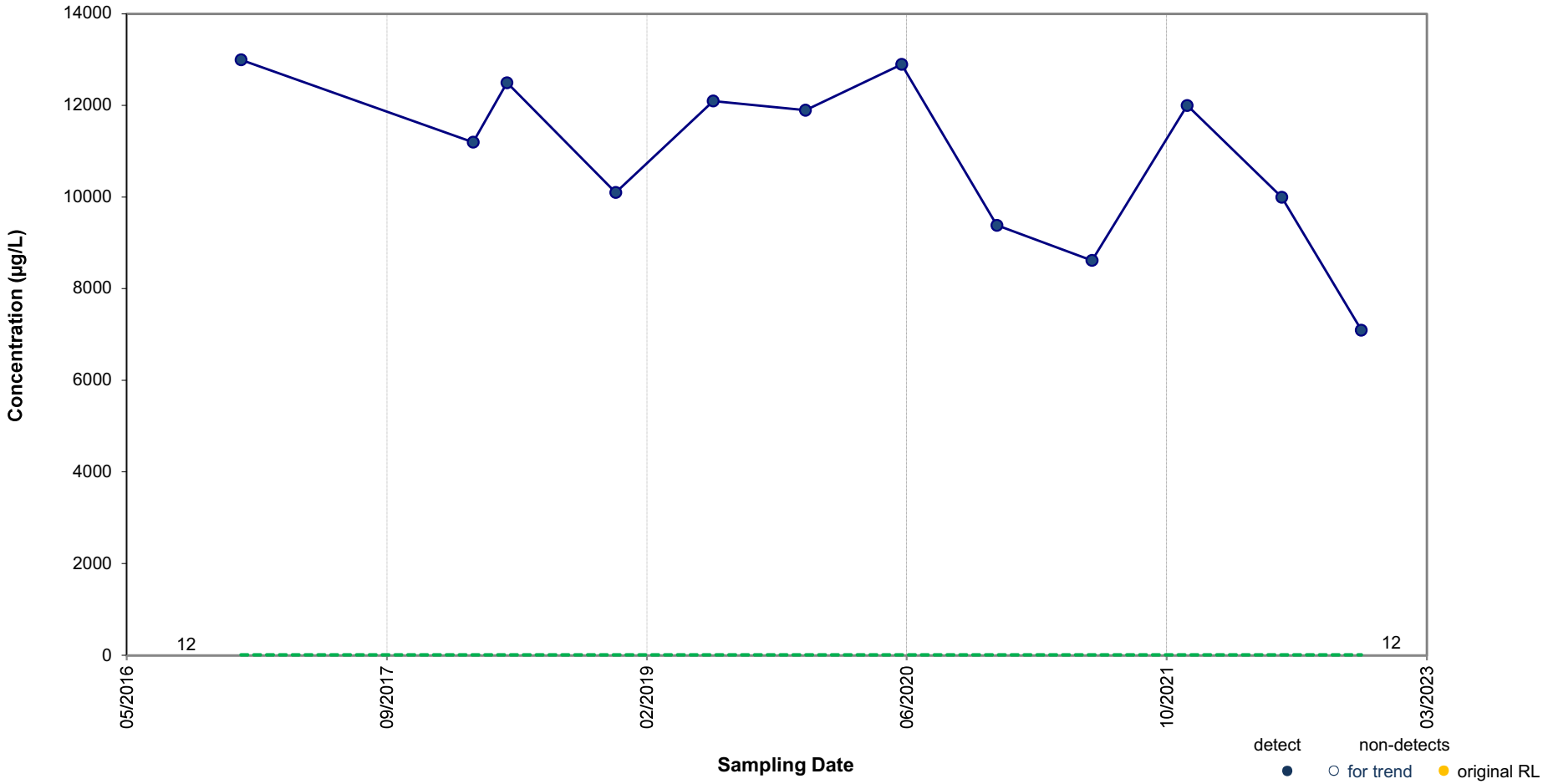
p value = 0.25 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: CH-14-RO, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

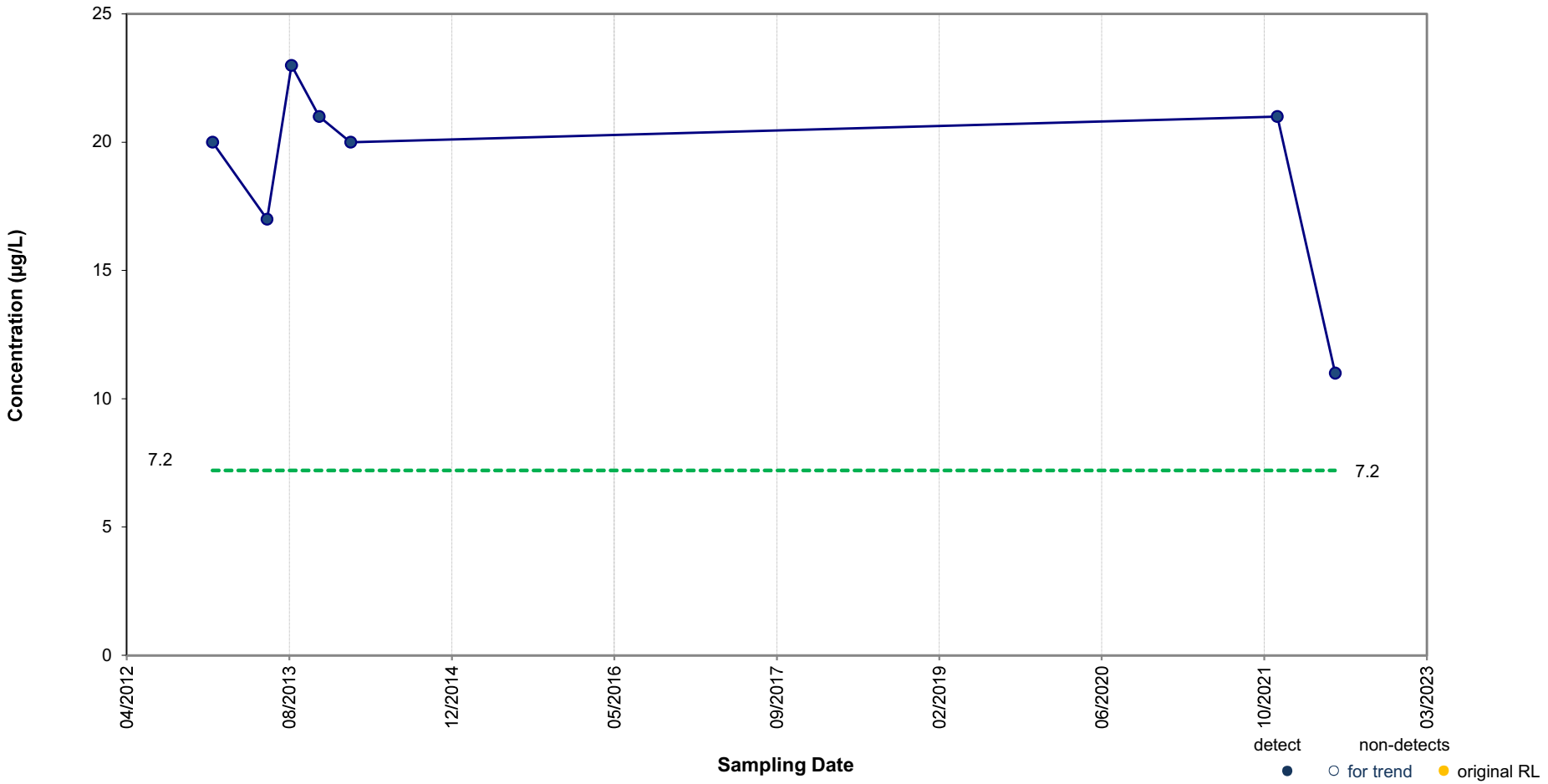
p value = 0.02 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: CH-14-RO, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

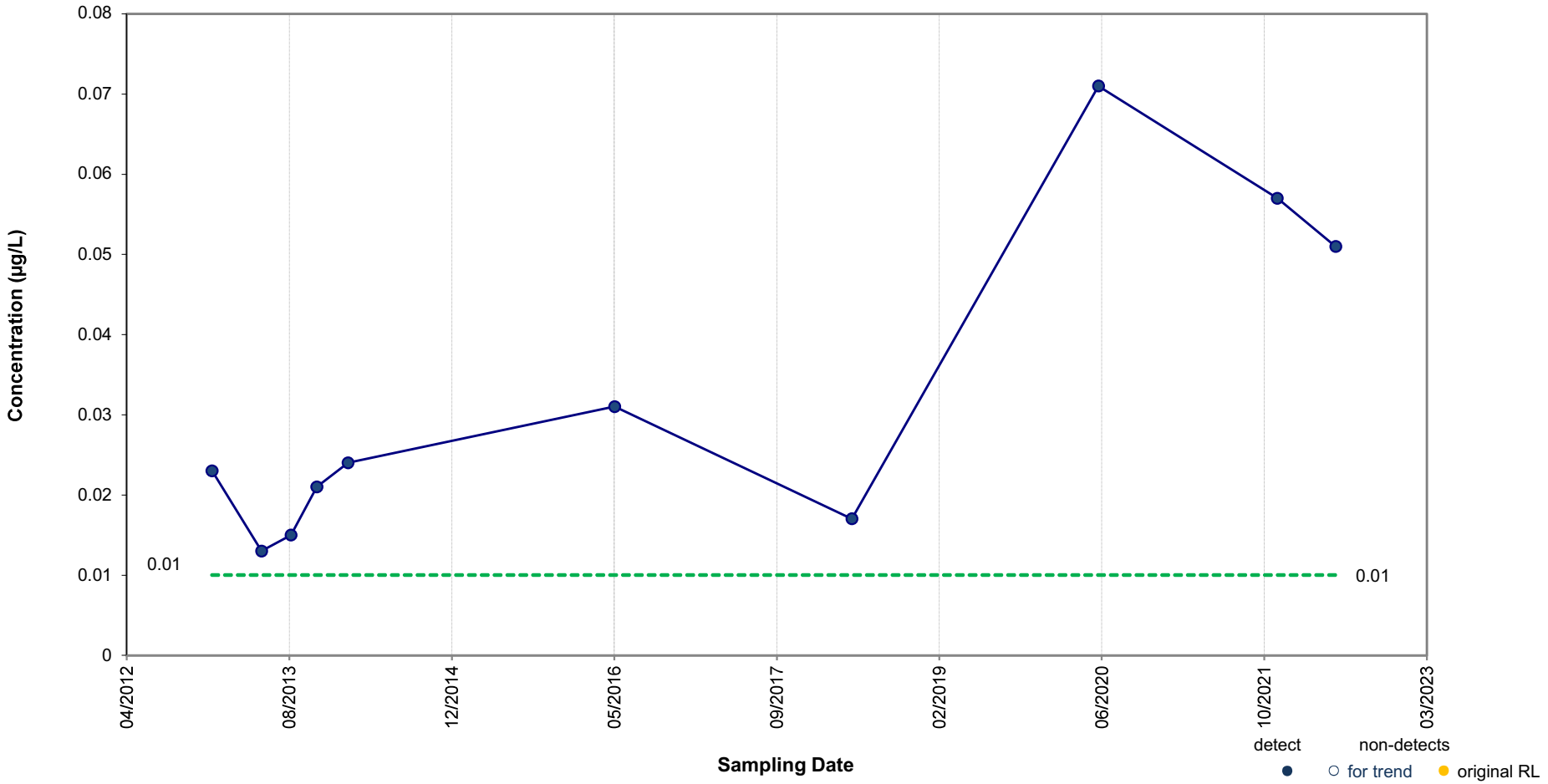
p value = 0.39 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-02-02(6), 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

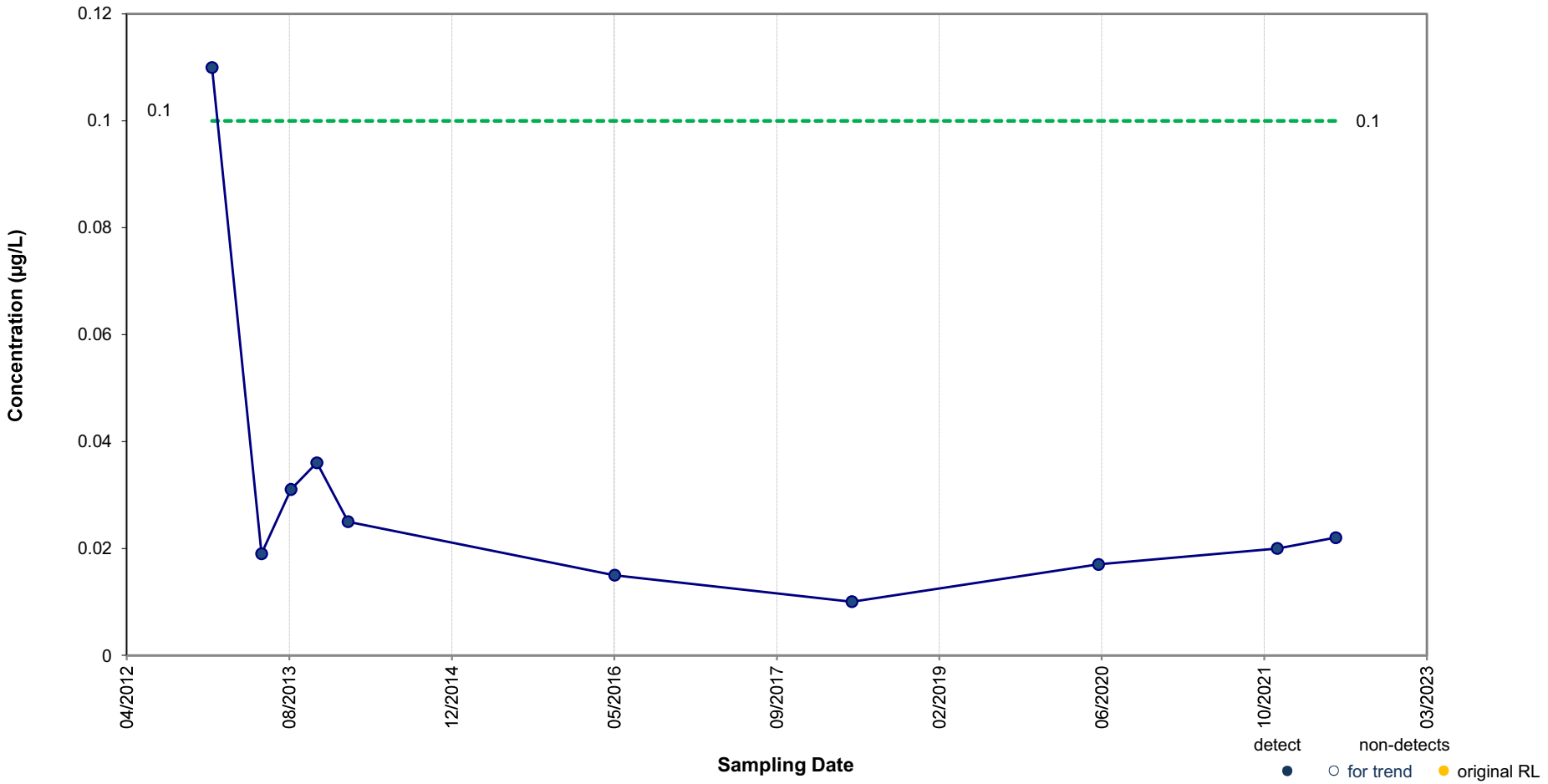
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-02-04(3), Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

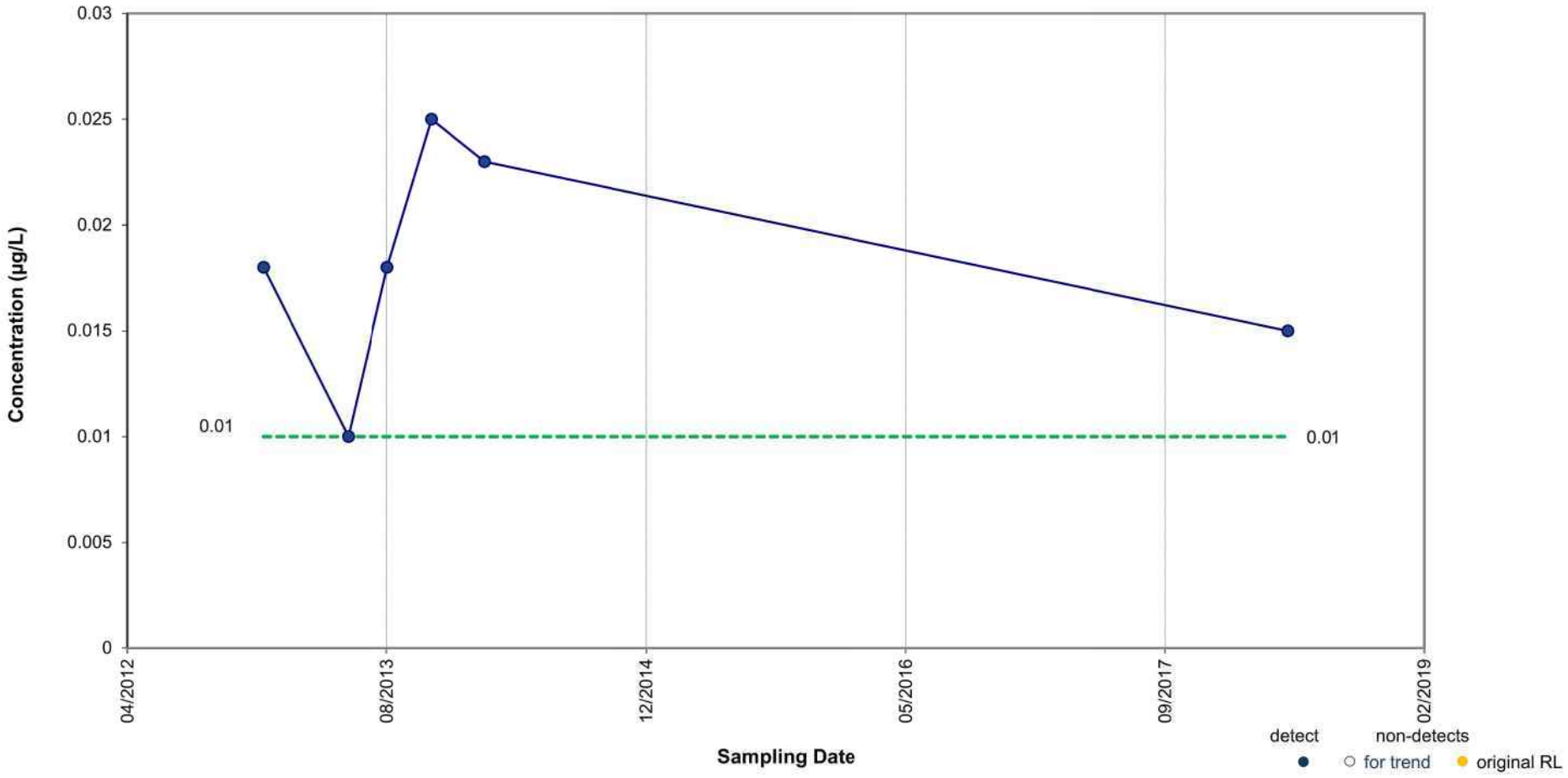
p value = 0.11 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-02-04(3), Nickel

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

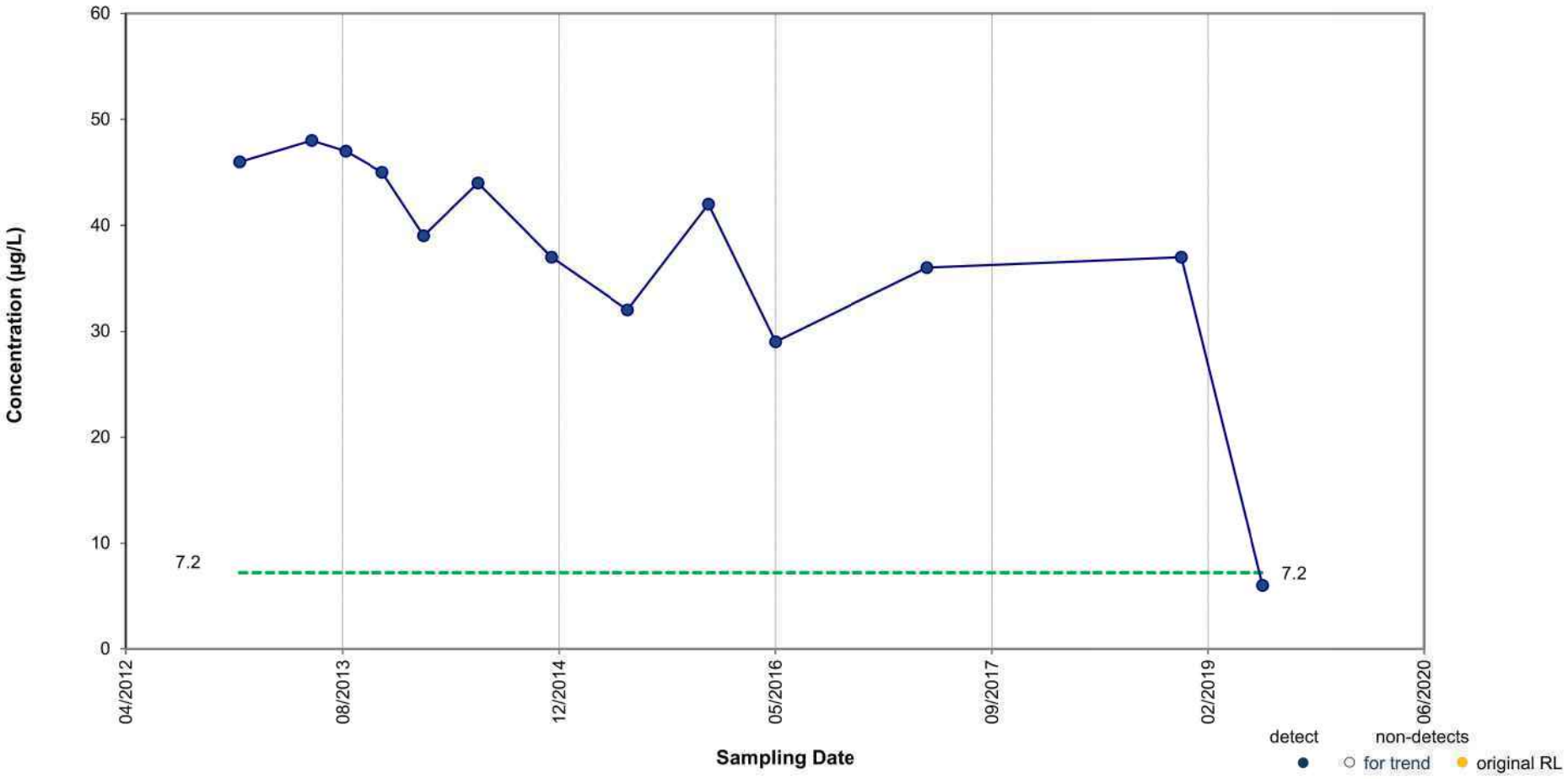
p value = 0.43 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-03-02, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

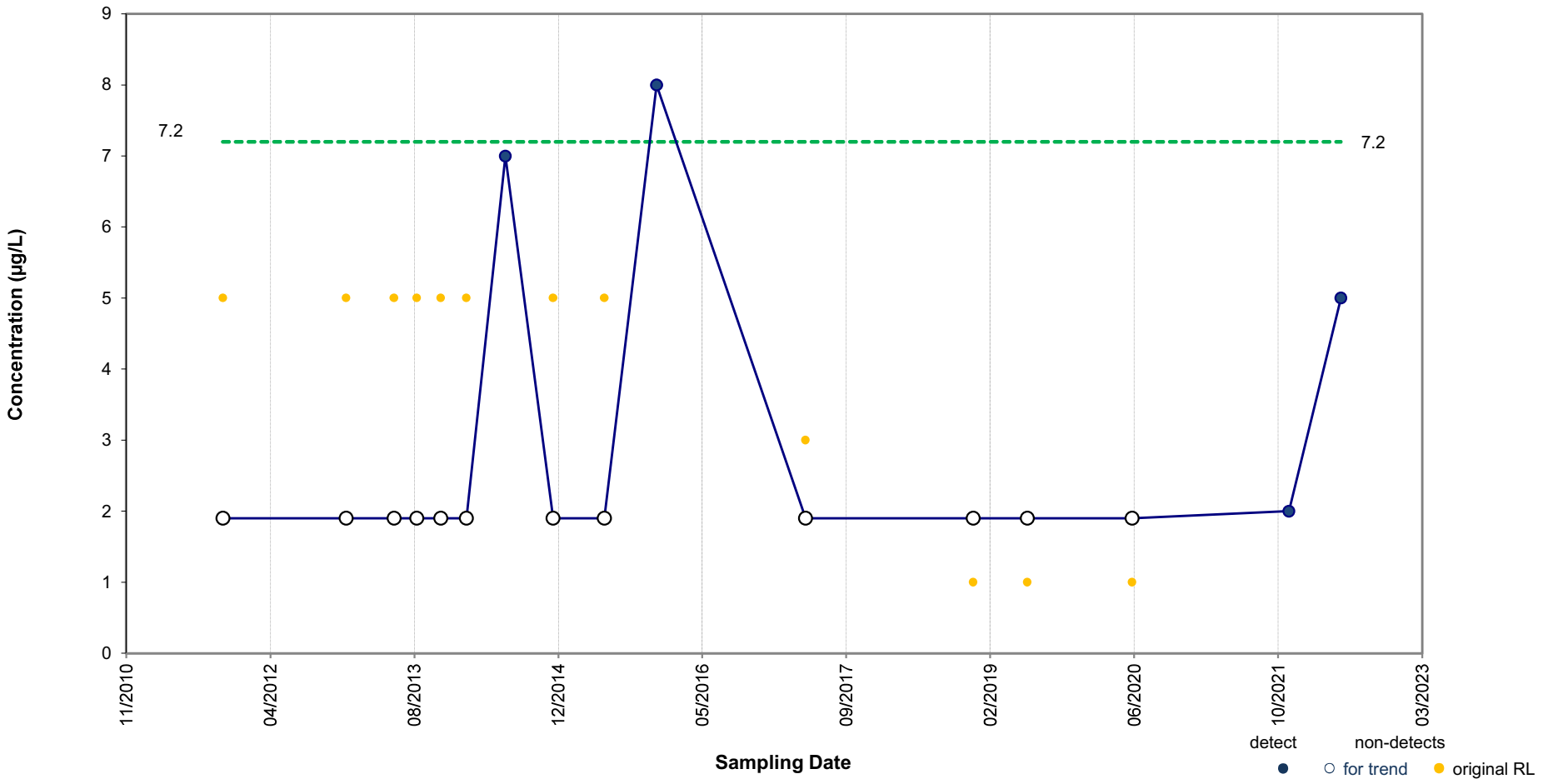
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-03-04, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

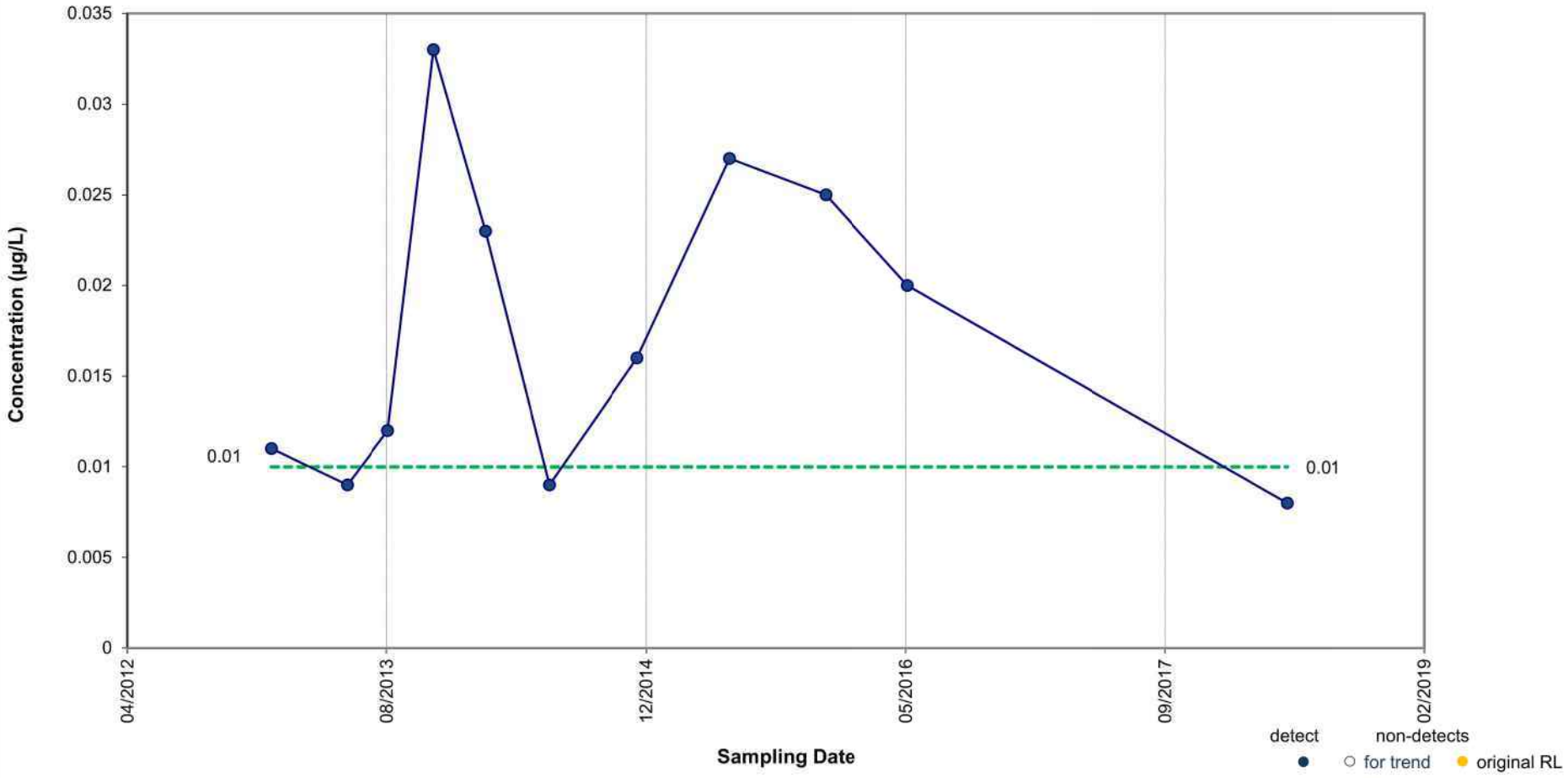
p value = 0.07 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-03-06, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

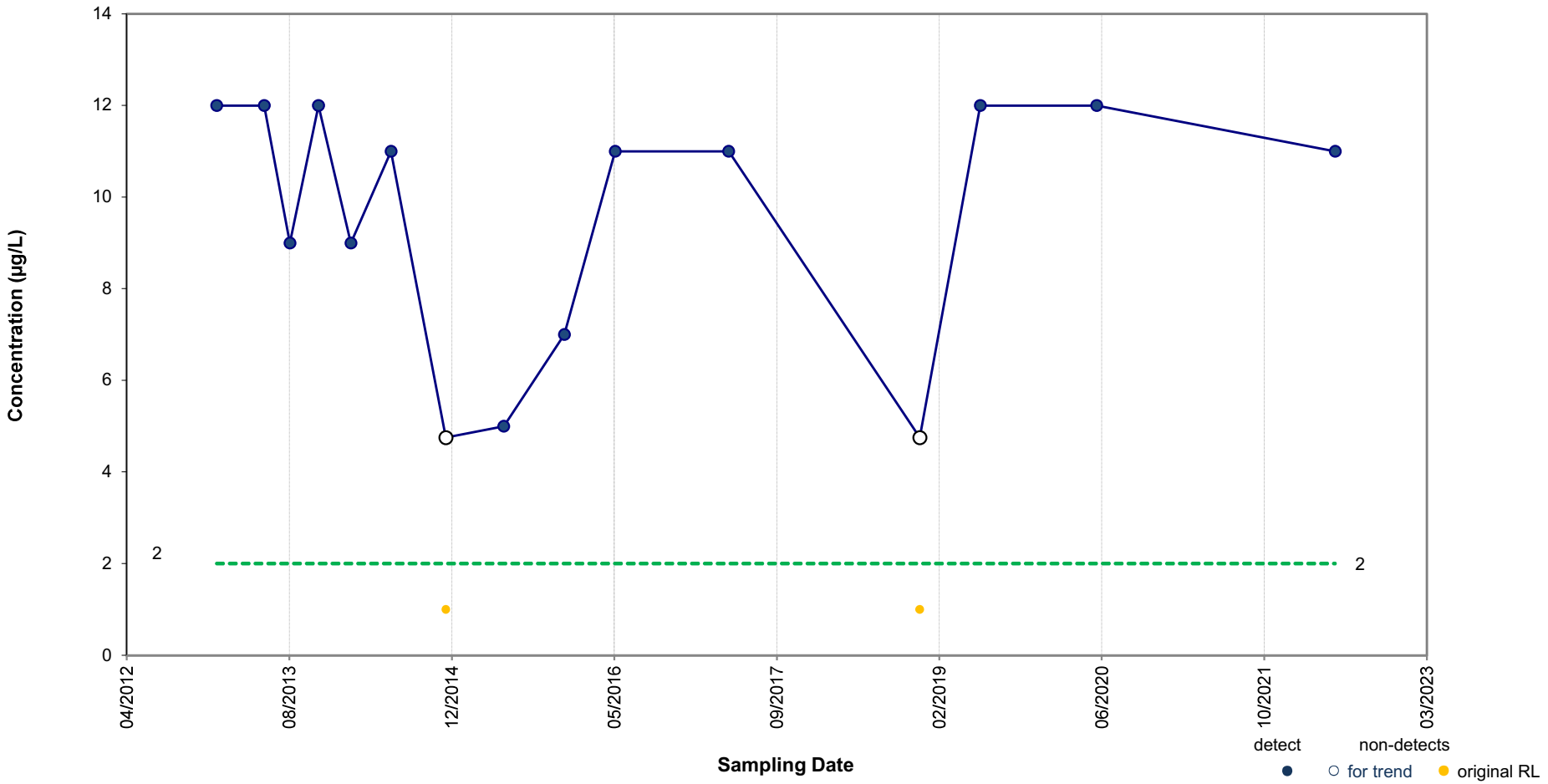
p value = 0.41 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-03-06, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

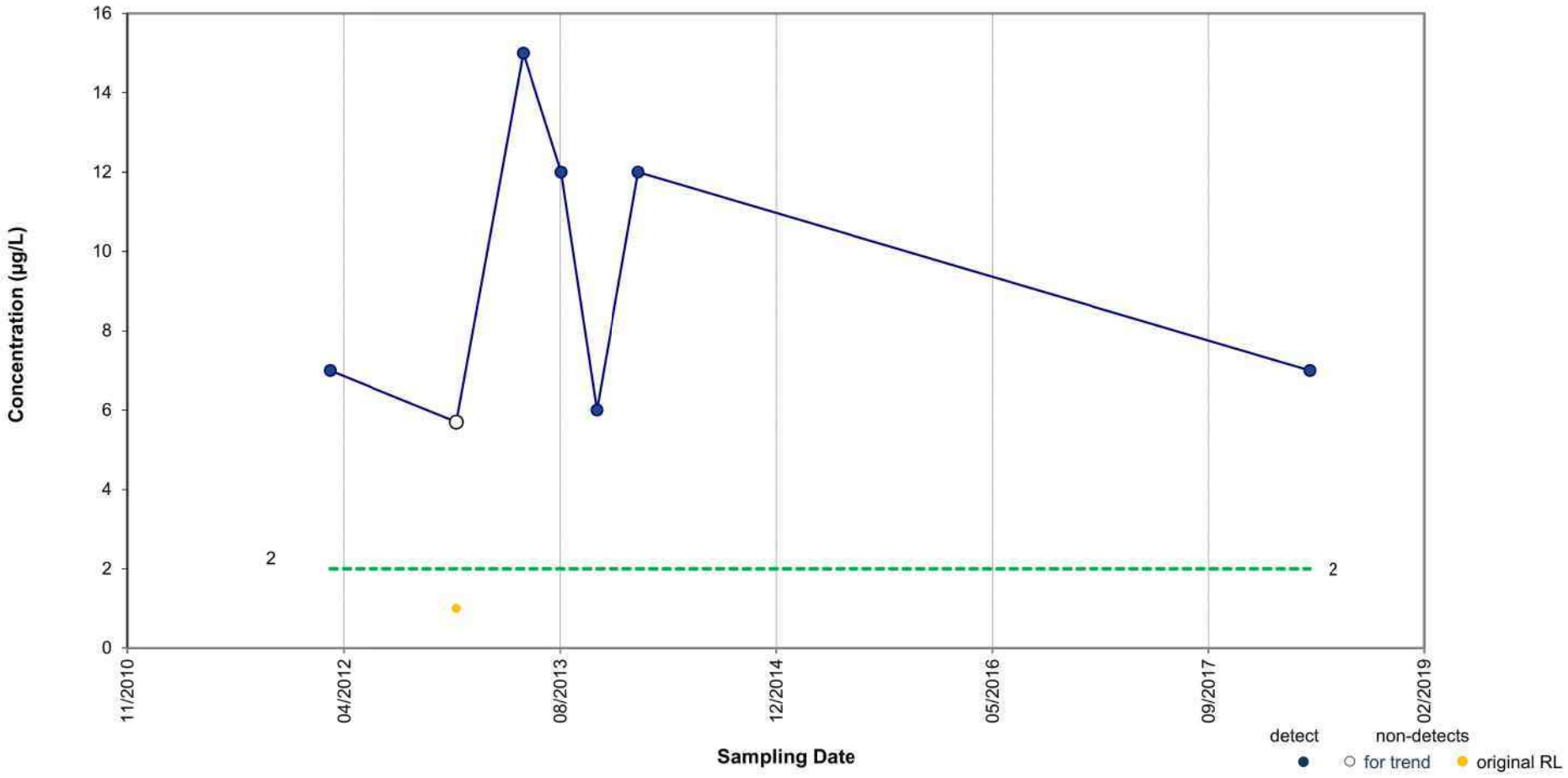
p value = 0.38 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-03-06, Vinyl chloride

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

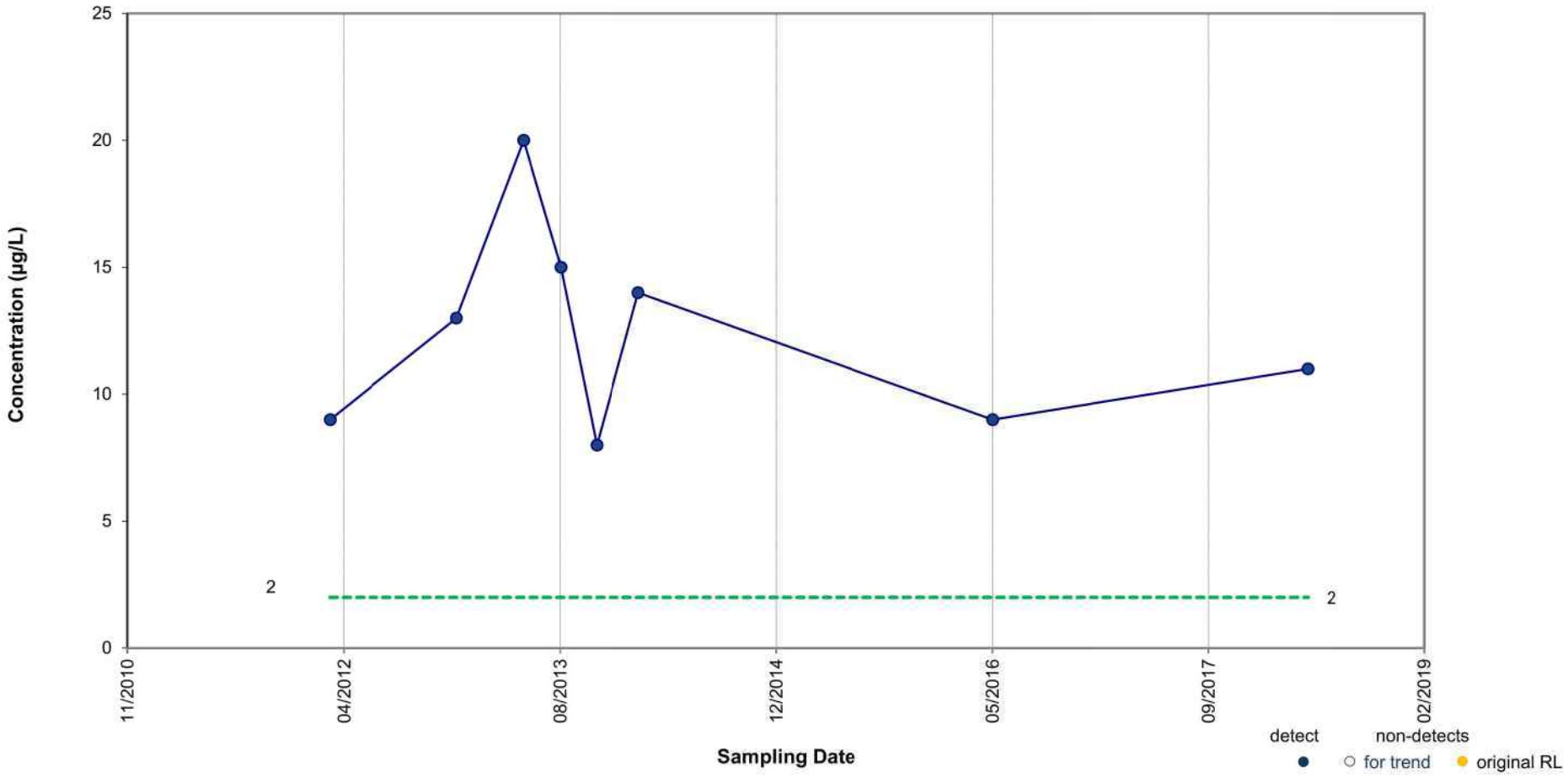
p value = 0.50 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-04-02(3), Vinyl chloride

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

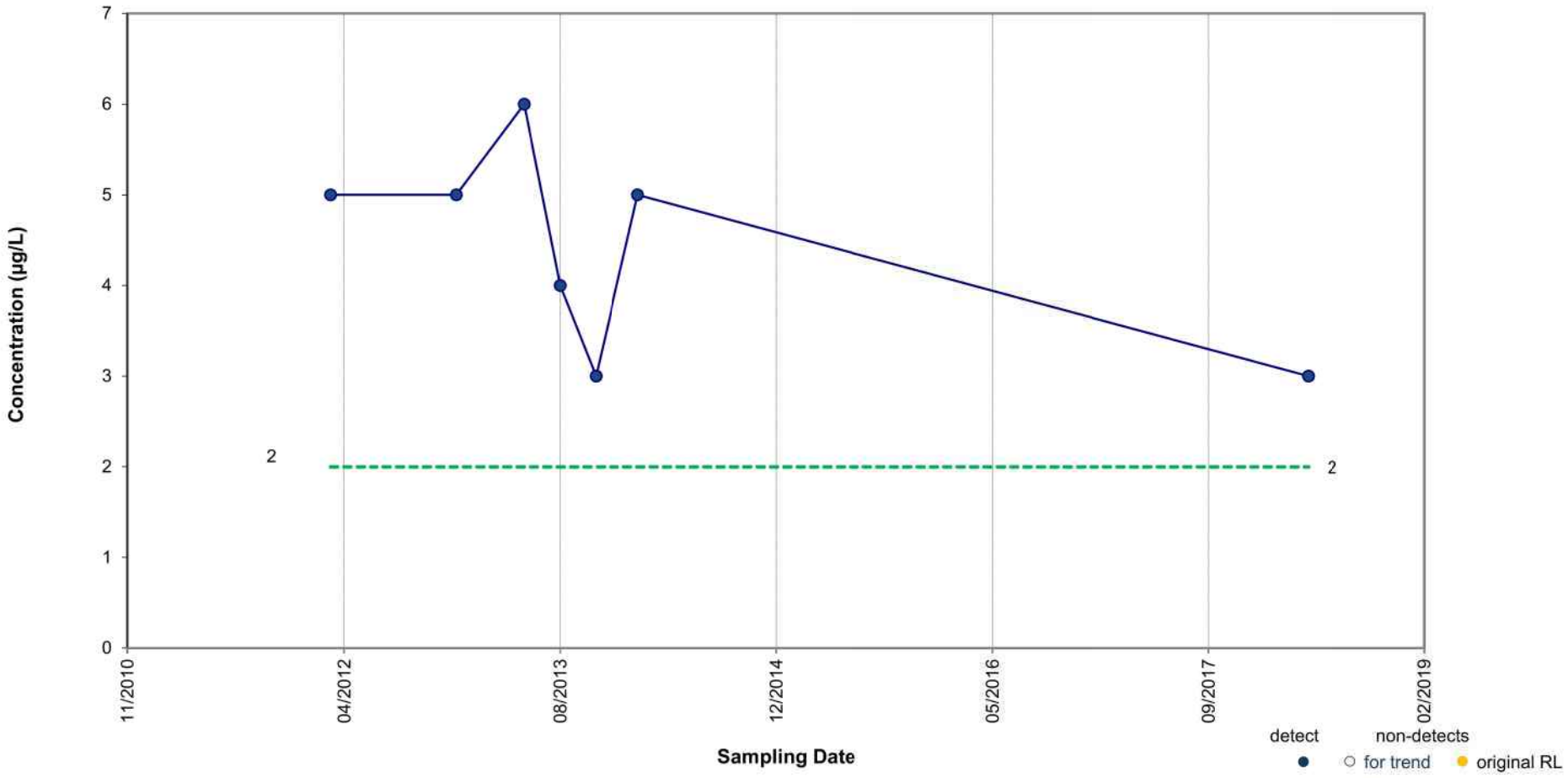
p value = 0.41 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-04-03(3), Vinyl chloride

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

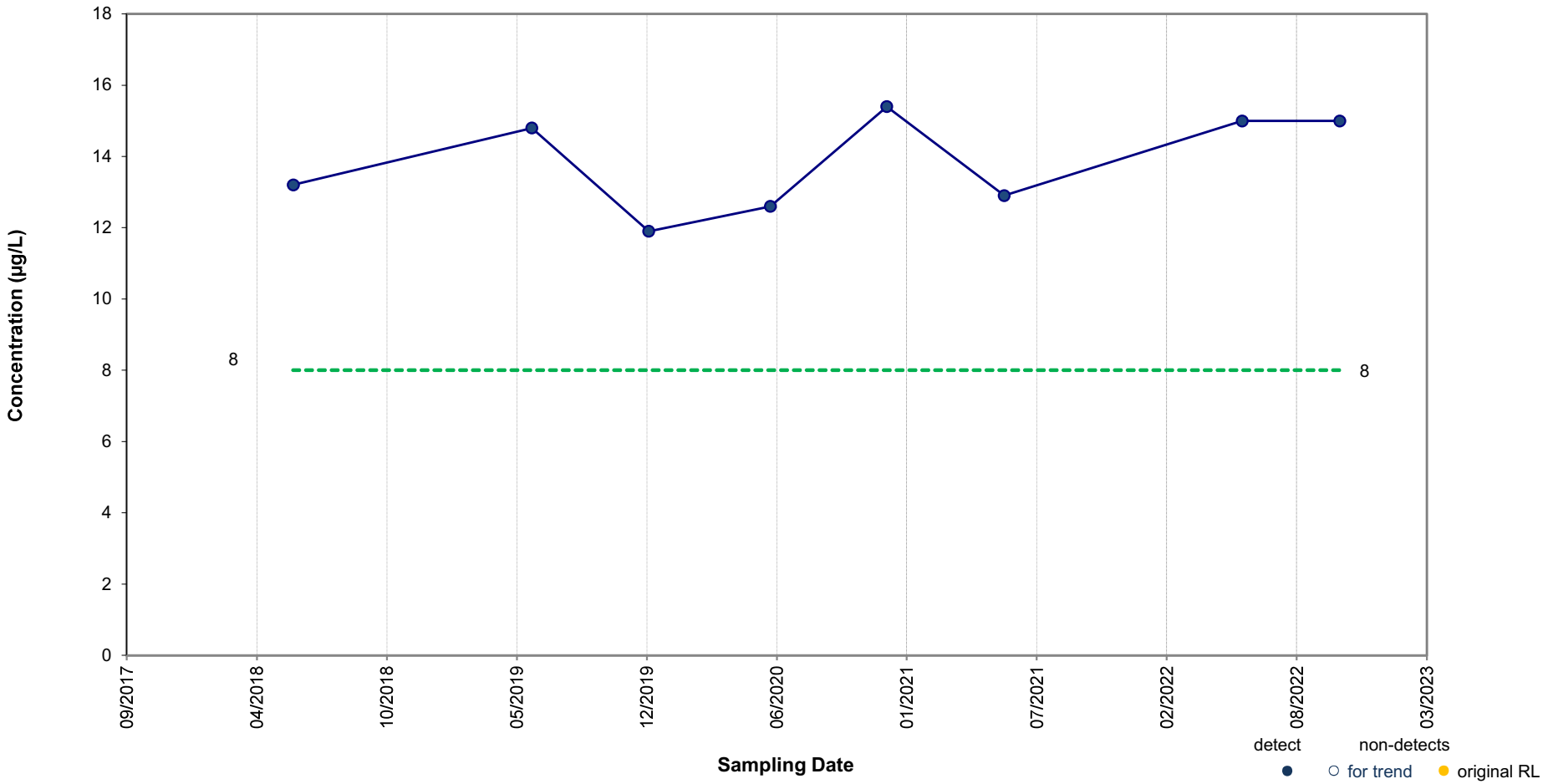
p value = 0.12 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-04-04(3), Vinyl chloride

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

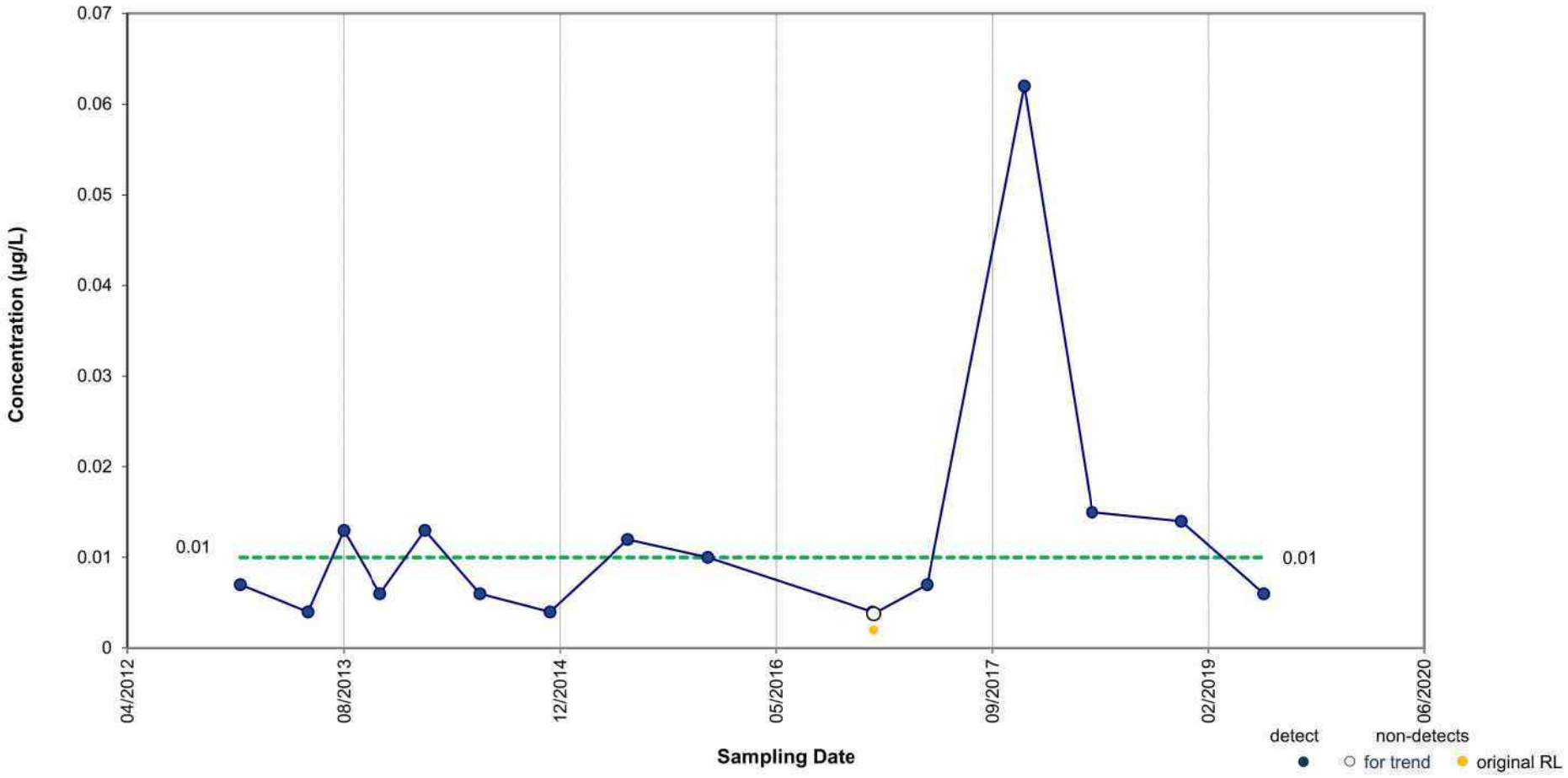
p value = 0.17 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-09, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

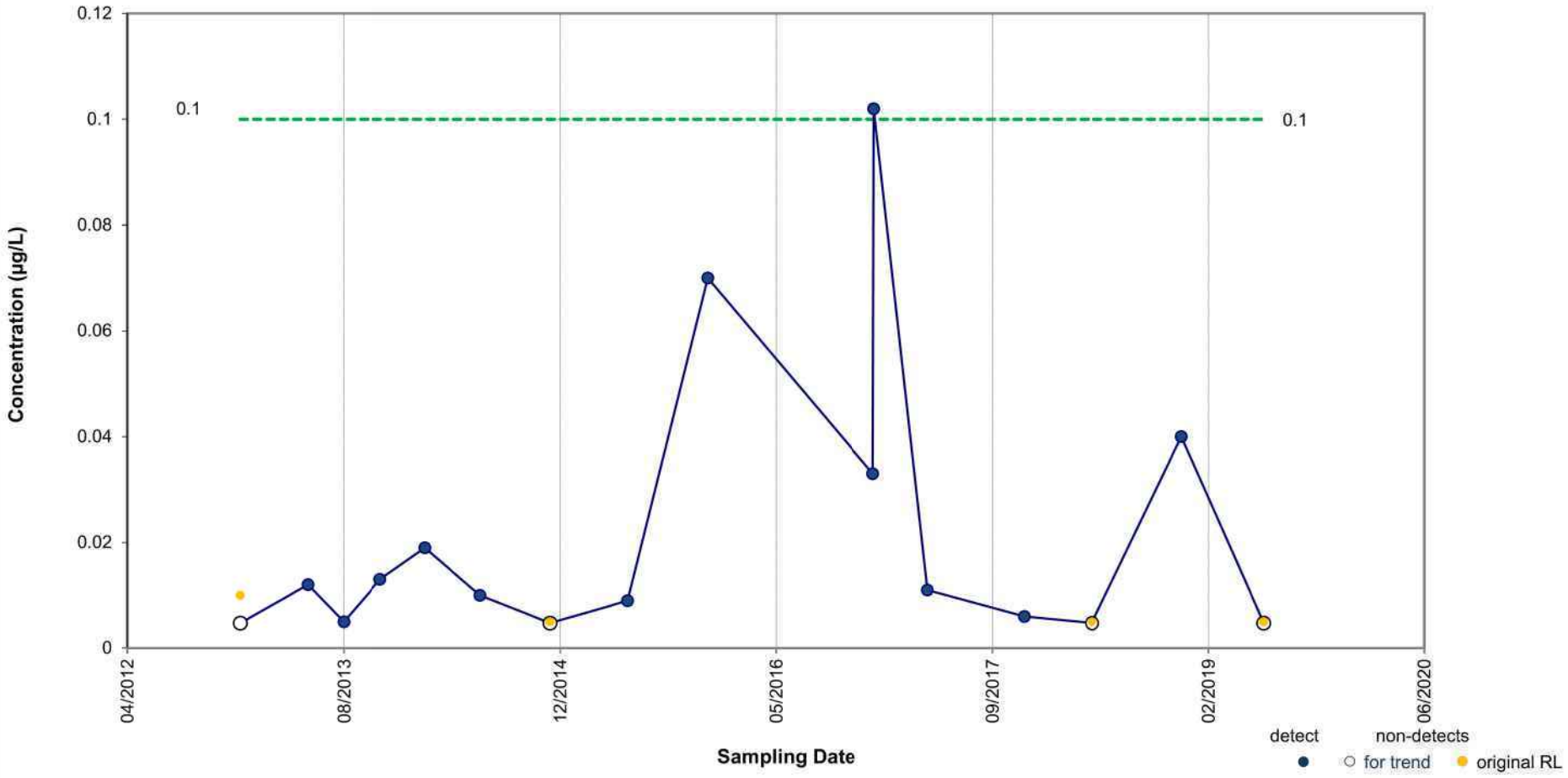
p value = 0.28 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-11, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

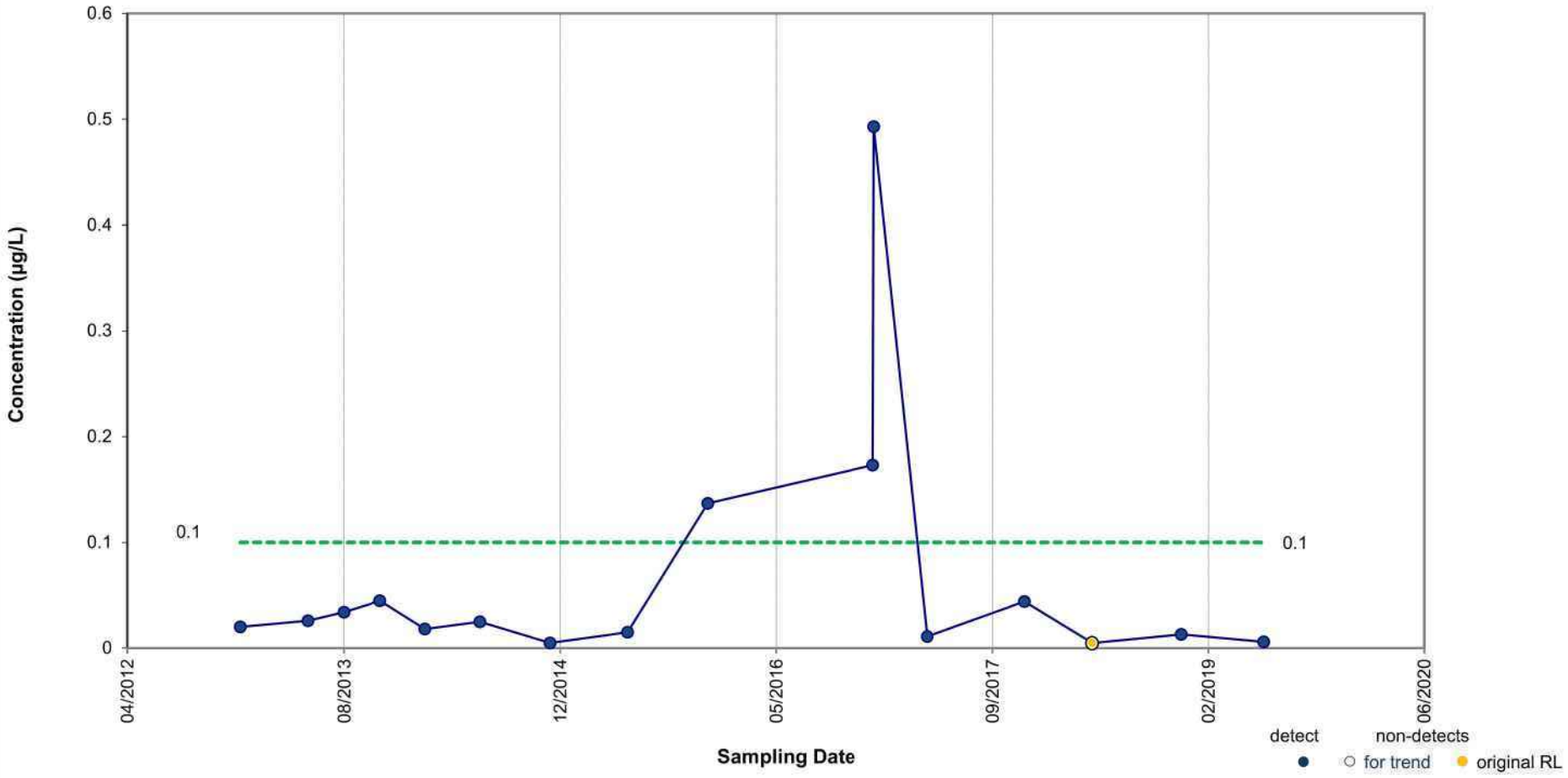
p value = 0.41 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-11, Chromium III

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

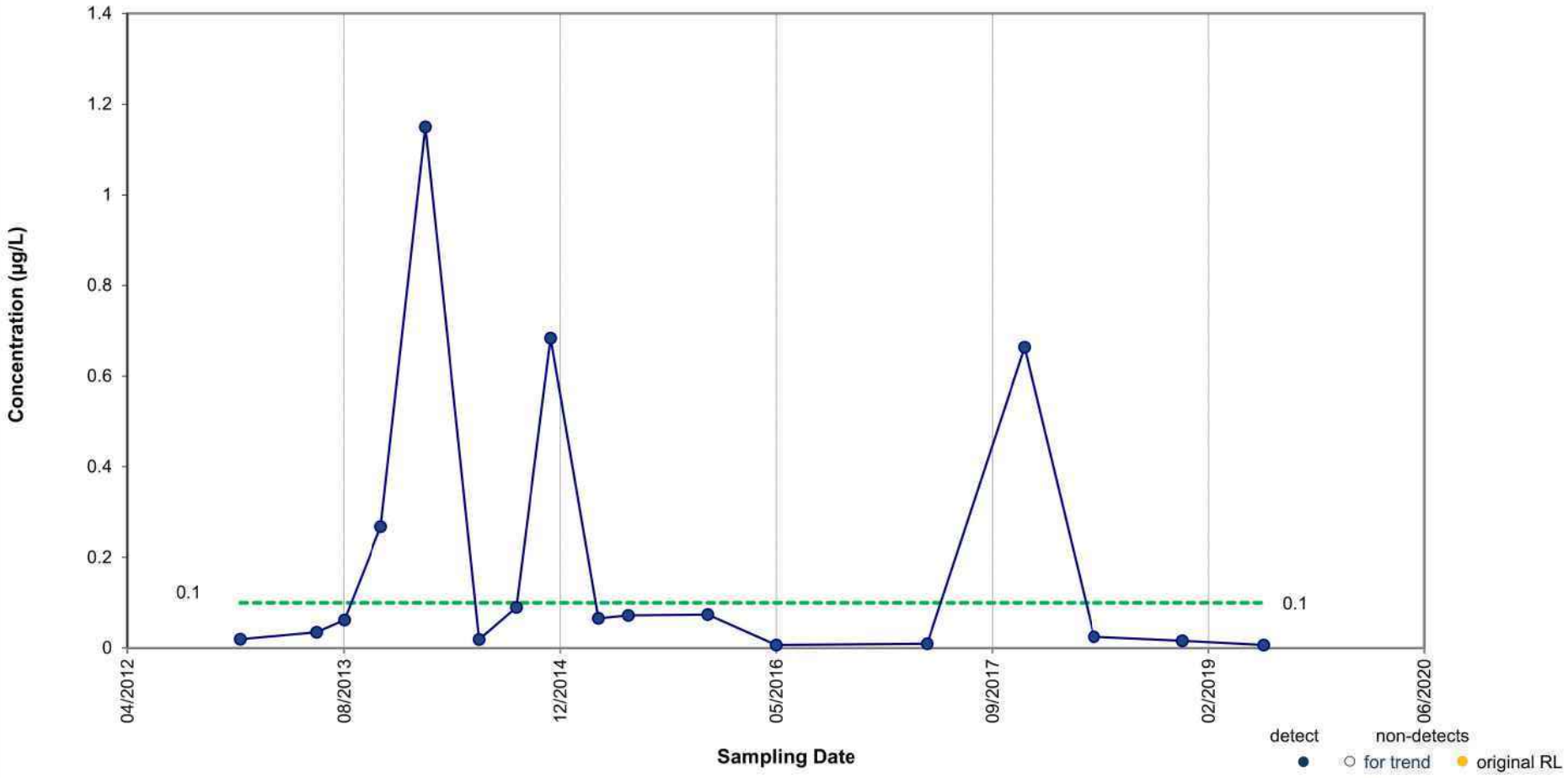
p value = 0.20 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-11, Nickel

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

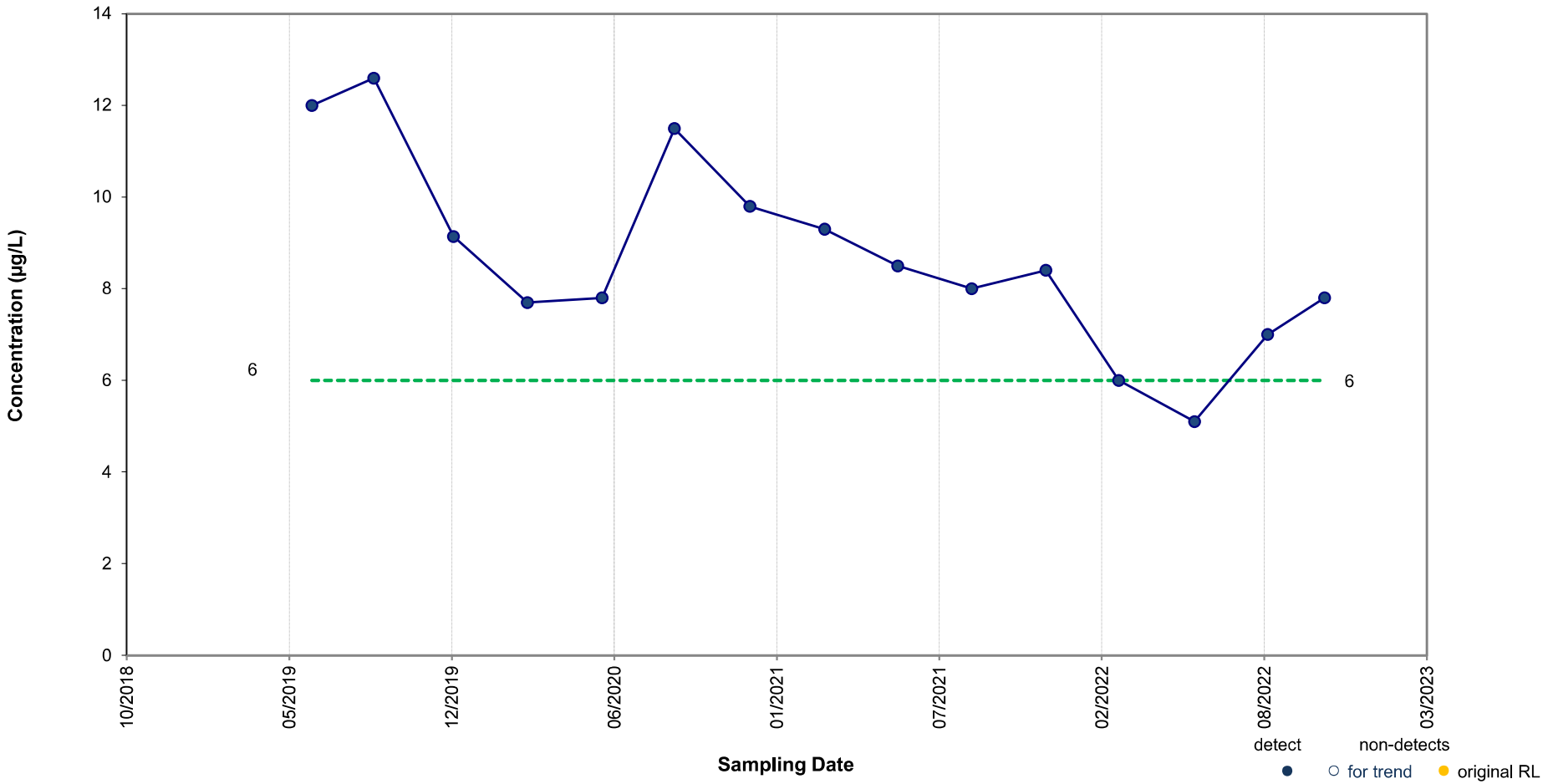
p value = 0.12 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-12, Nickel

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

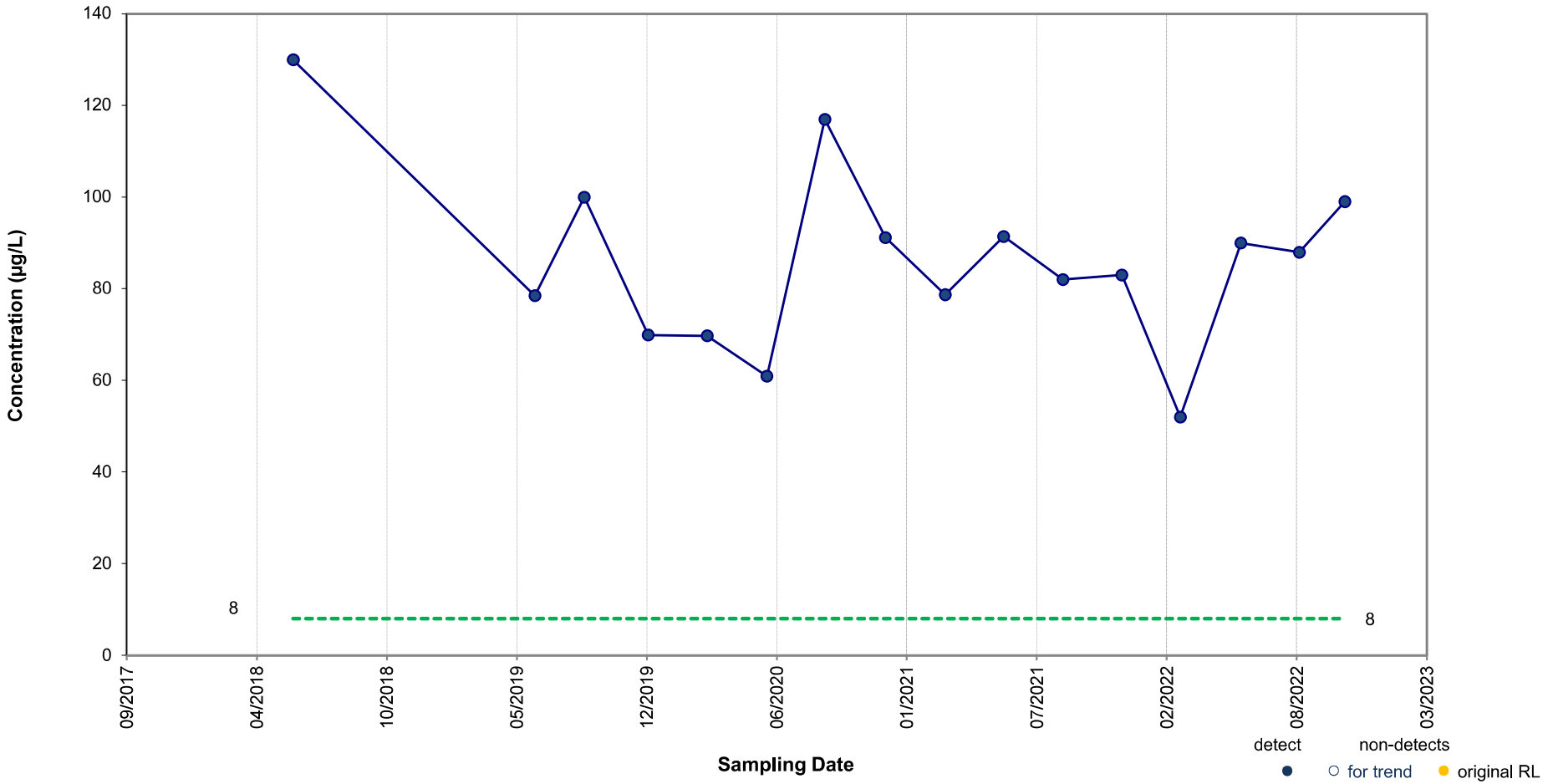
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-12, PFNA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

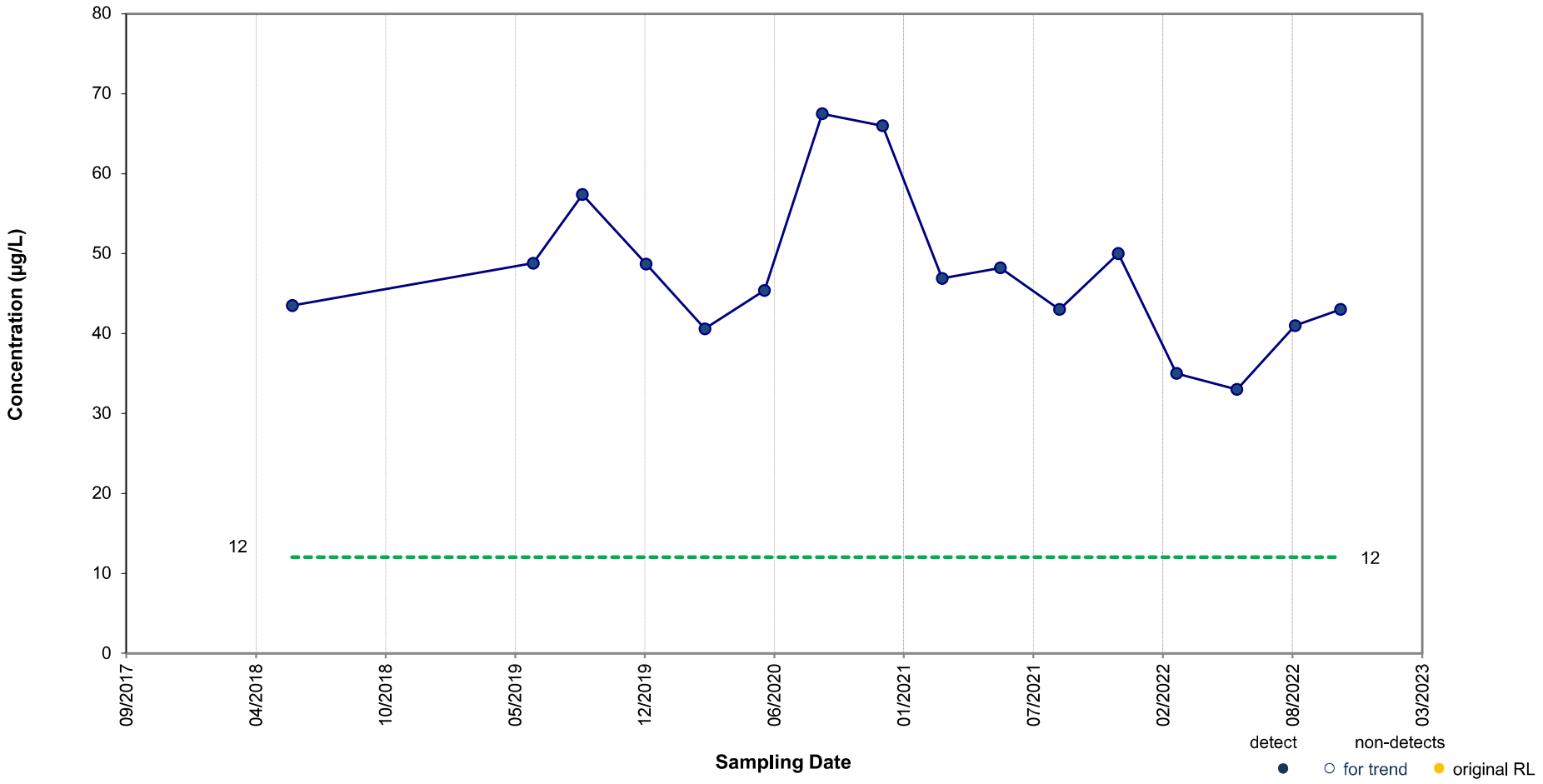
p value = 0.48 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-12, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

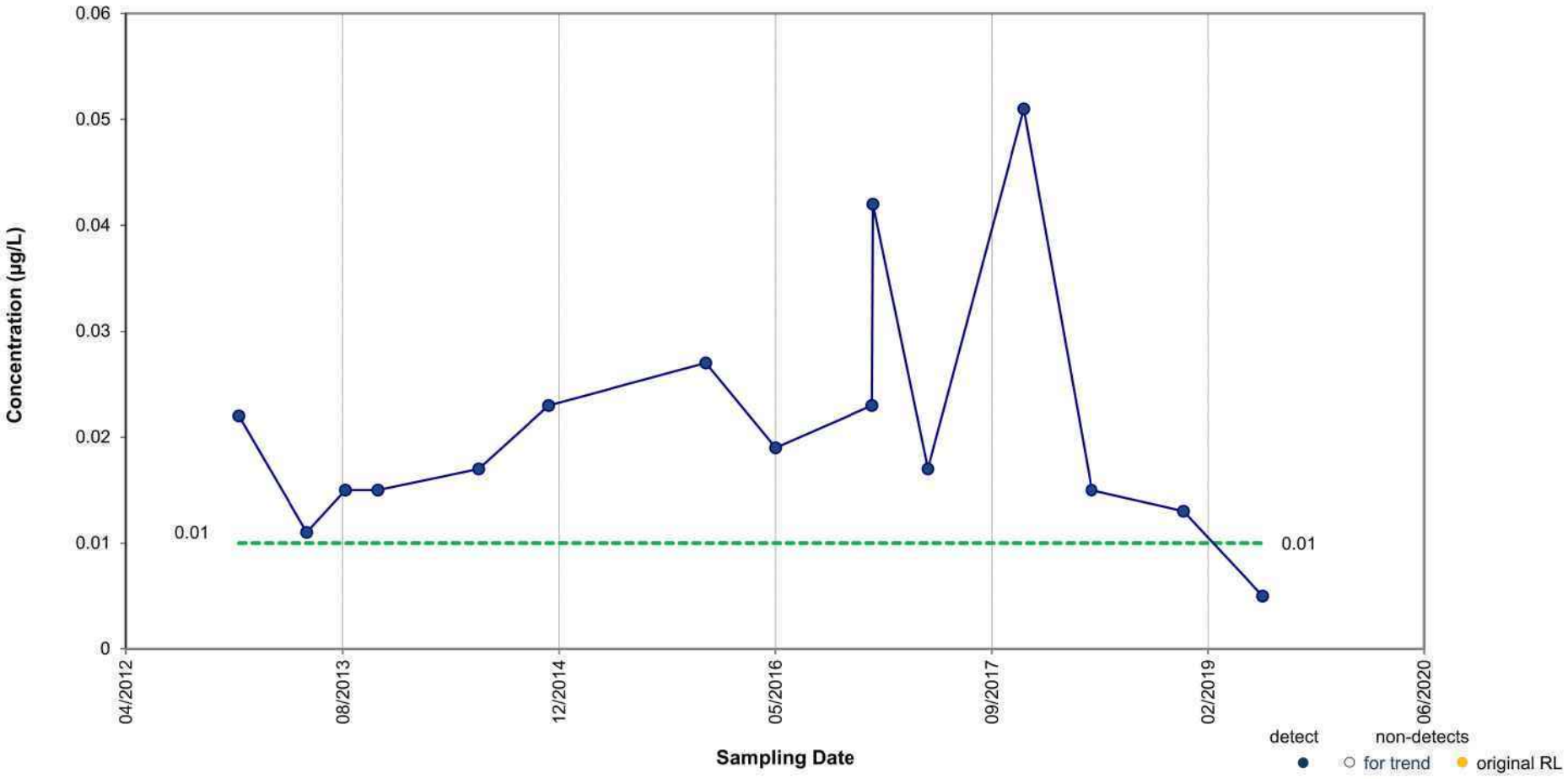
p value = 0.05 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-12, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

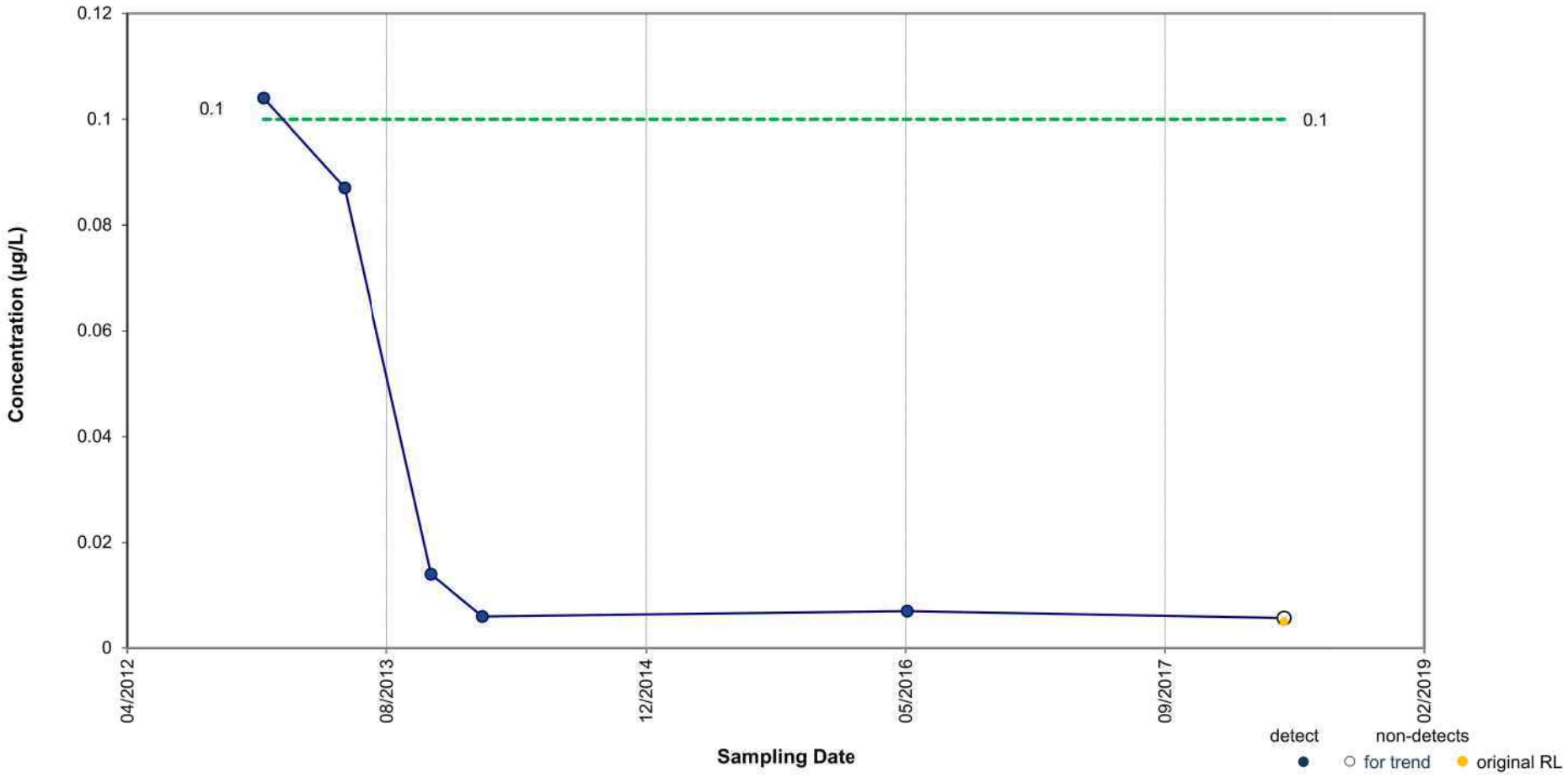
p value = 0.48 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-16, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

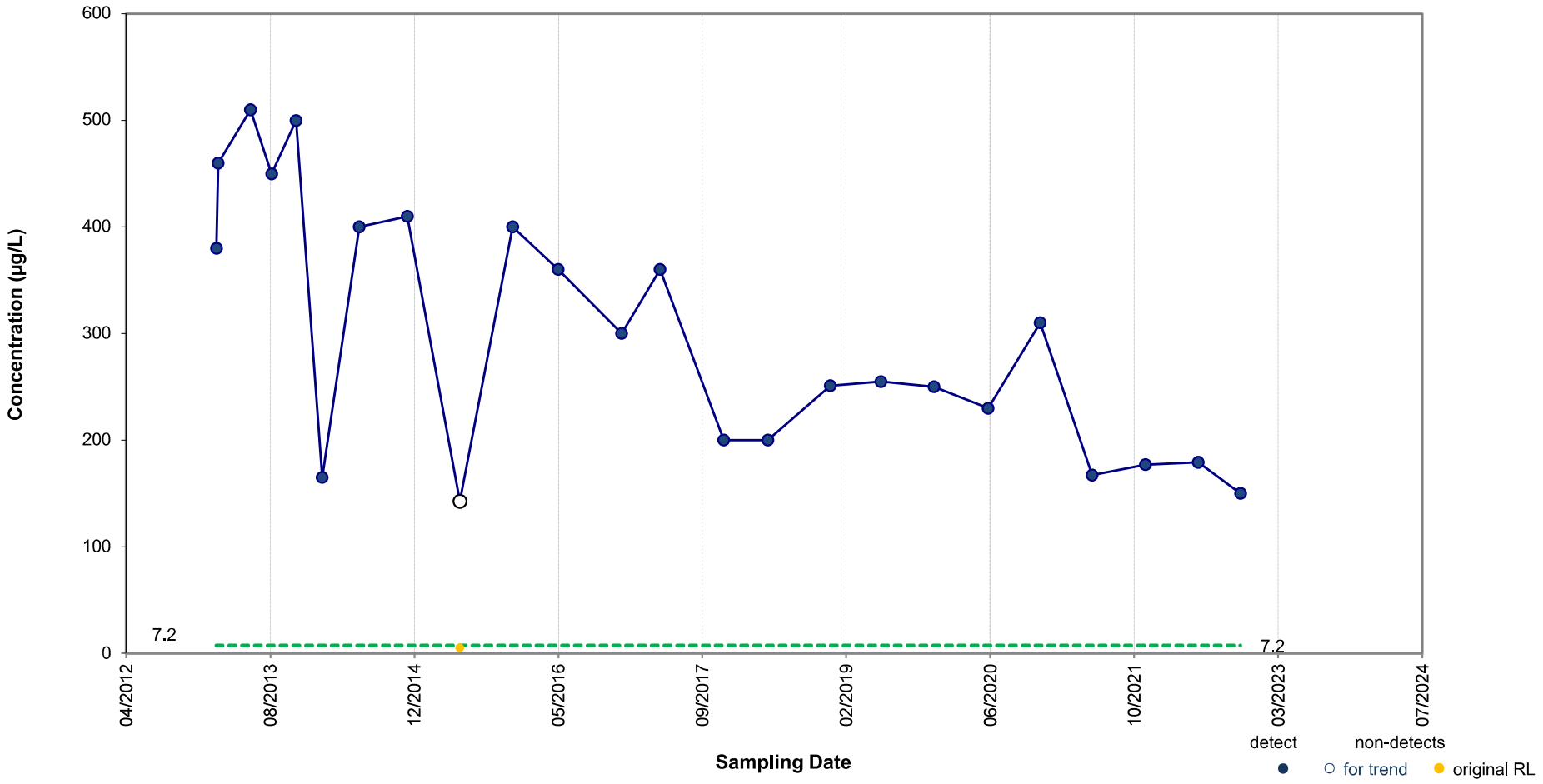
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-18, Nickel

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

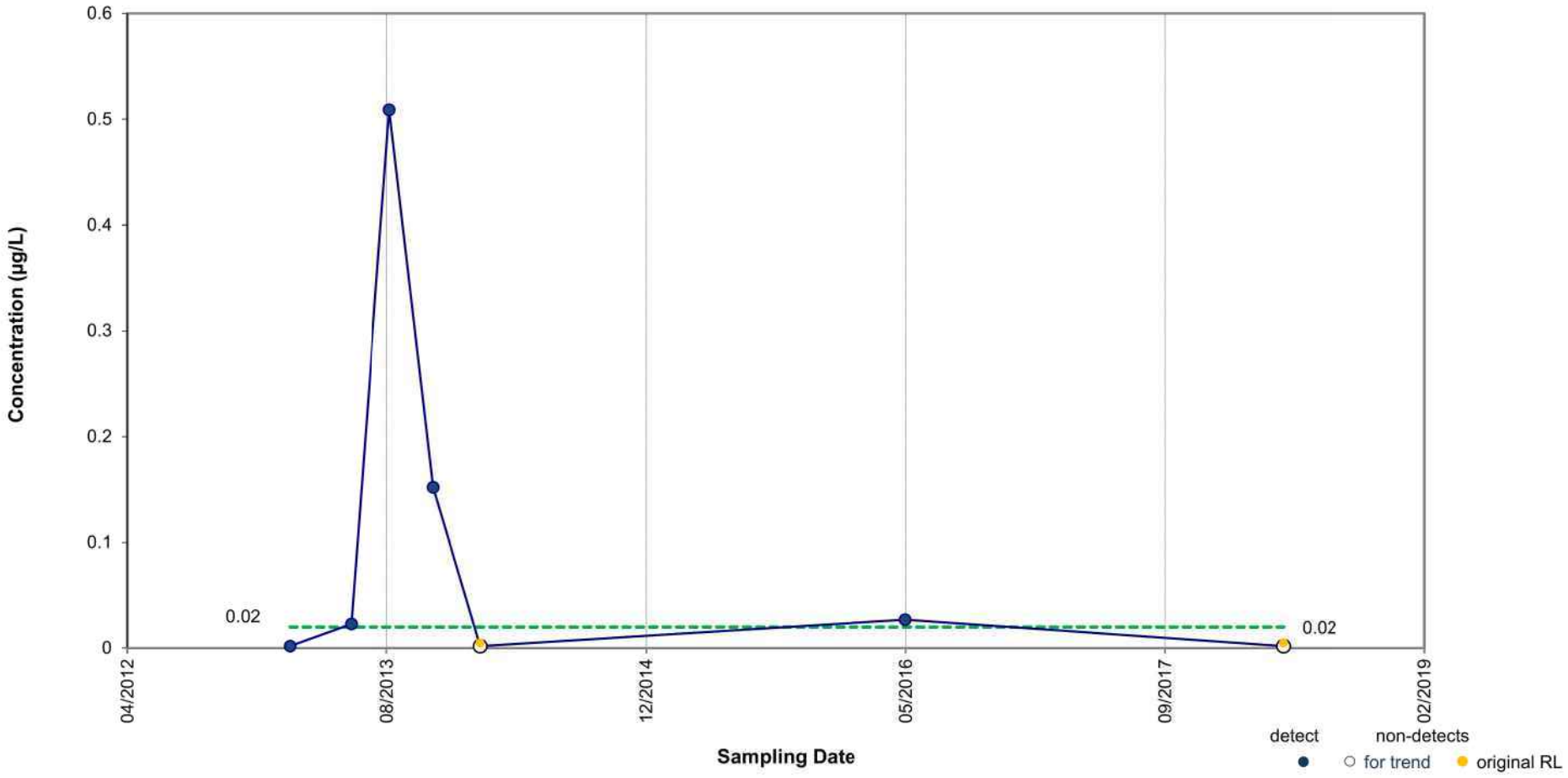
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-21, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

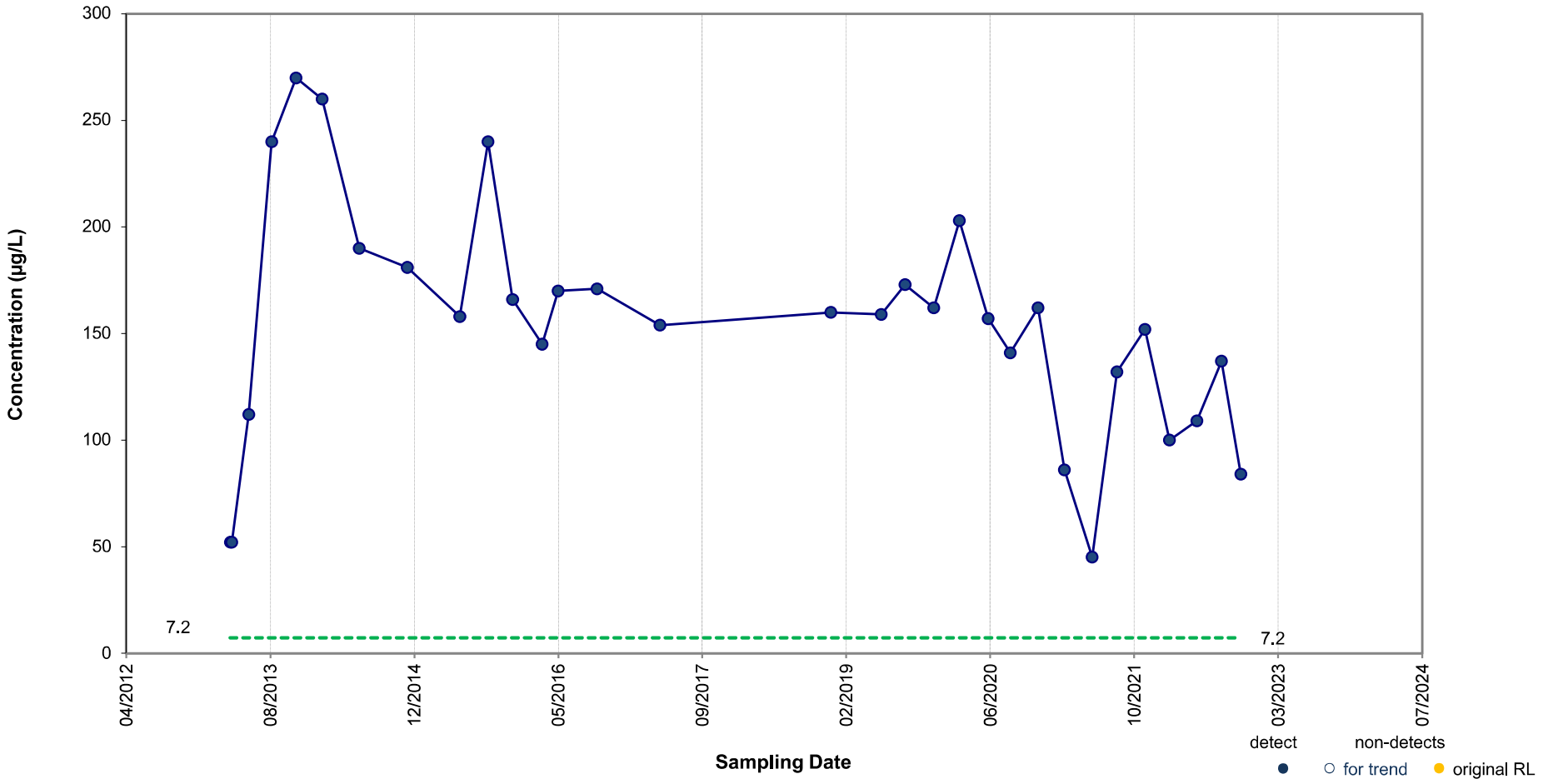
p value = 0.33 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-12-21, Copper

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

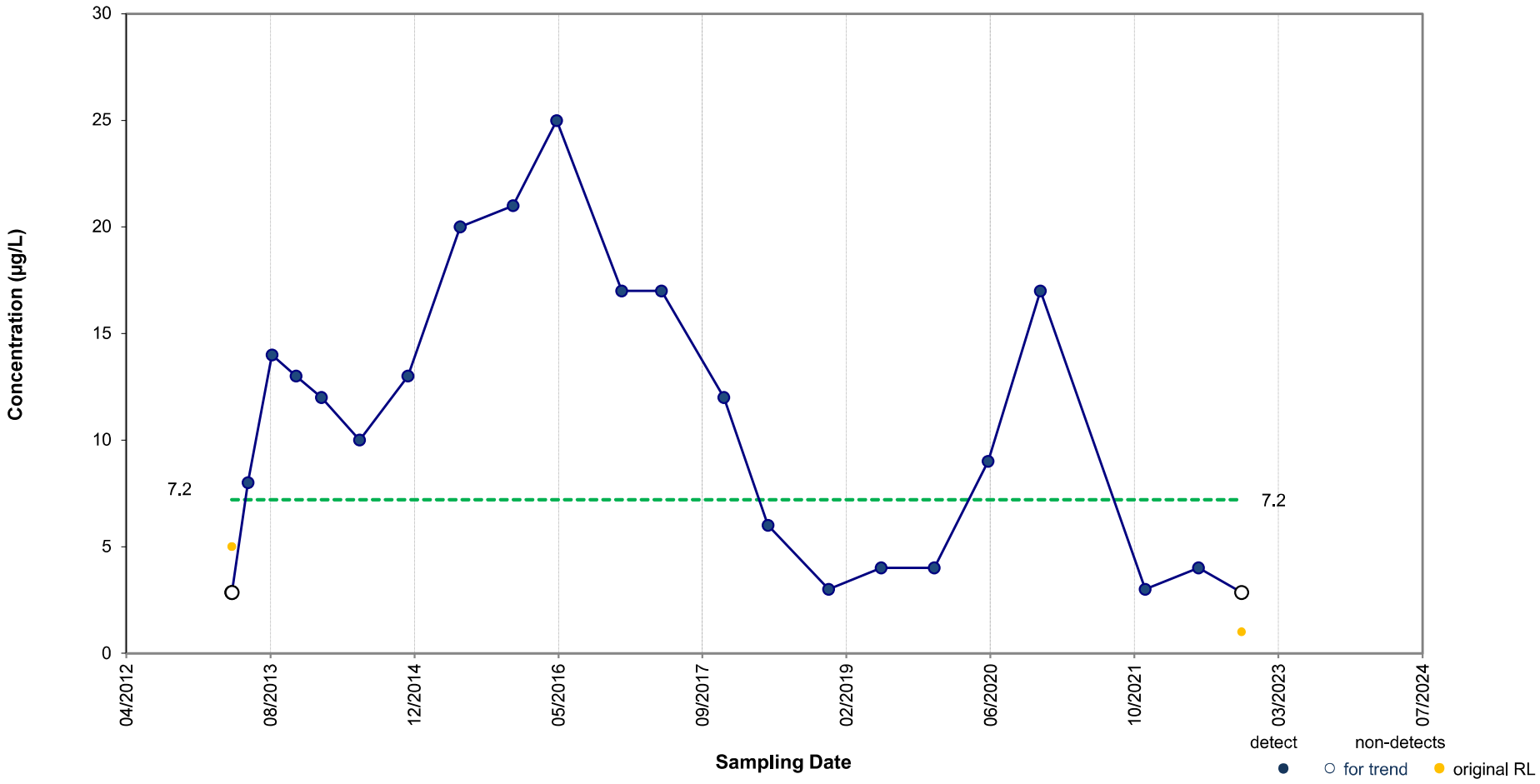
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-22, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

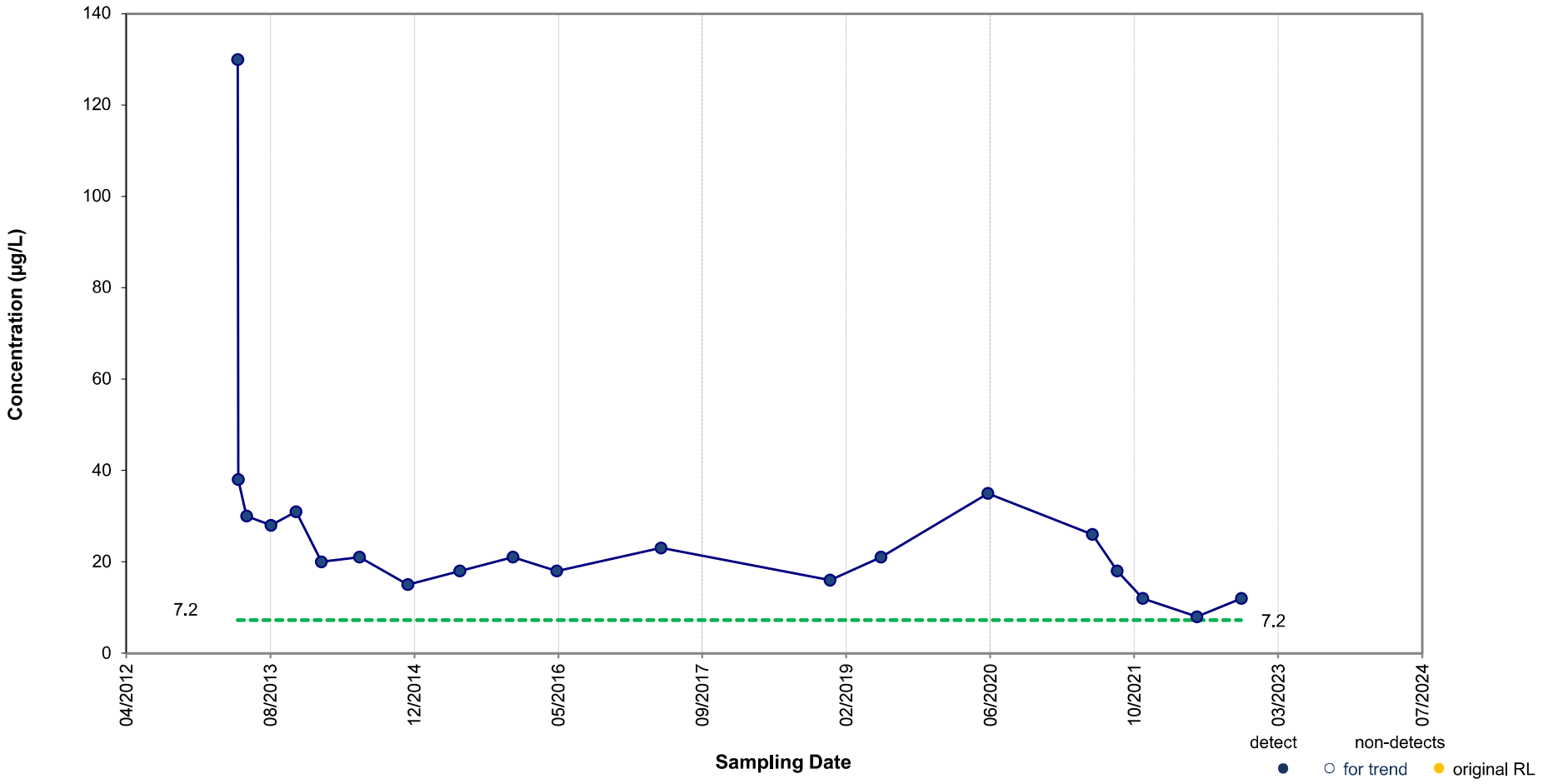
p value = 0.18 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-25, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

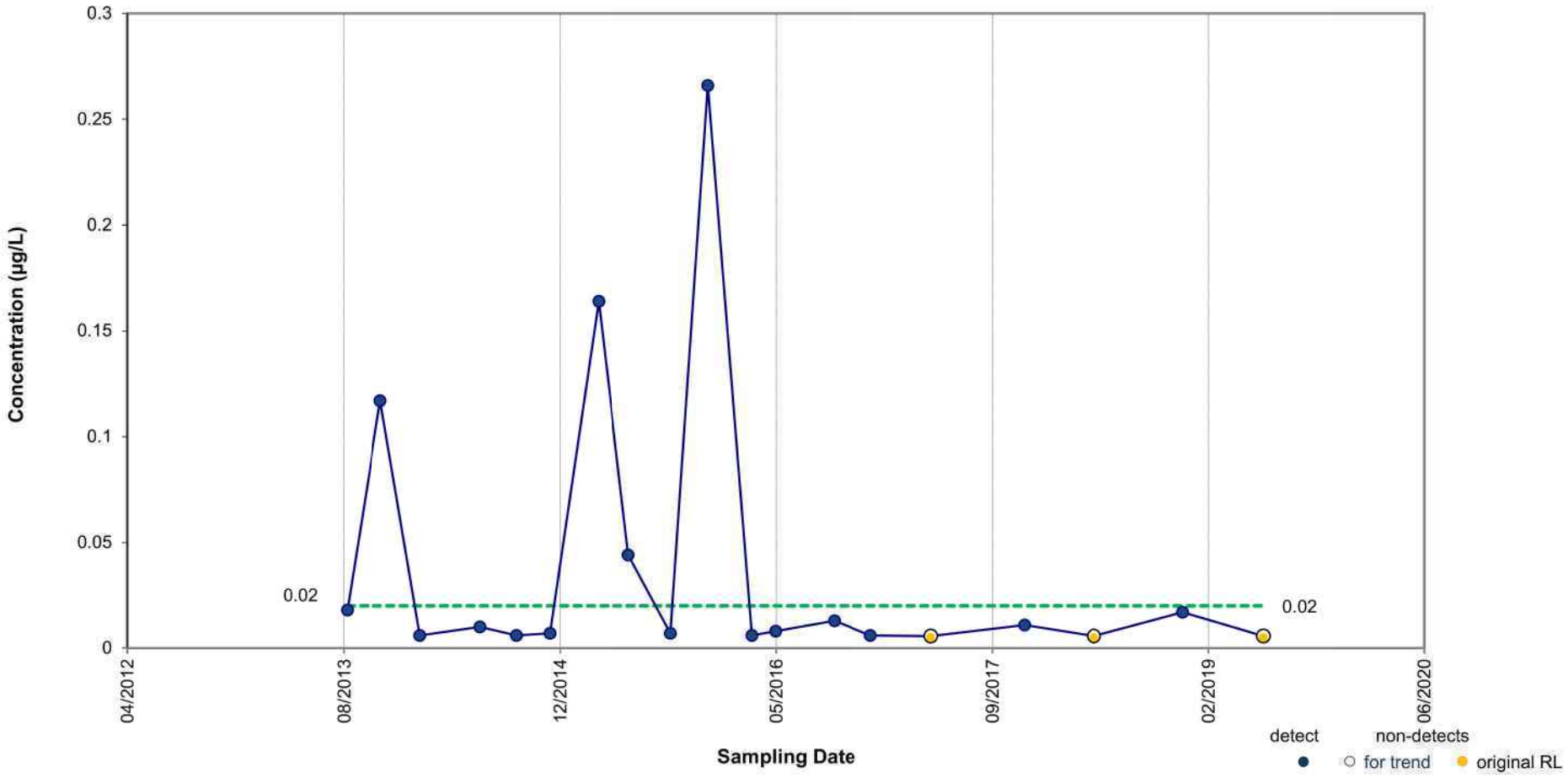
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-29, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

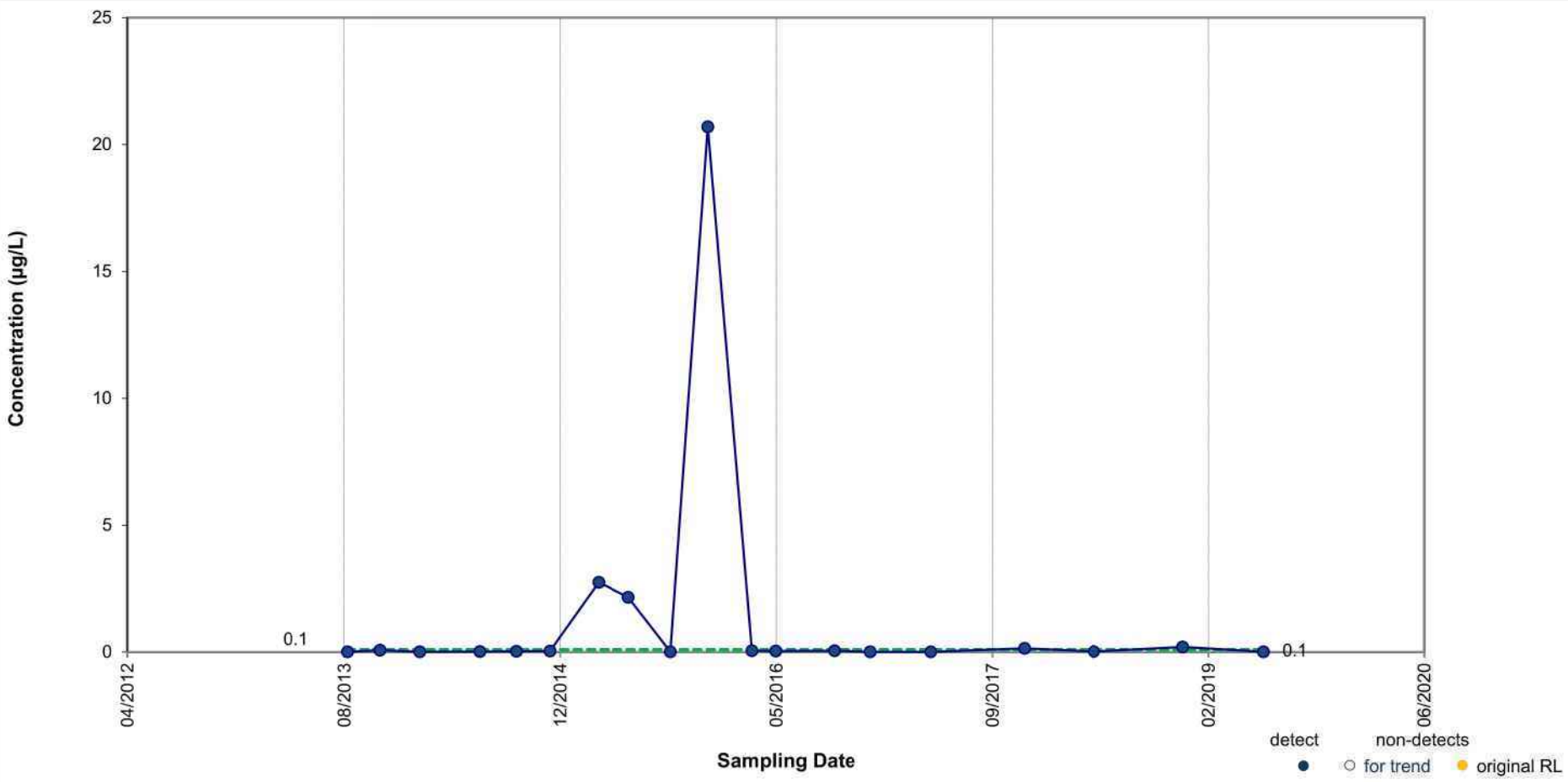
p value = 0.07 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-31, Copper

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

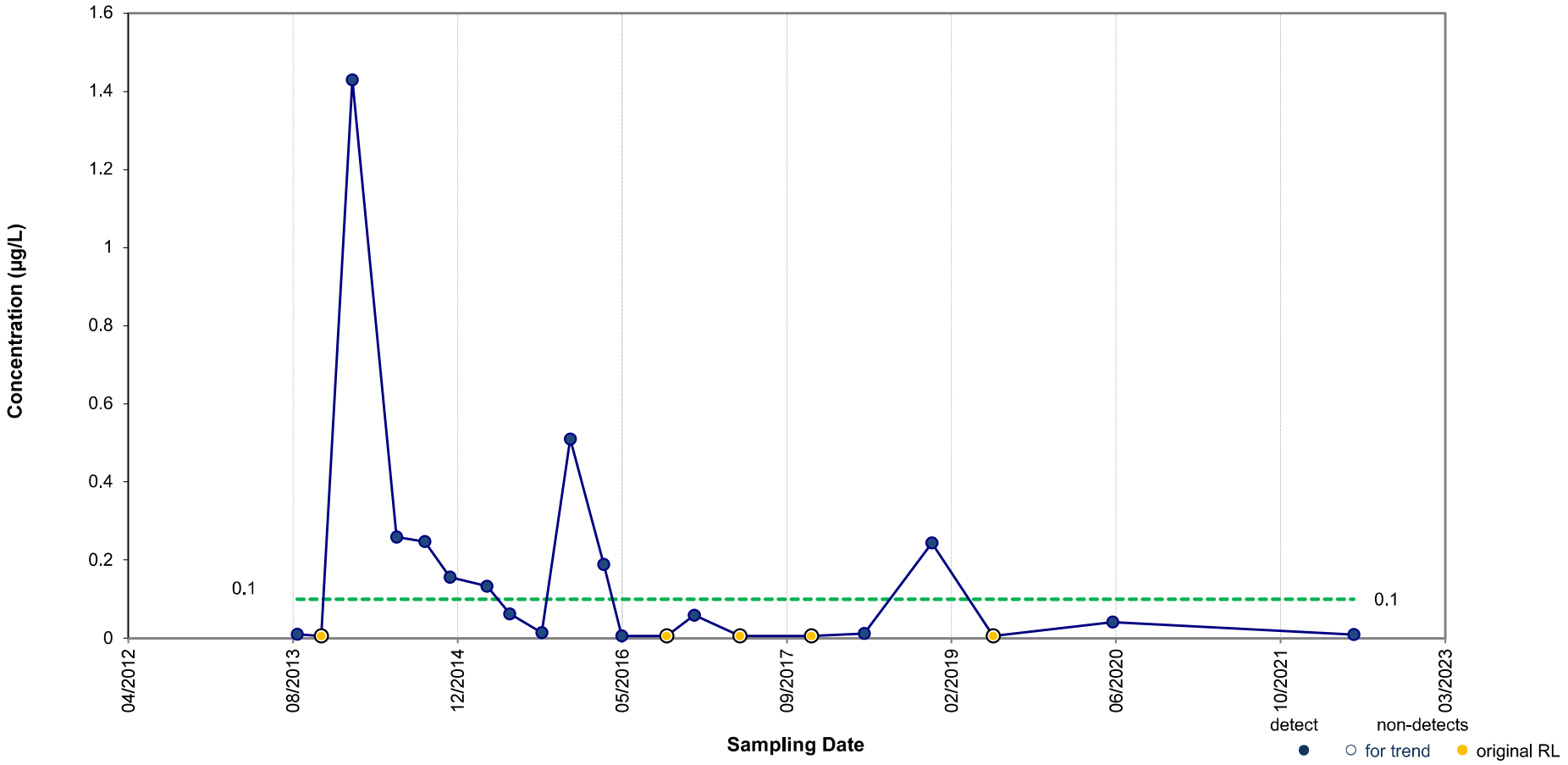
p value = 0.44 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-31, Nickel

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

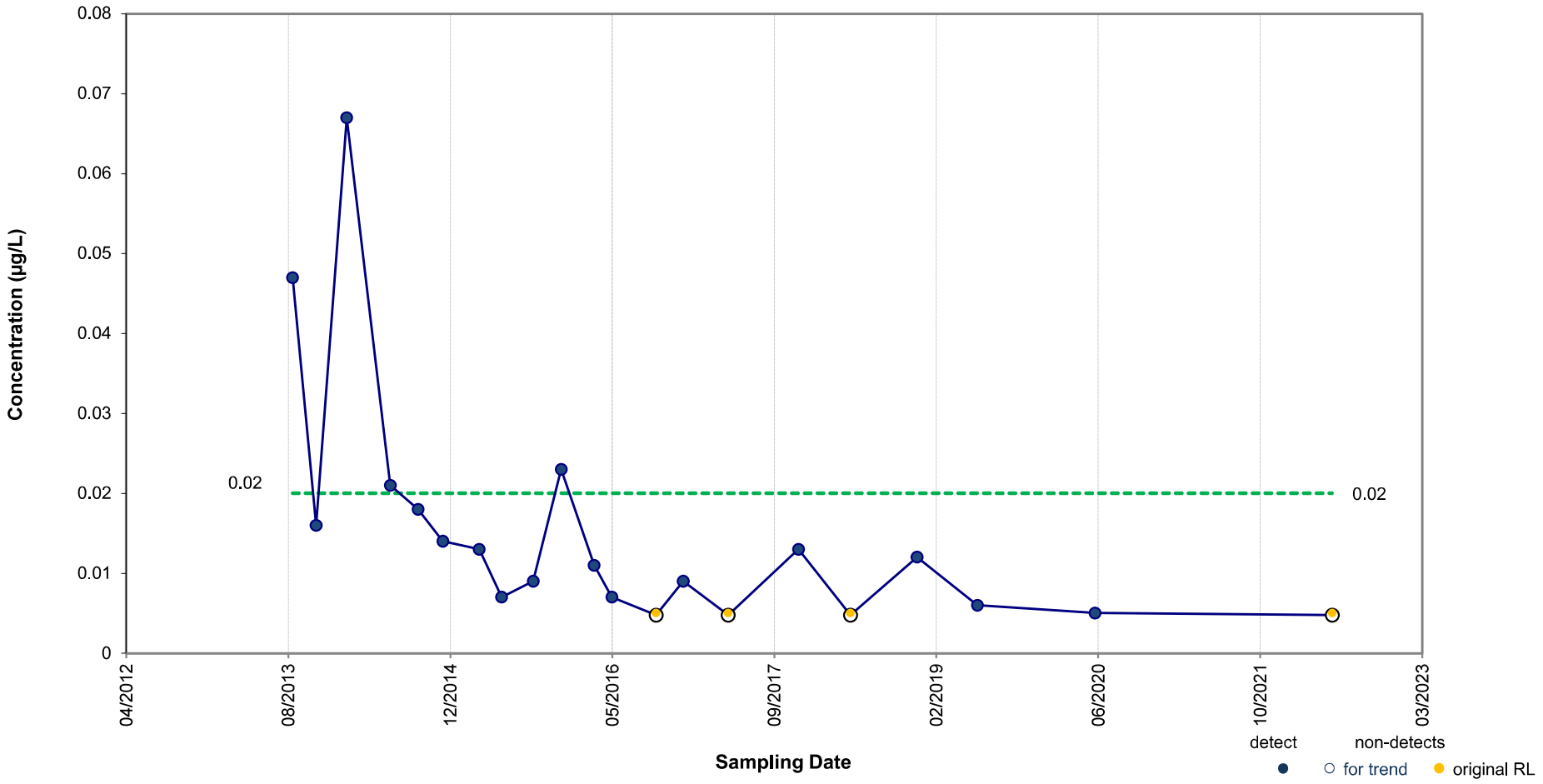
p value = 0.03 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-32, Chromium III

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

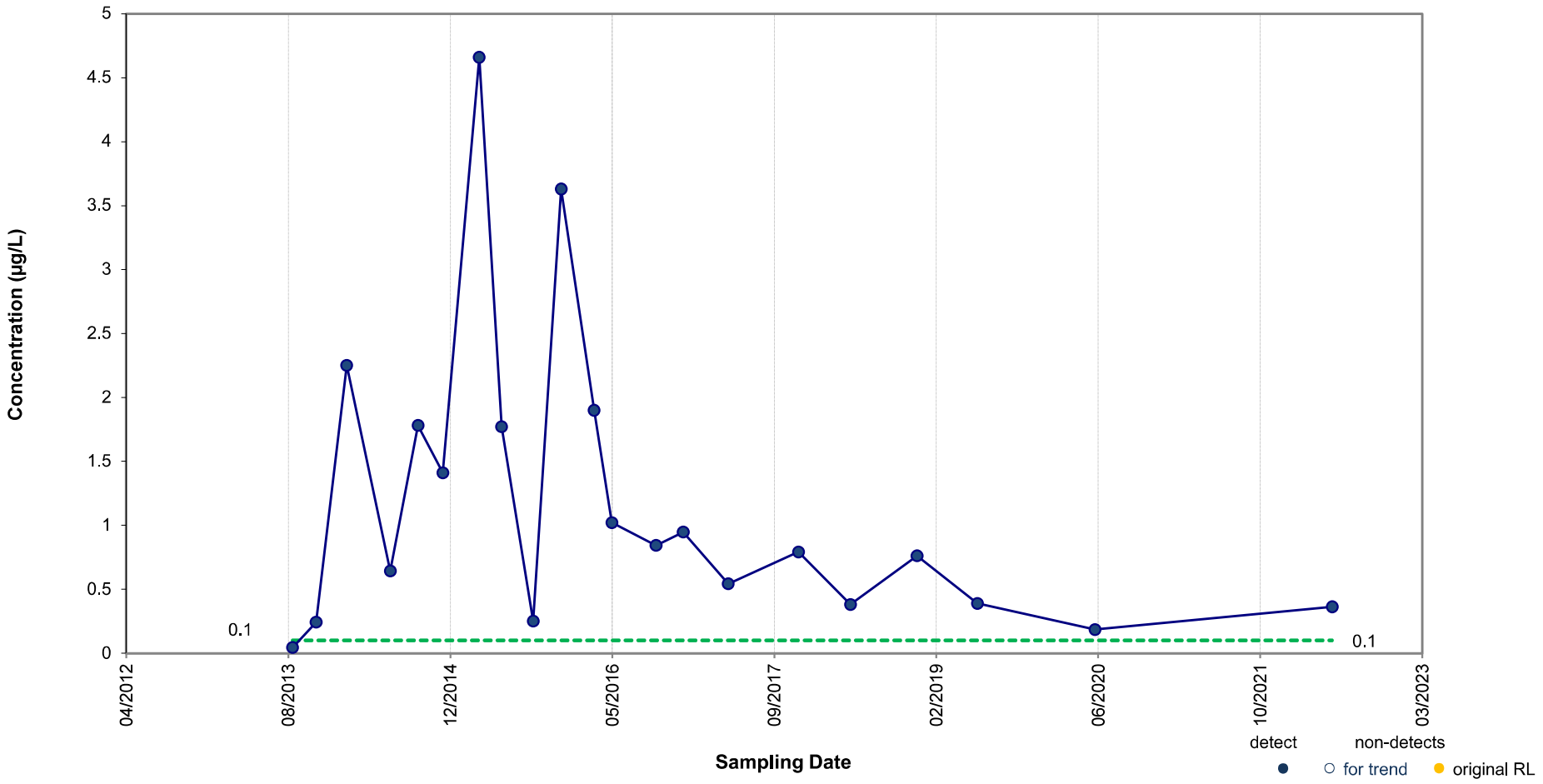
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-32, Copper

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

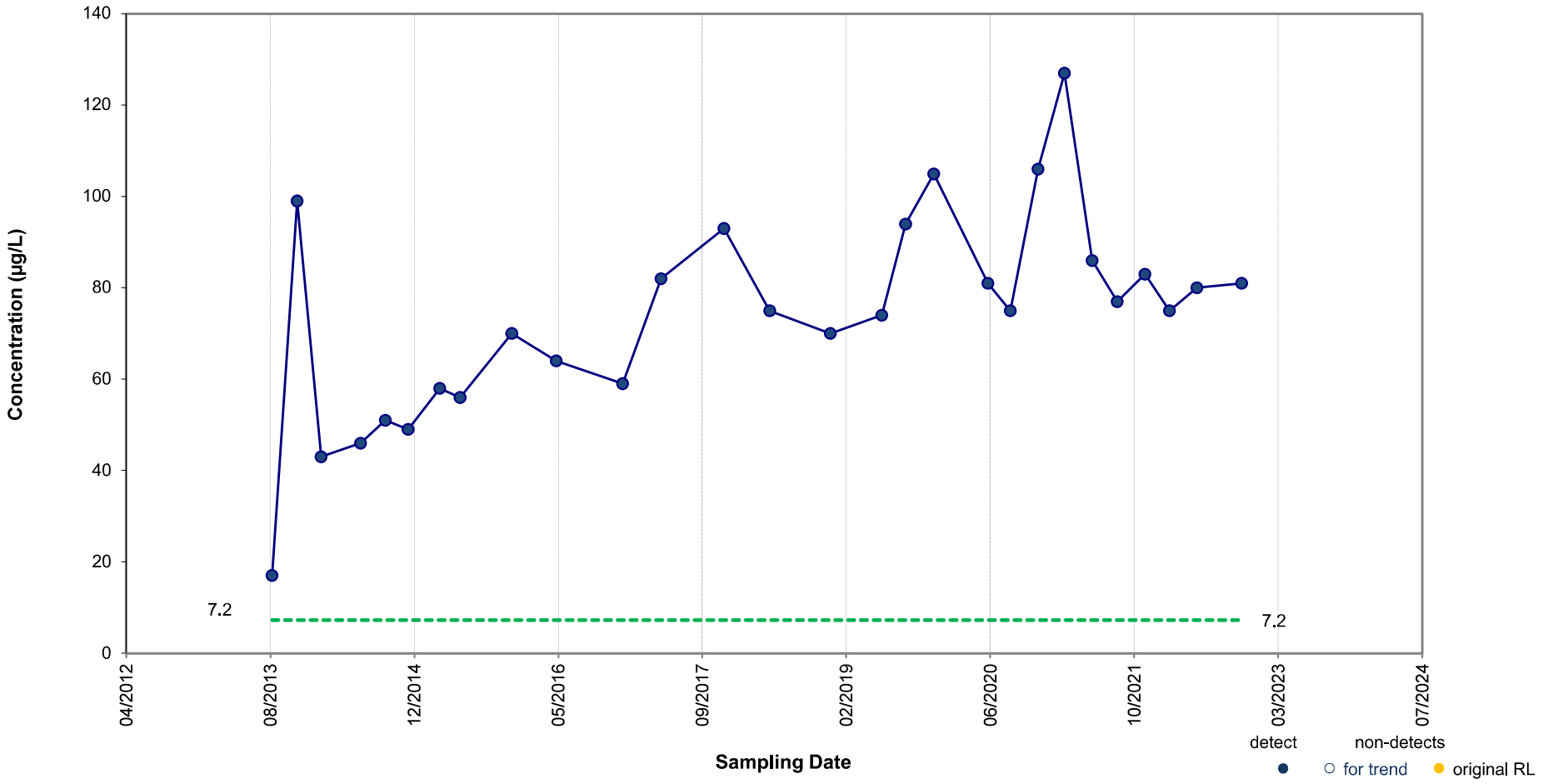
p value = 0.05 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-32, Nickel

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

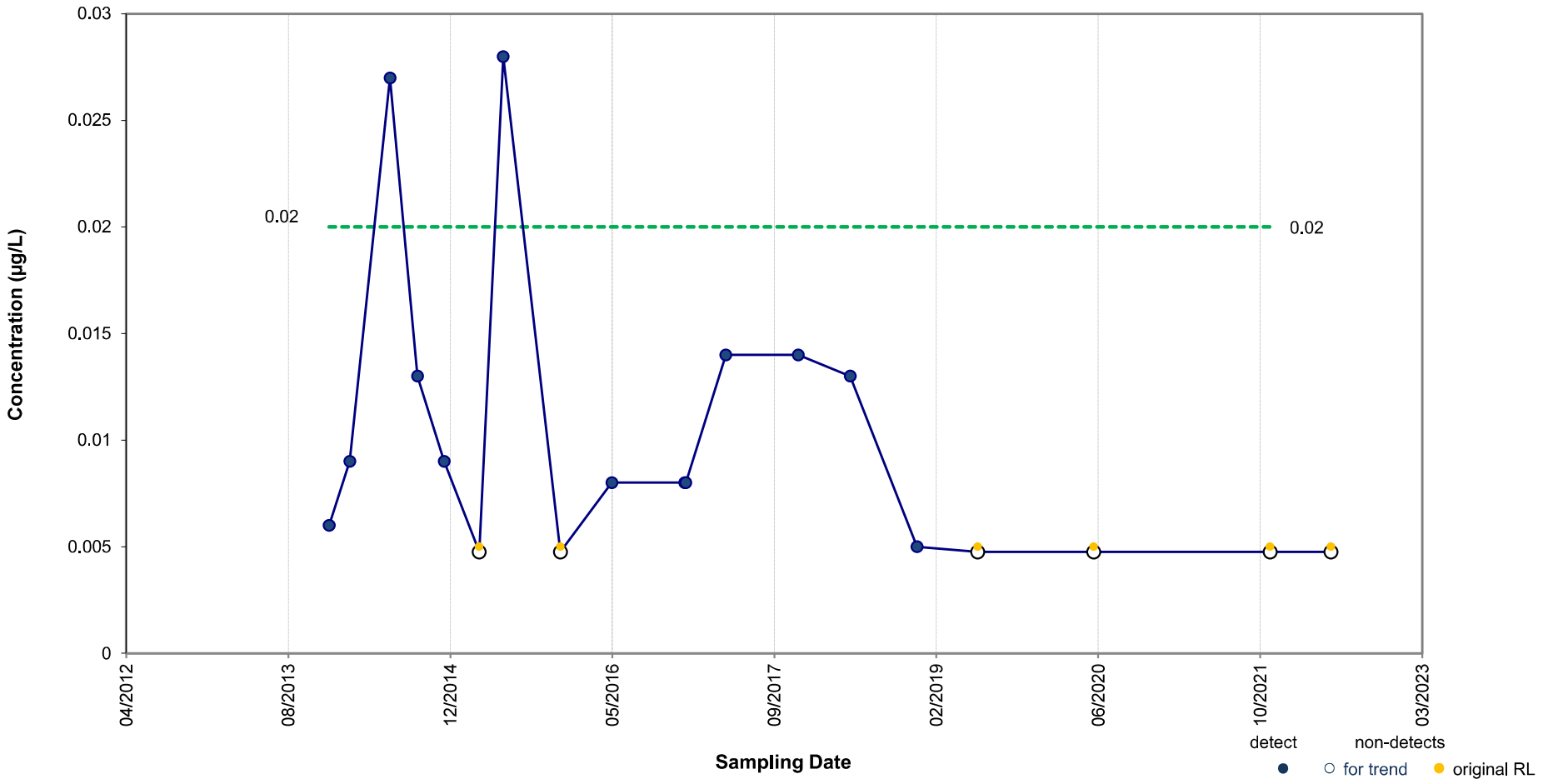
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-34, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

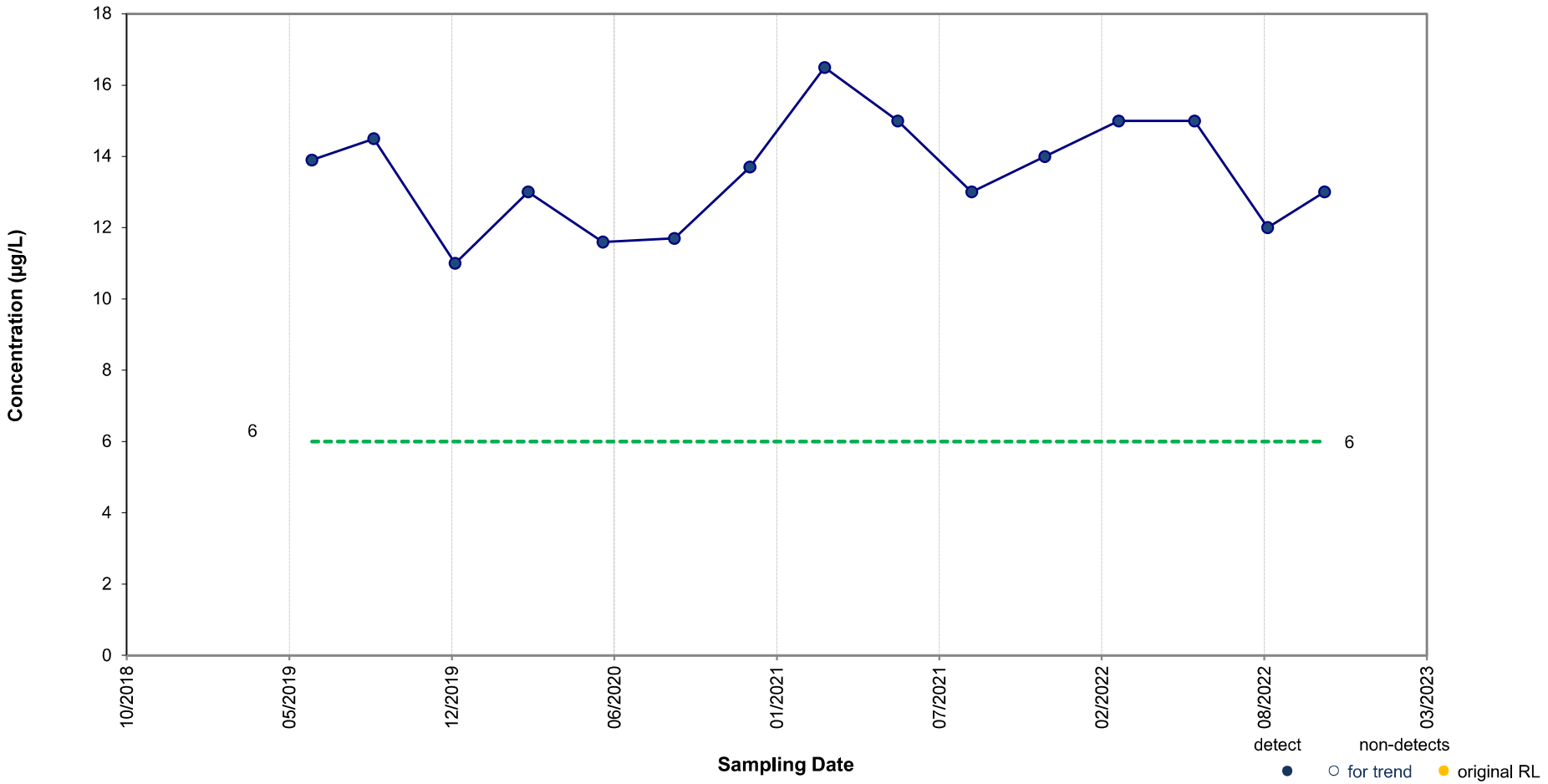
p value = 0.03 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-36R, Copper

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

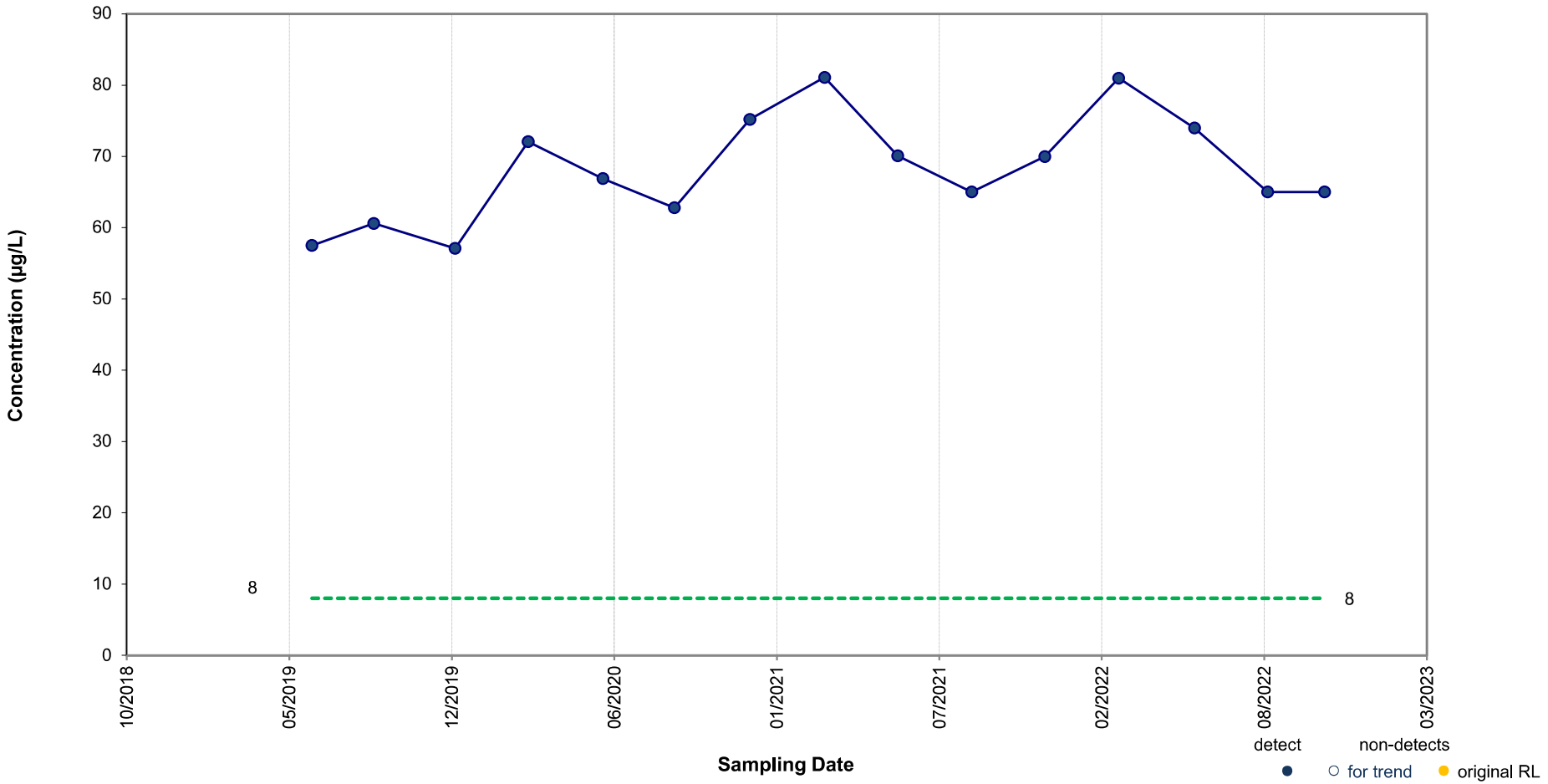
p value = 0.21 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-36R, PFNA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

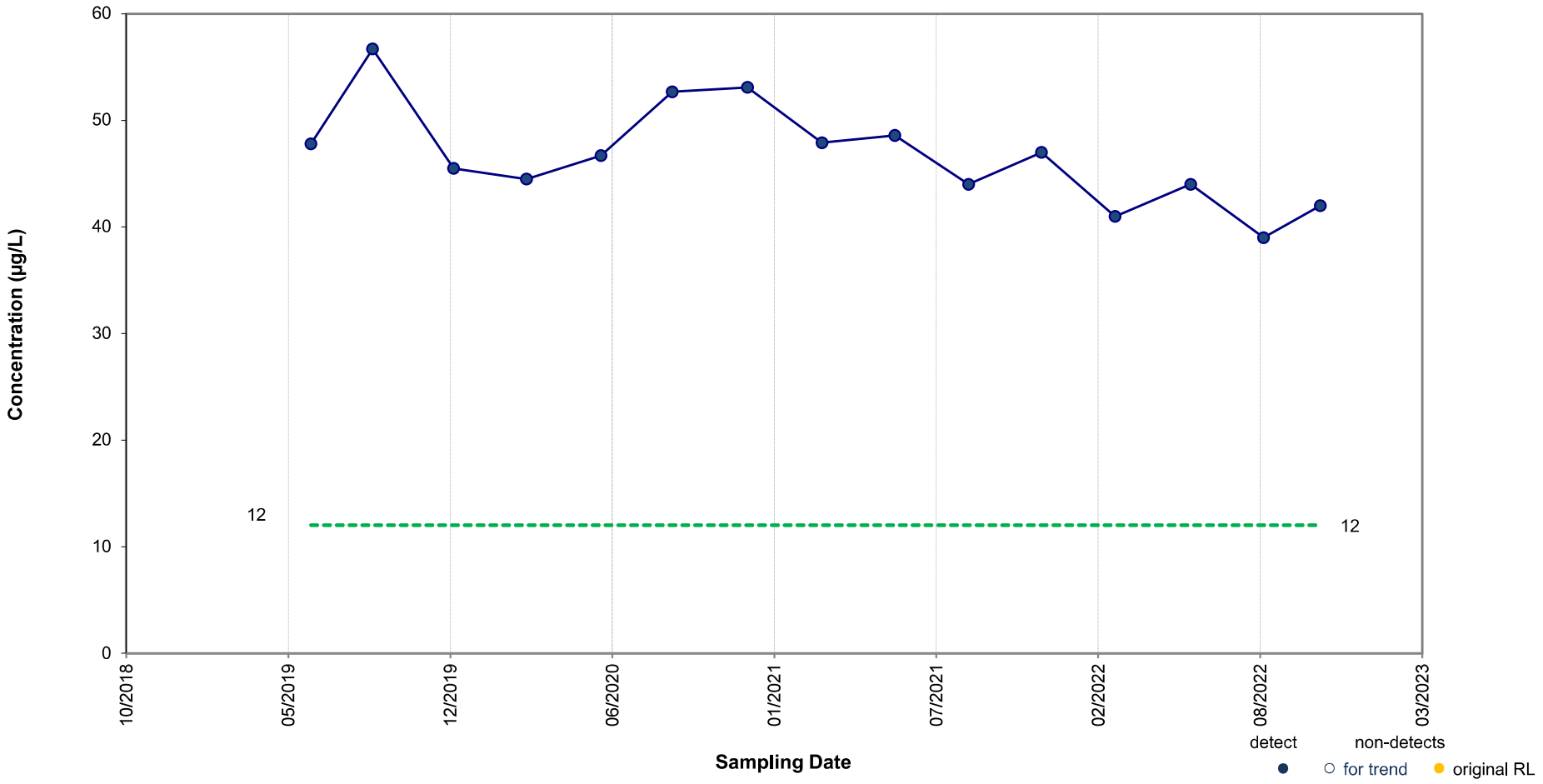
p value = 0.09 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-36R, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

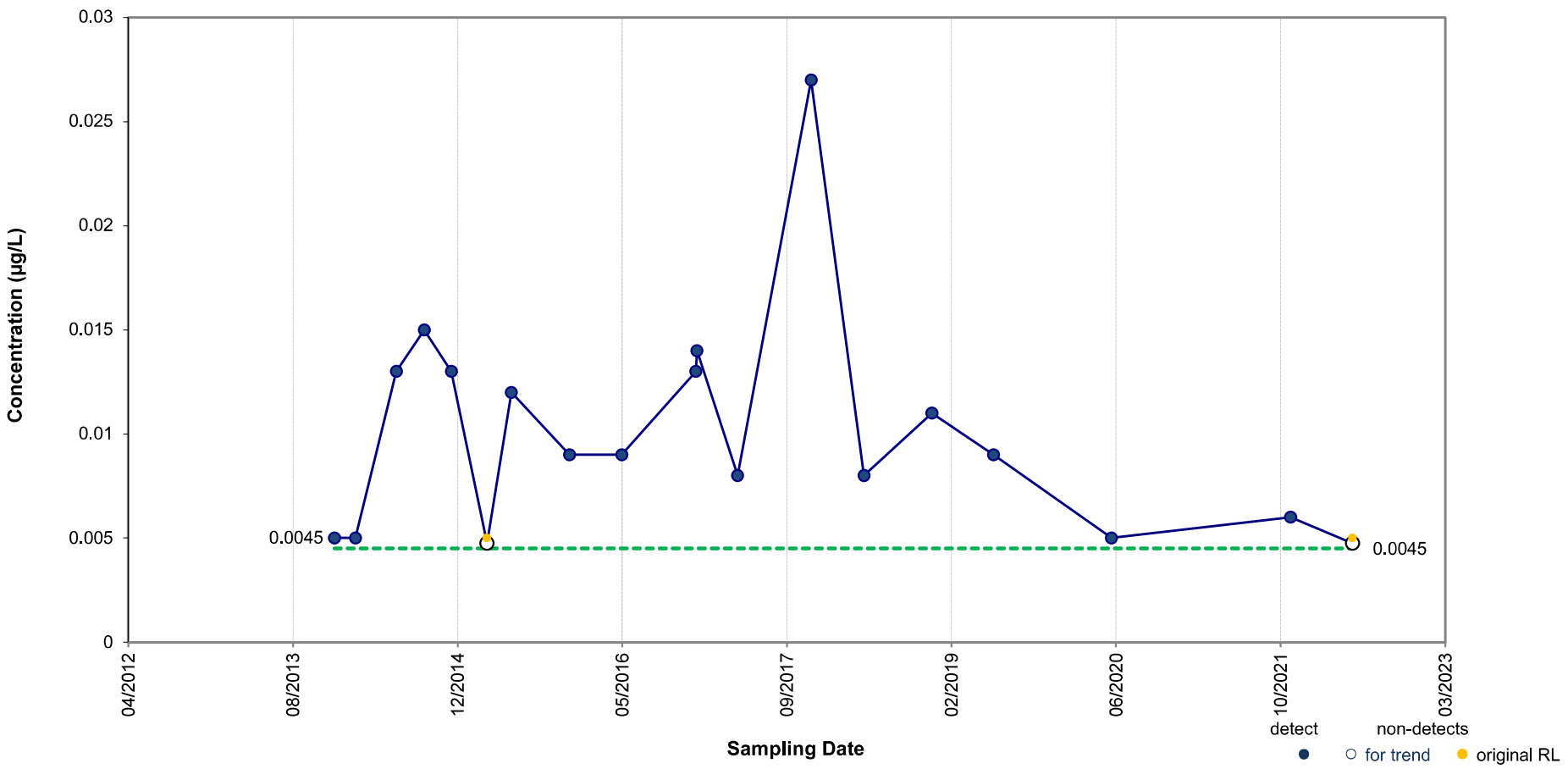
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-36R, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

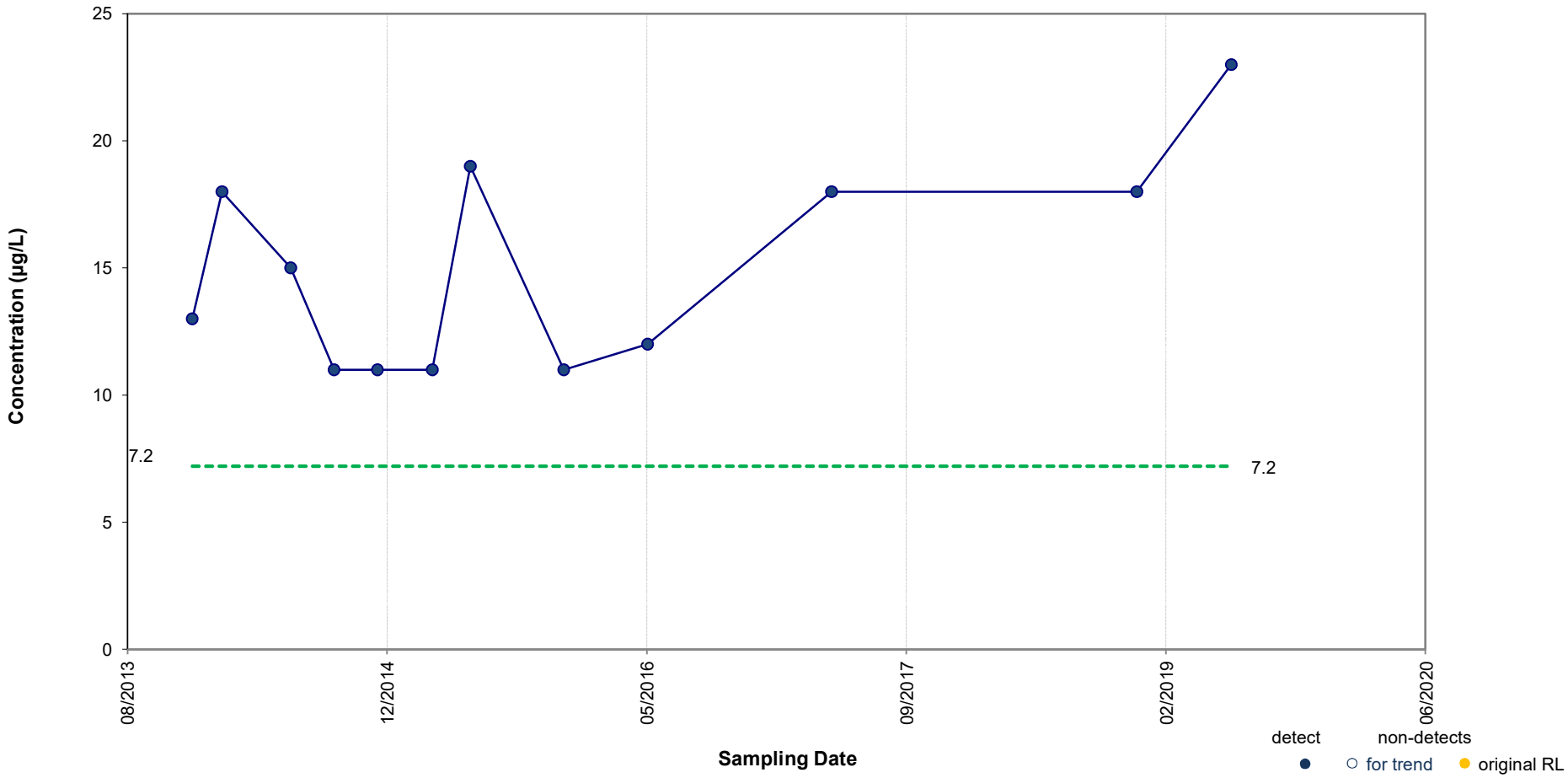
p value = 0.17 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-36R, Vanadium

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

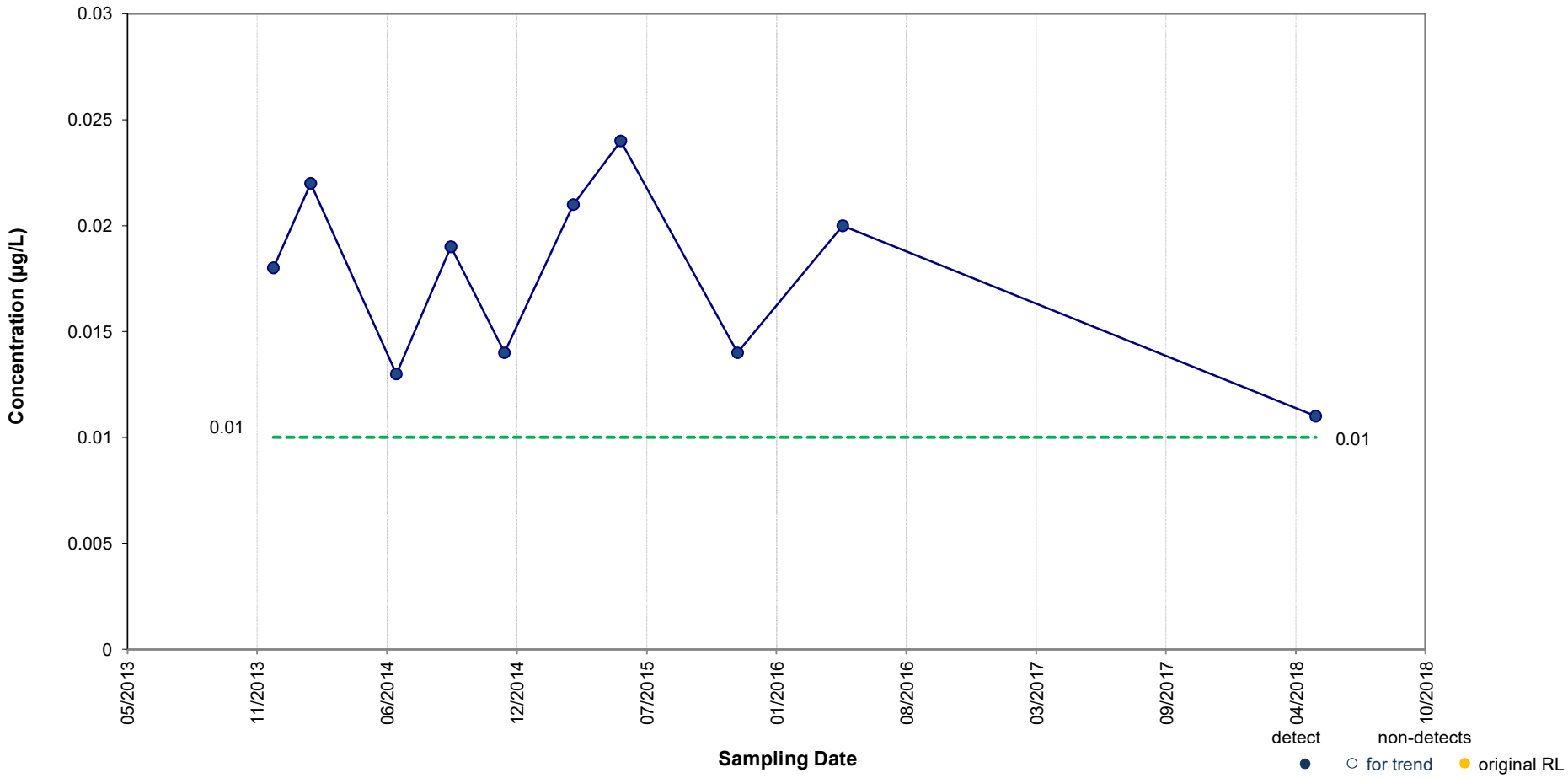
p value = 0.13 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-41, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

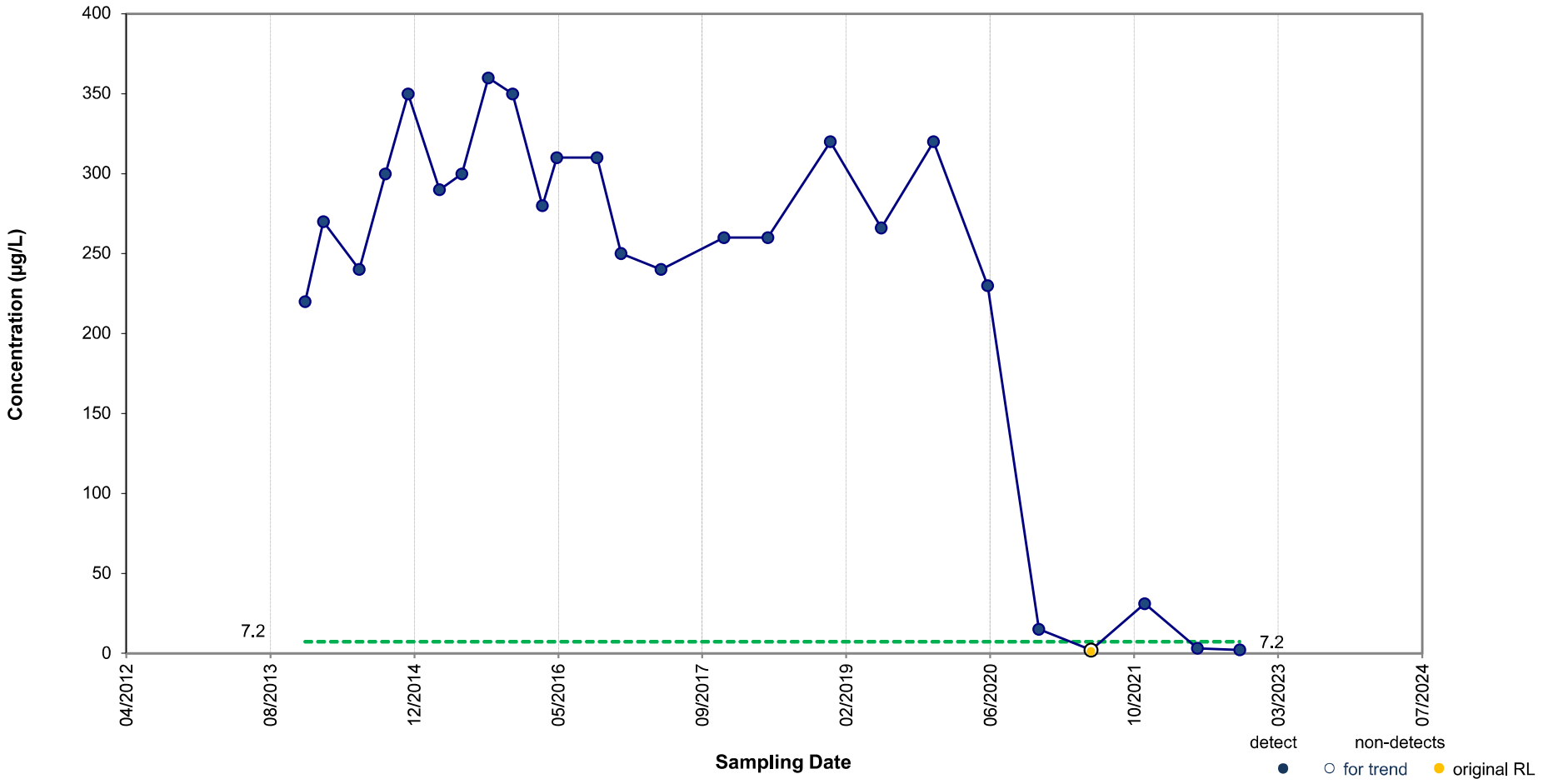
p value = 0.40 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-41, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

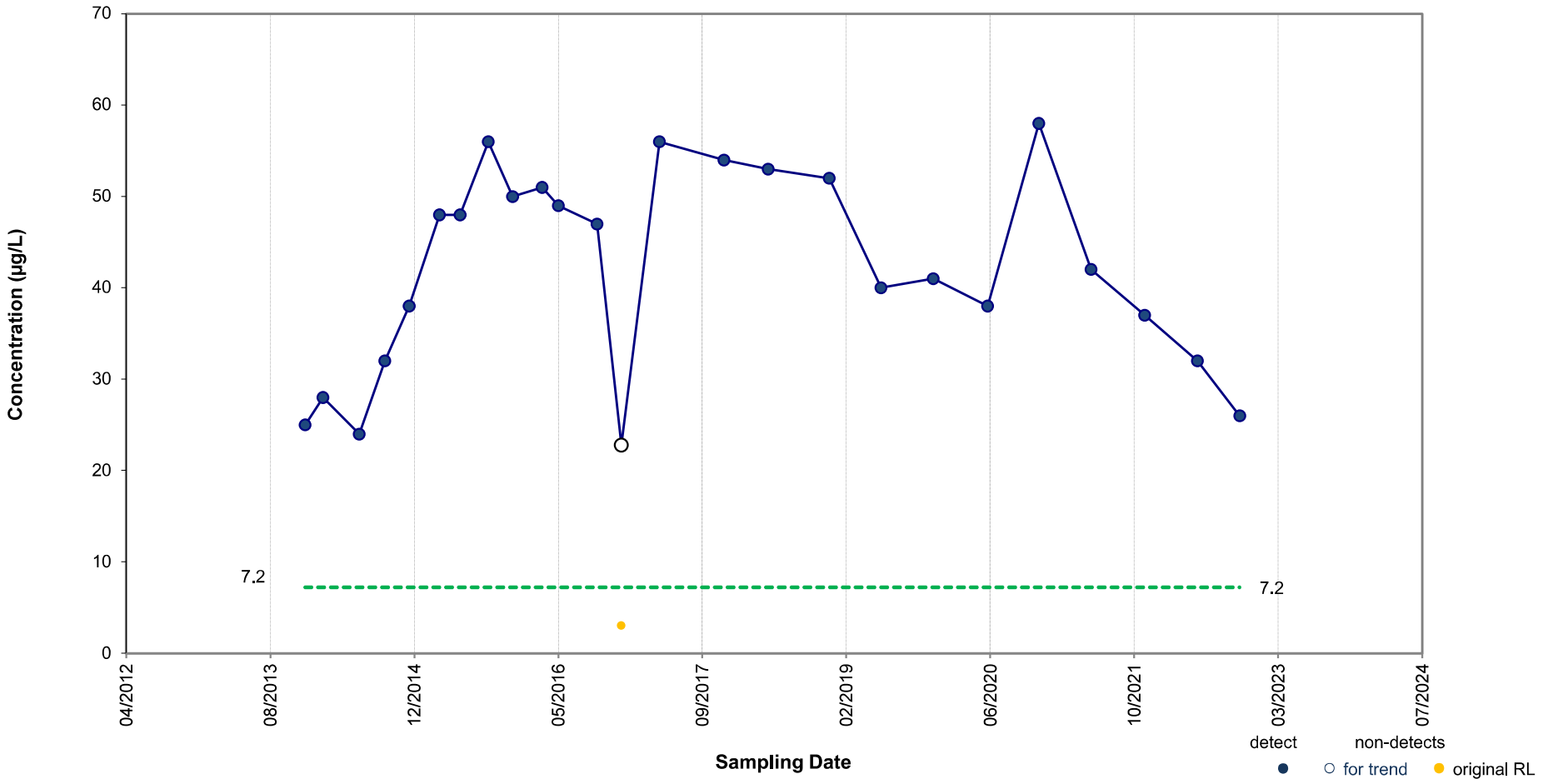
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-43, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

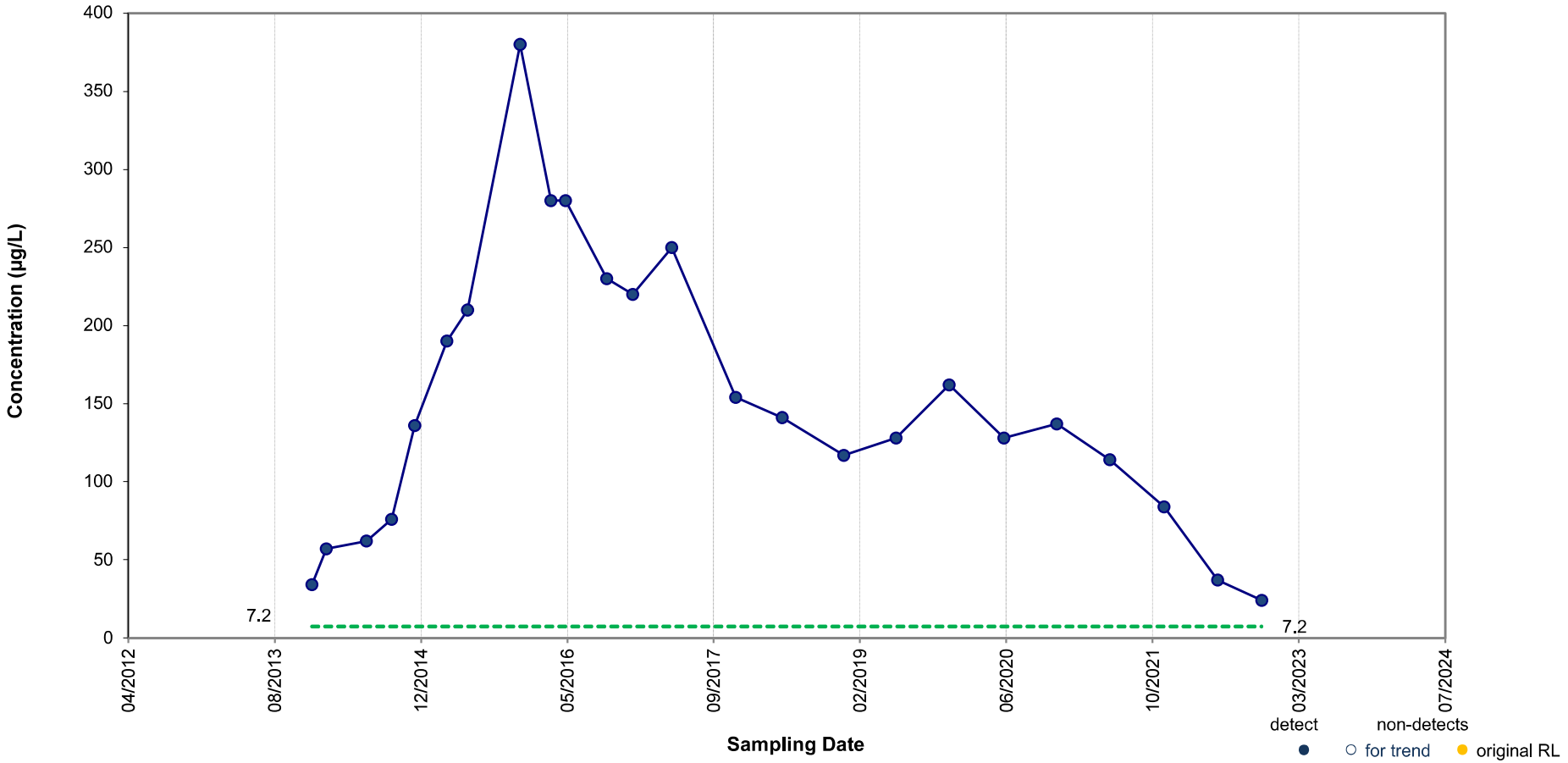
p value = 0.31 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-45, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

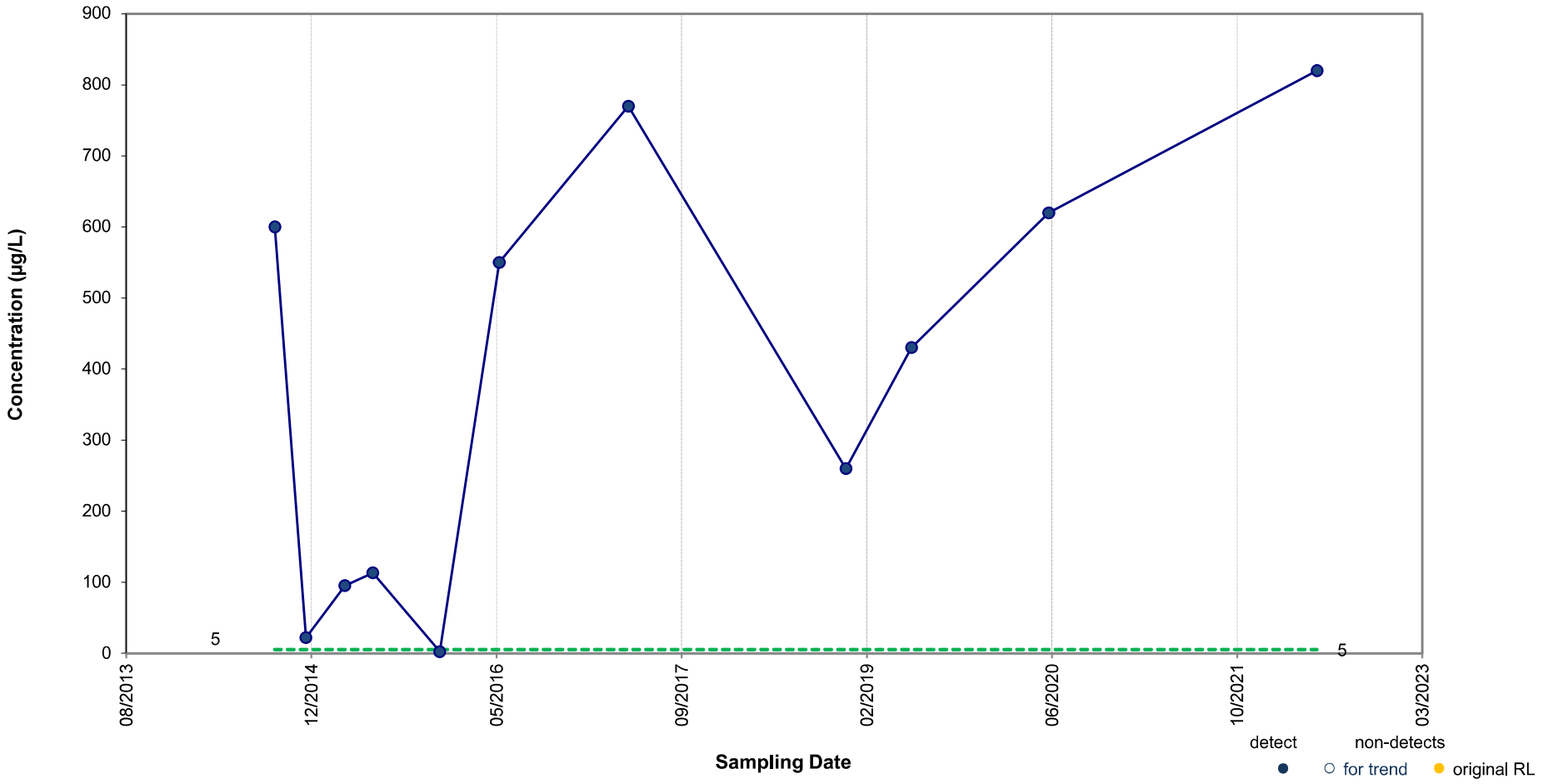
p value = 0.14 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-13-48, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

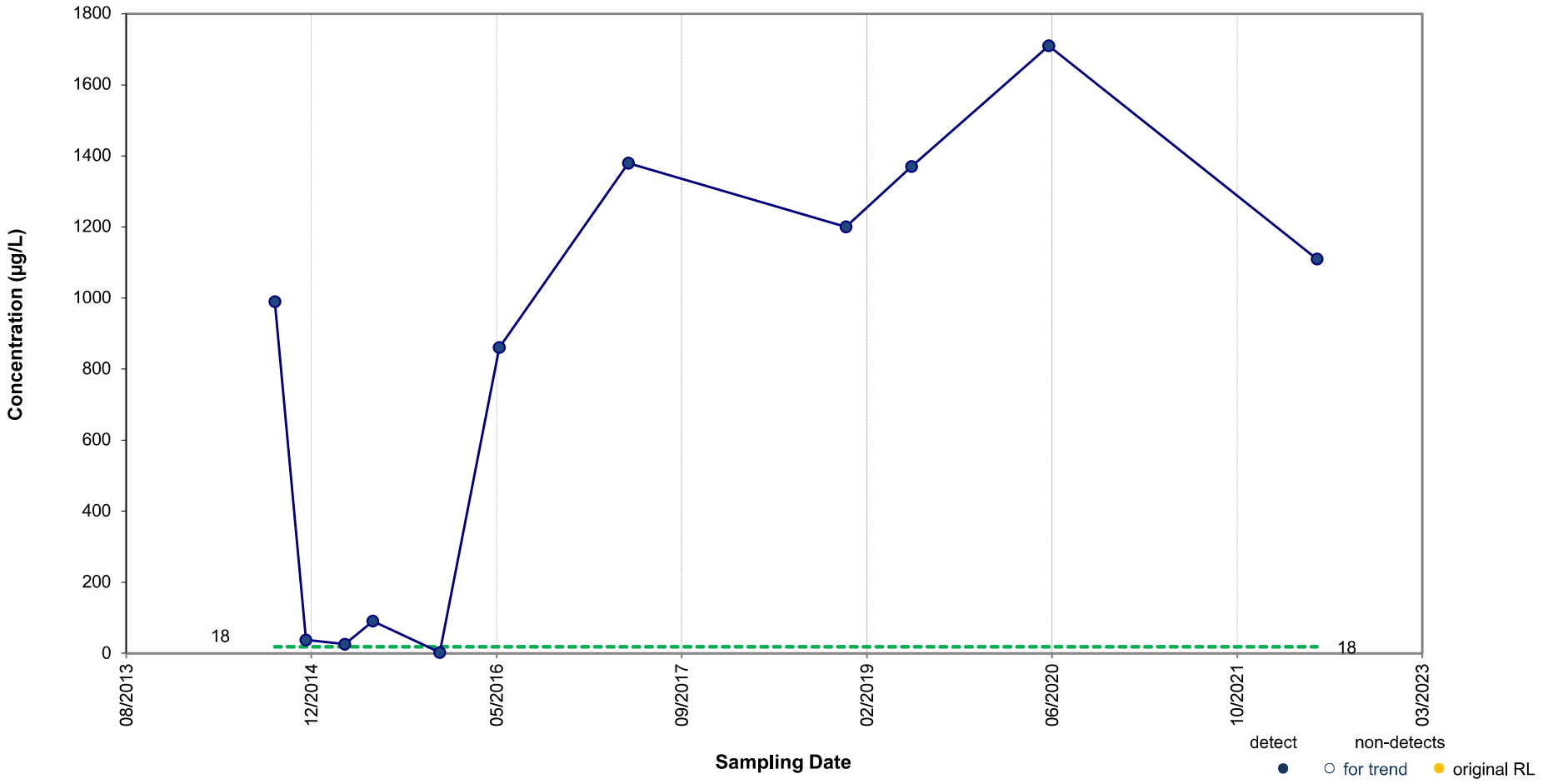
p value = 0.03 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-54, Benzene

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

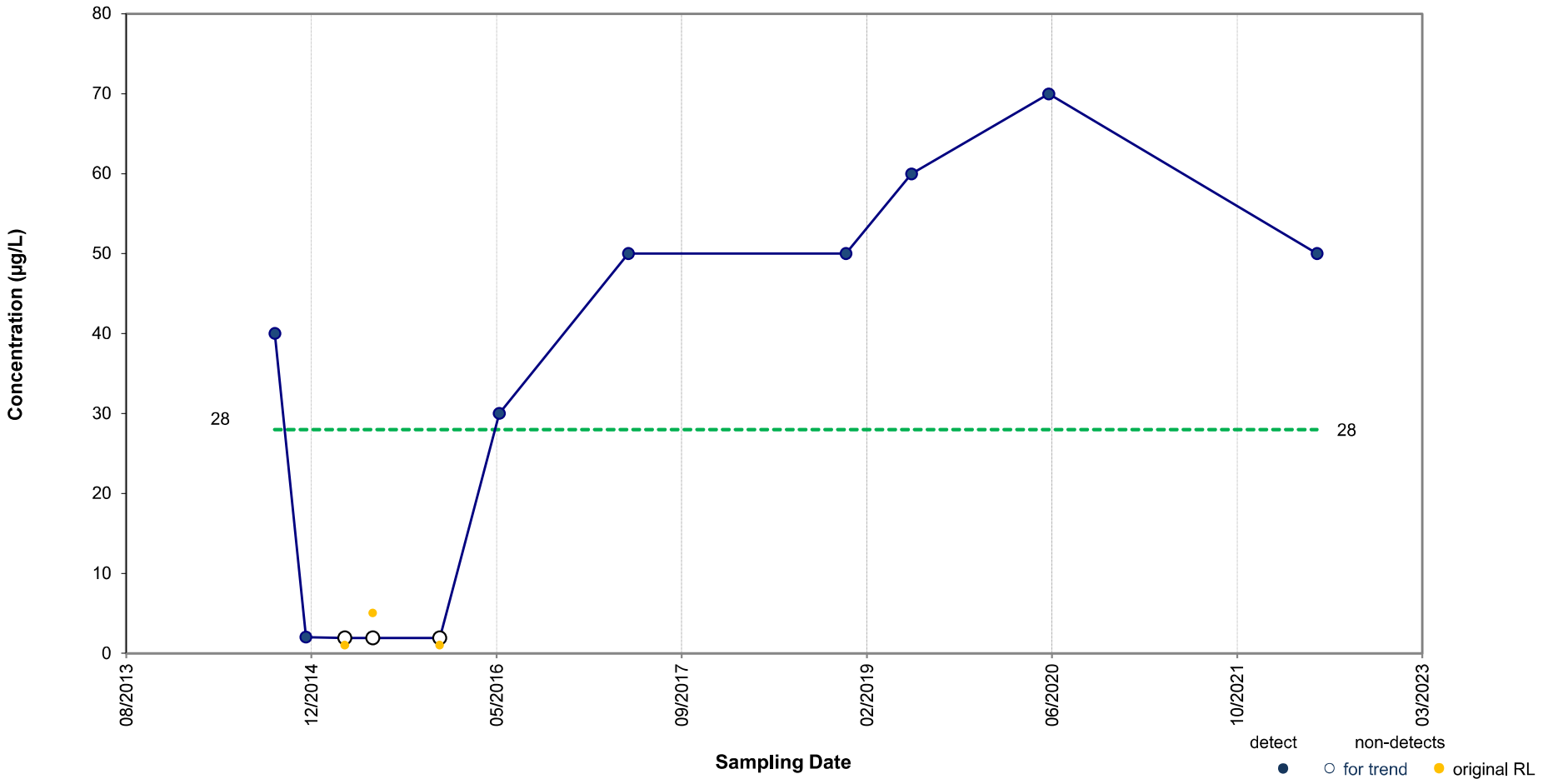
p value = 0.03 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-54, Ethylbenzene

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

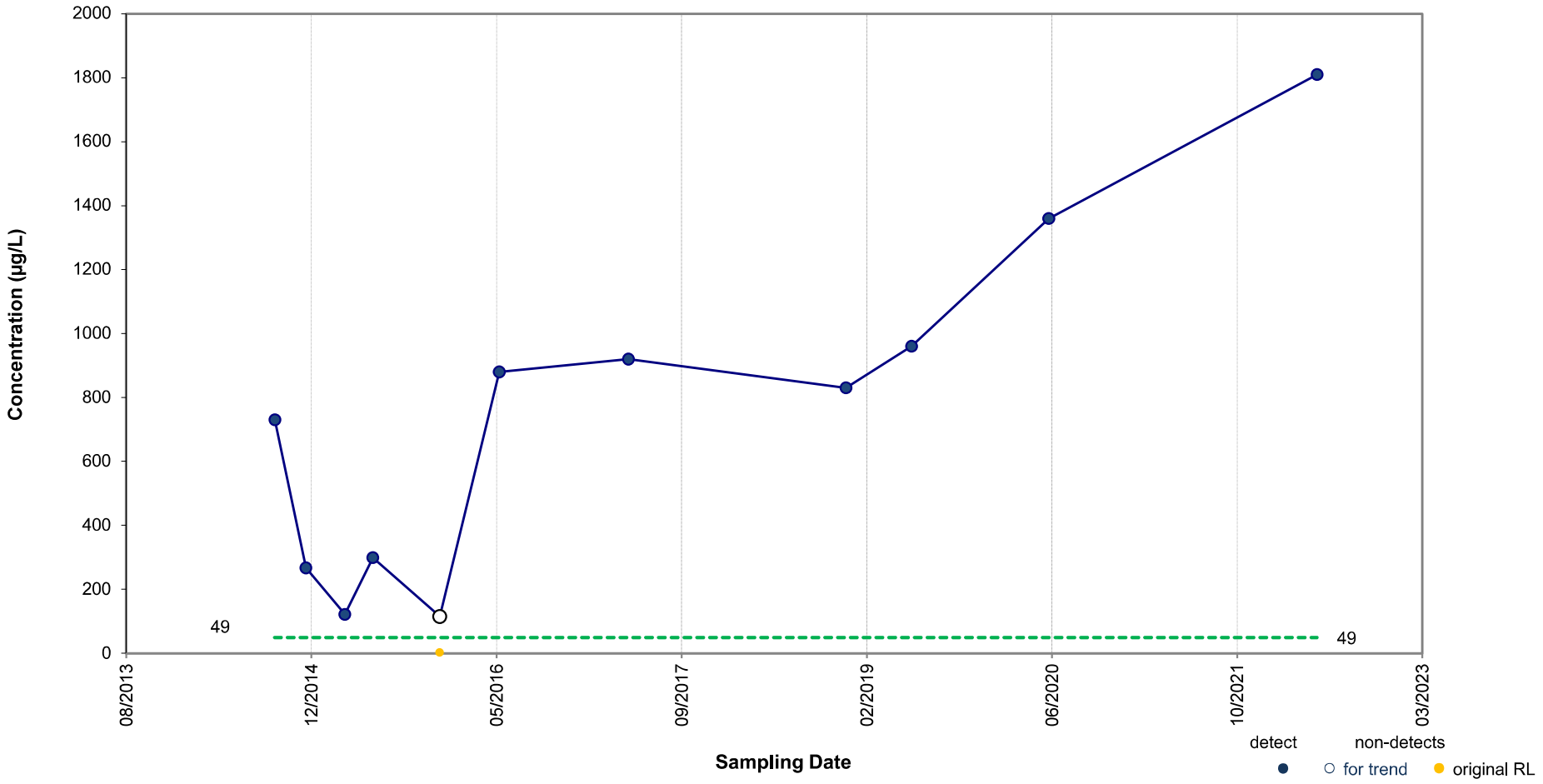
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-54, Isopropyl Benzene

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

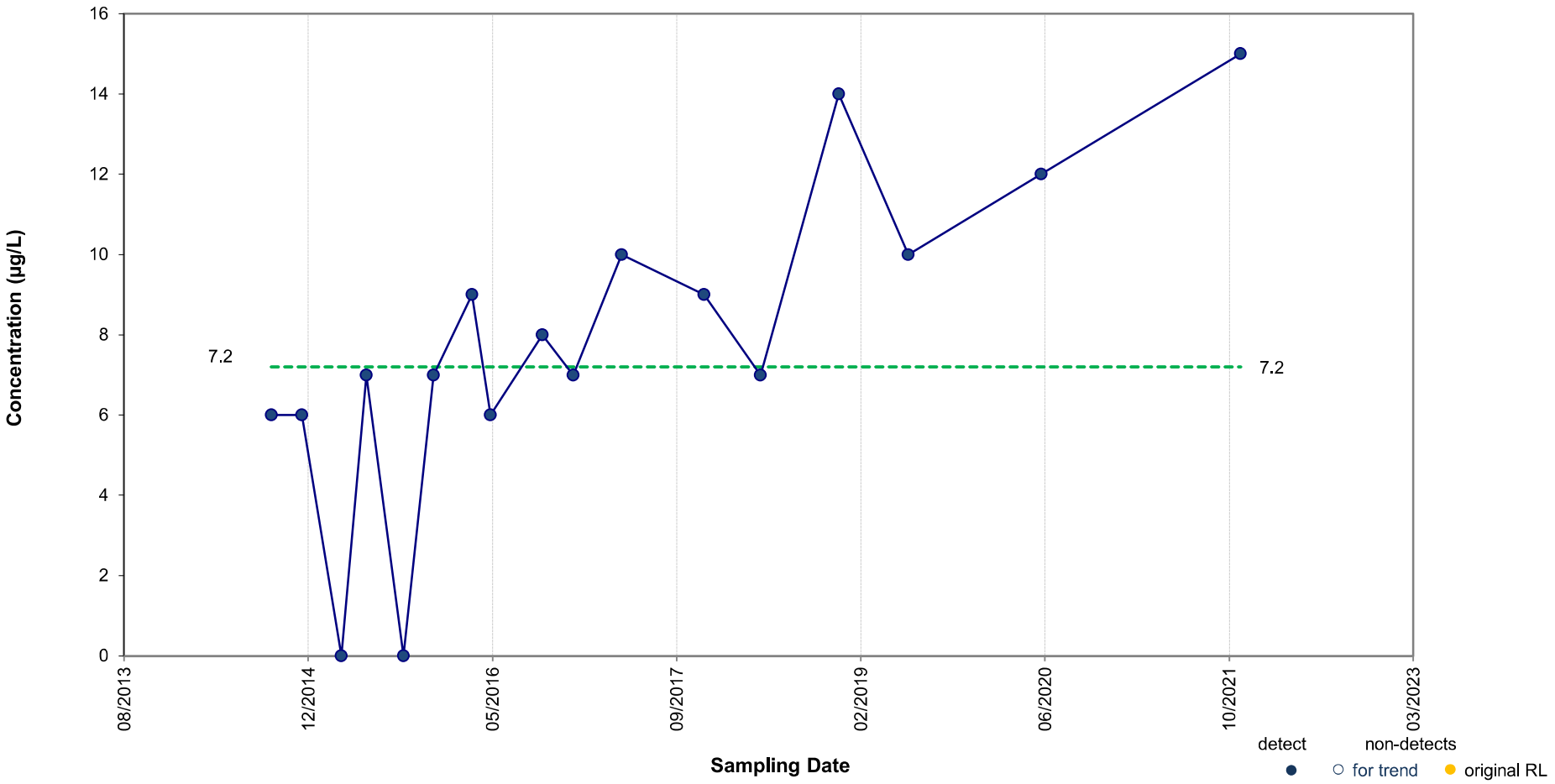
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-54, Total Xylenes

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

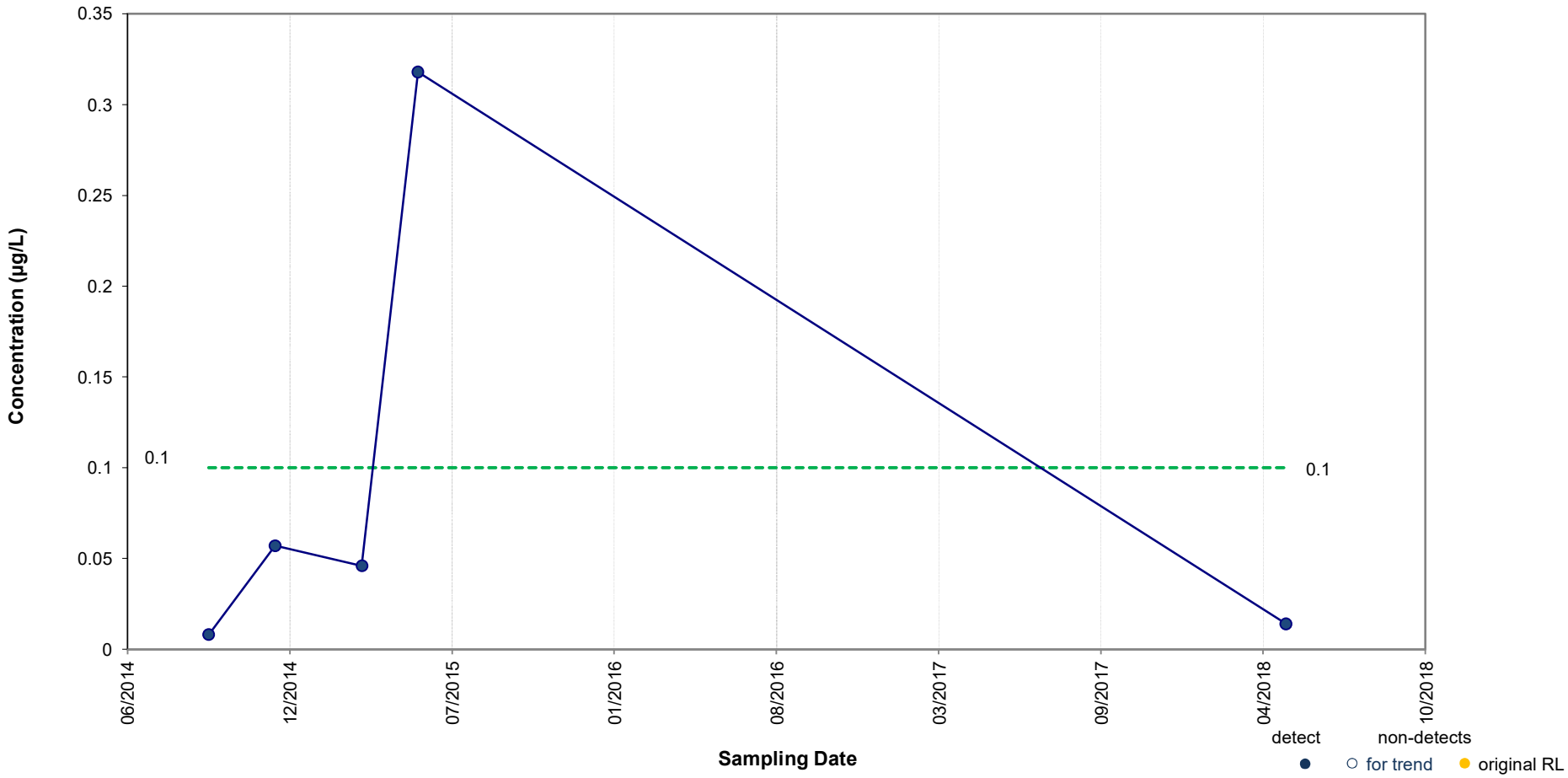
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-56, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

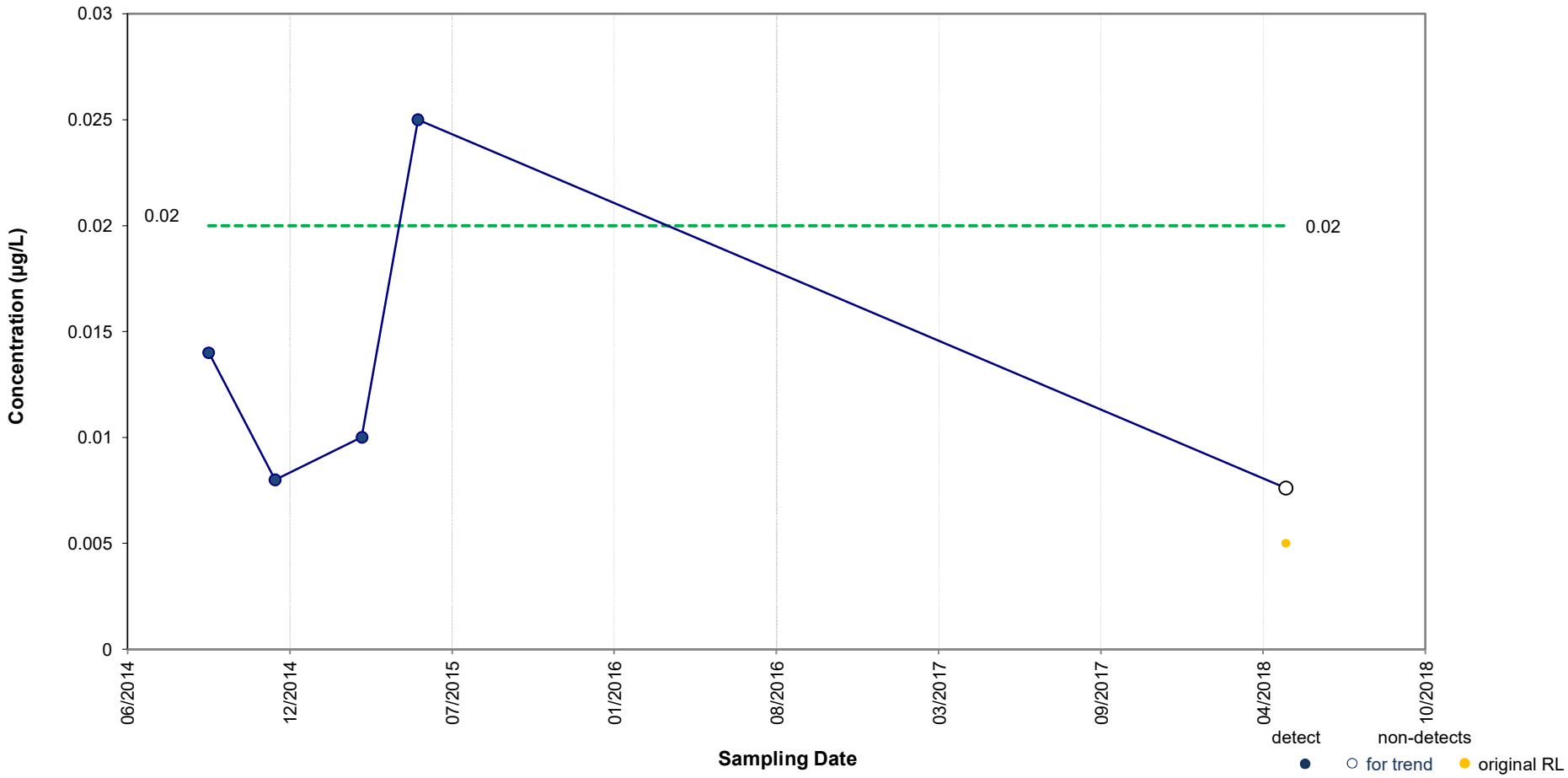
p value = 0.41 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-56, Chromium III

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

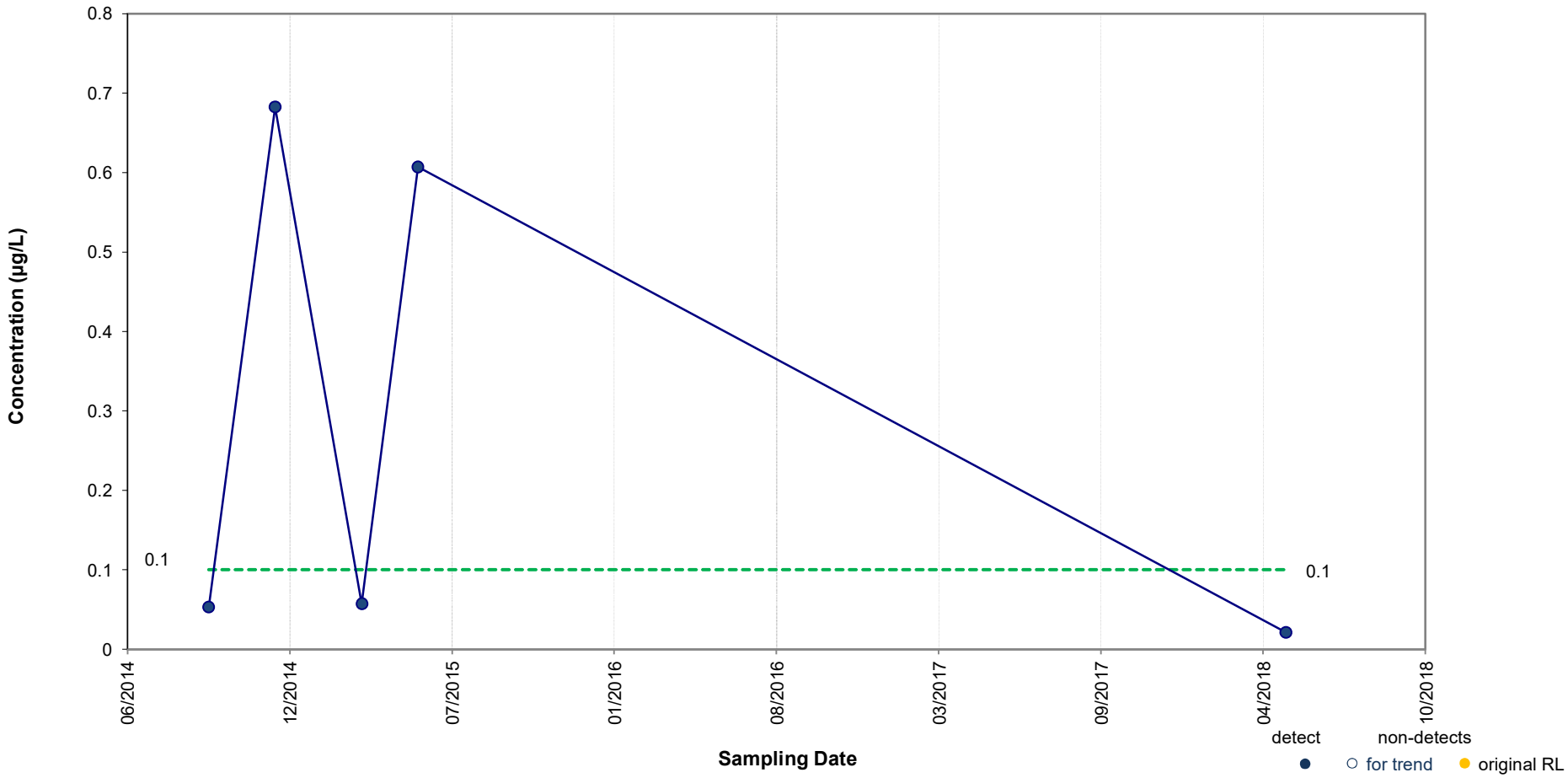
p value = 0.41 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-56, Copper

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

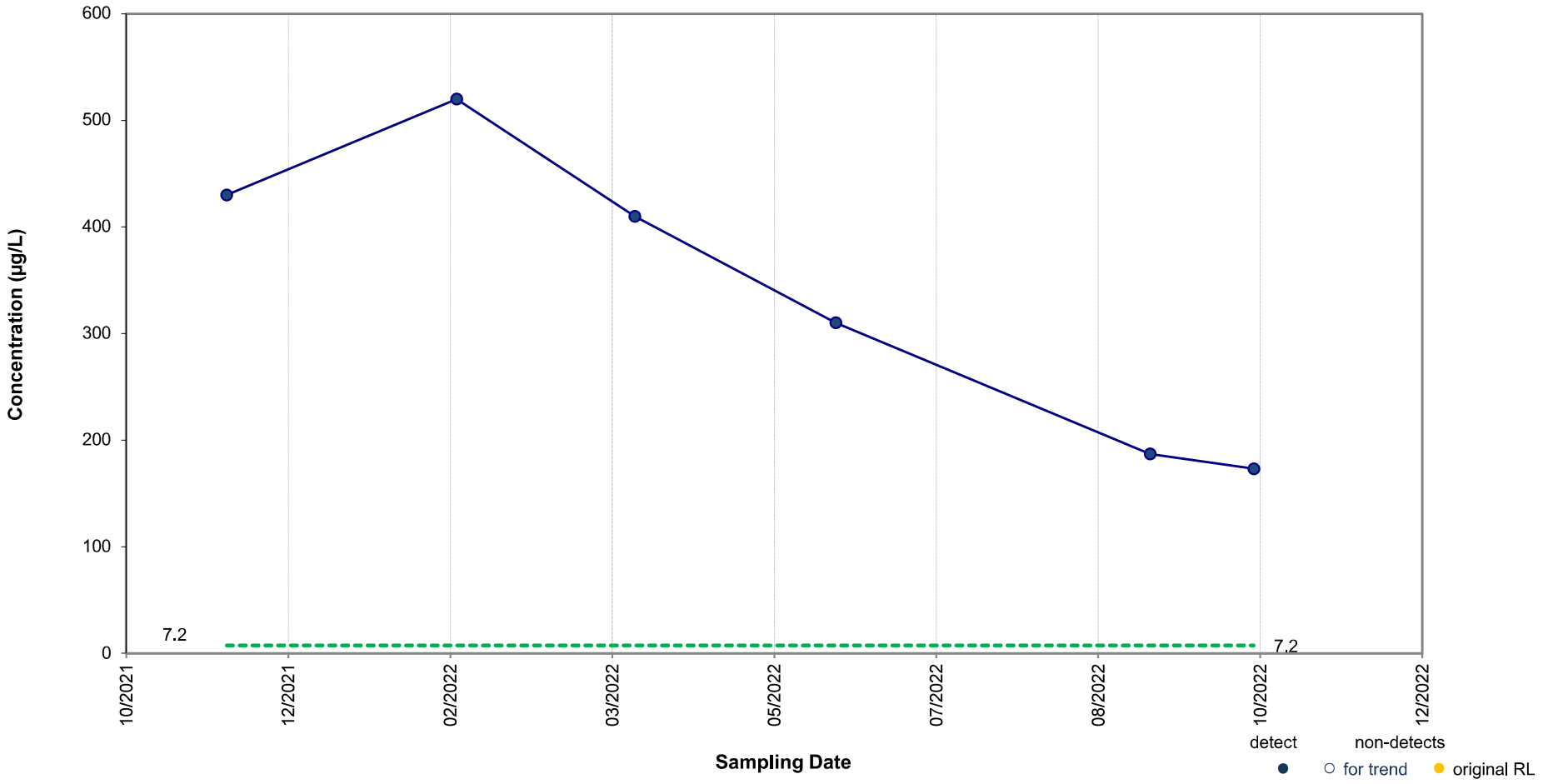
p value = 0.41 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-56, Nickel

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

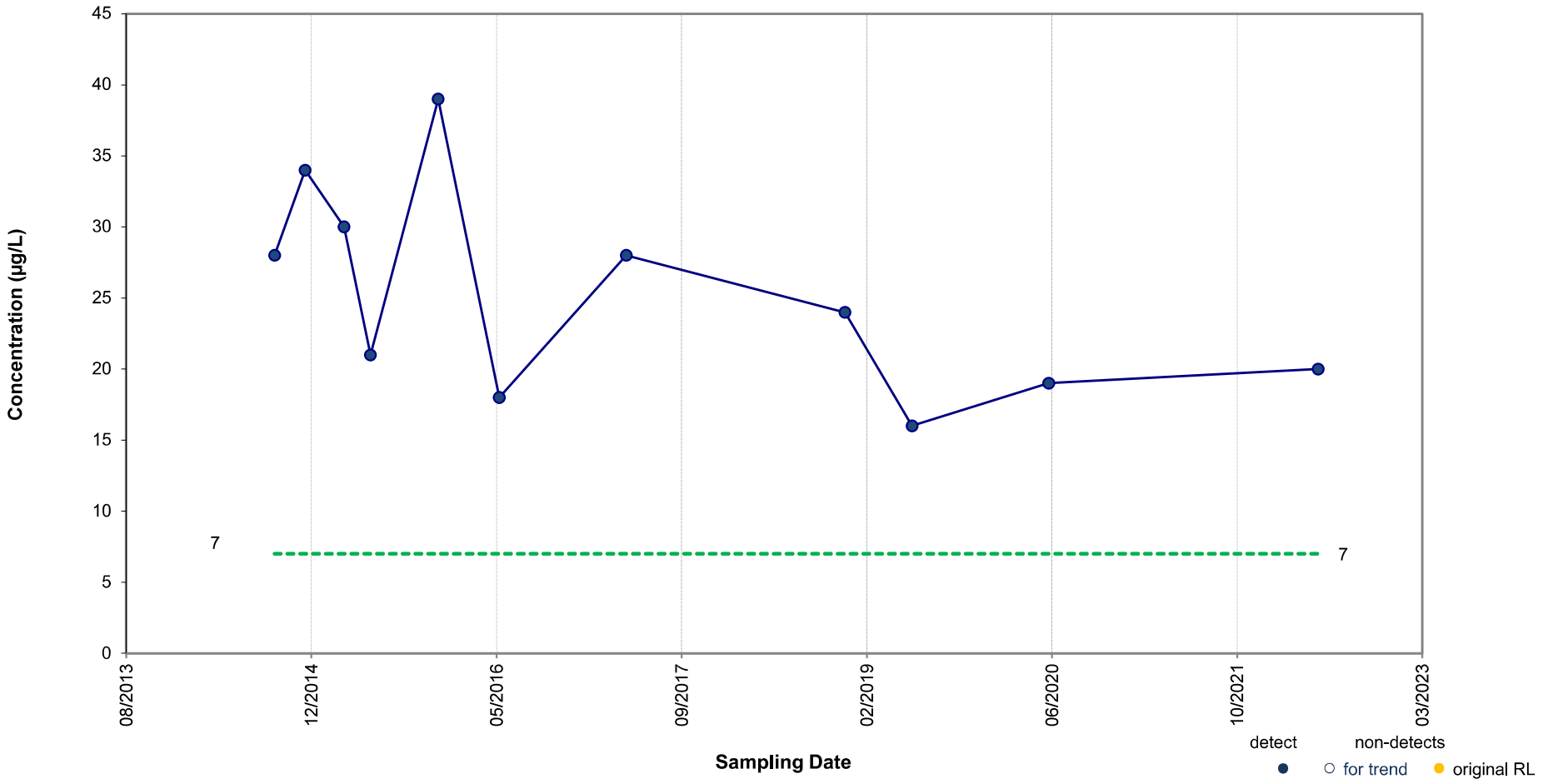
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-58R, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

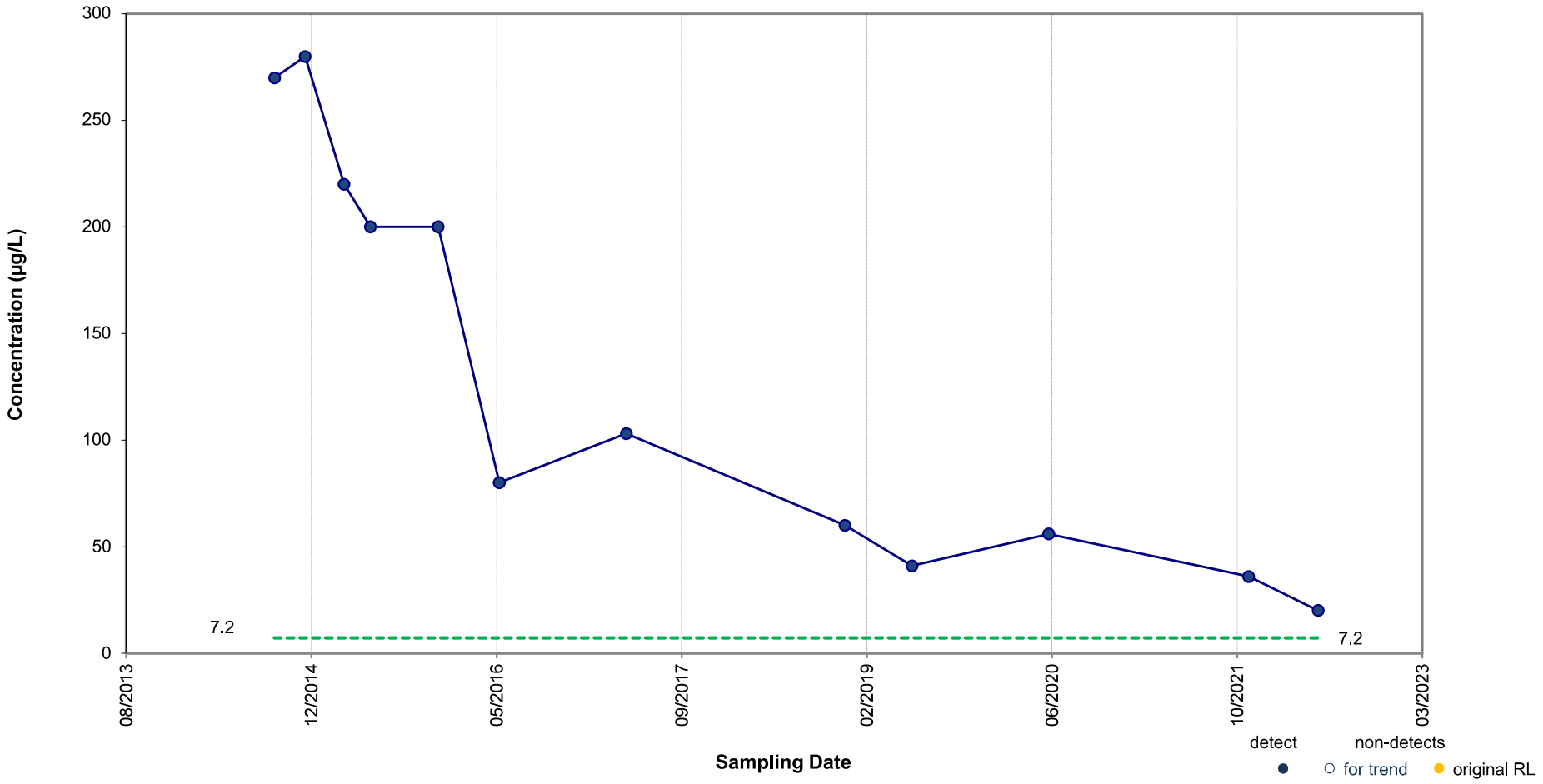
p value = 0.04 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-59, 1,1-Dichloroethene

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

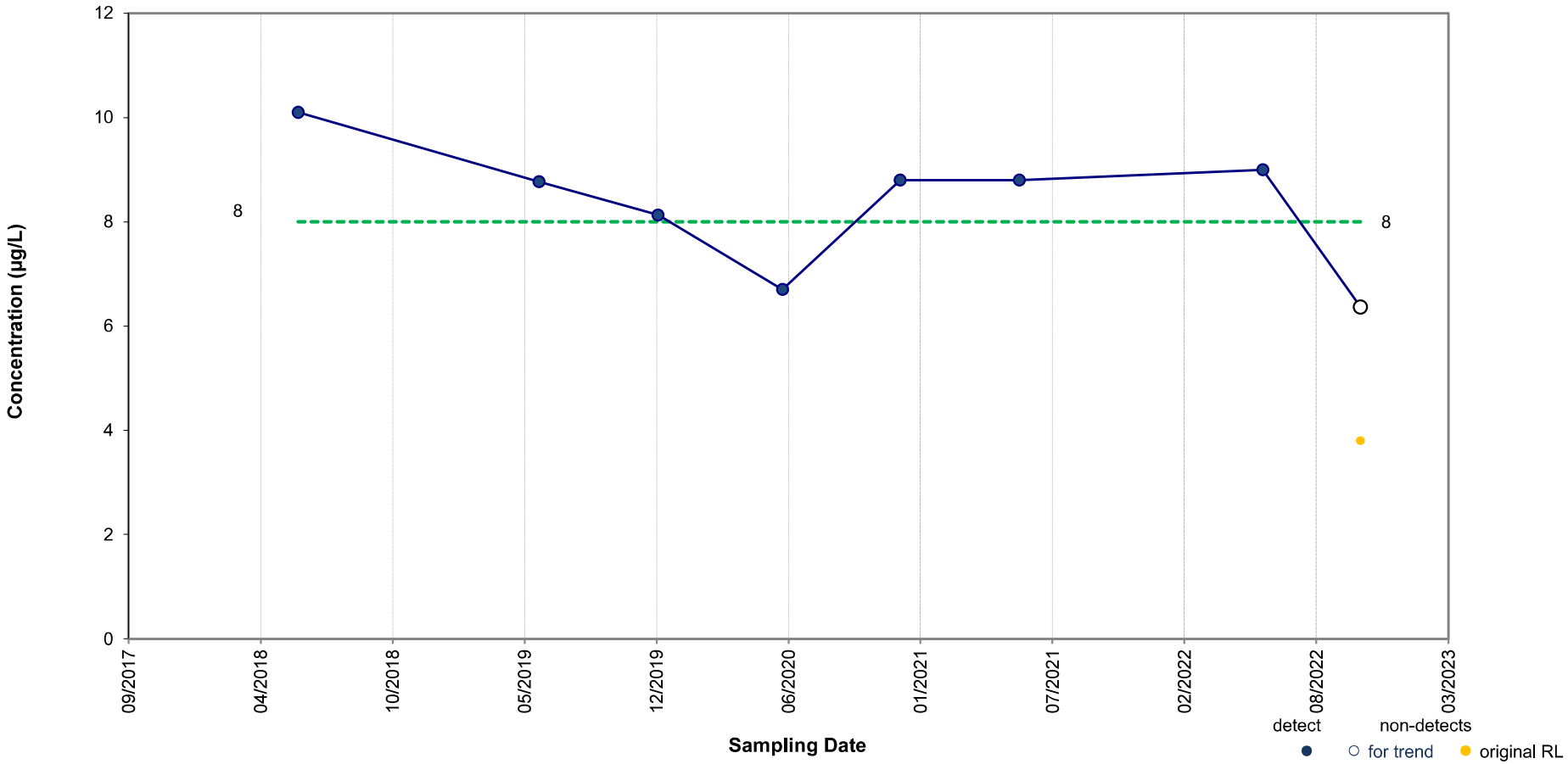
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-59, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

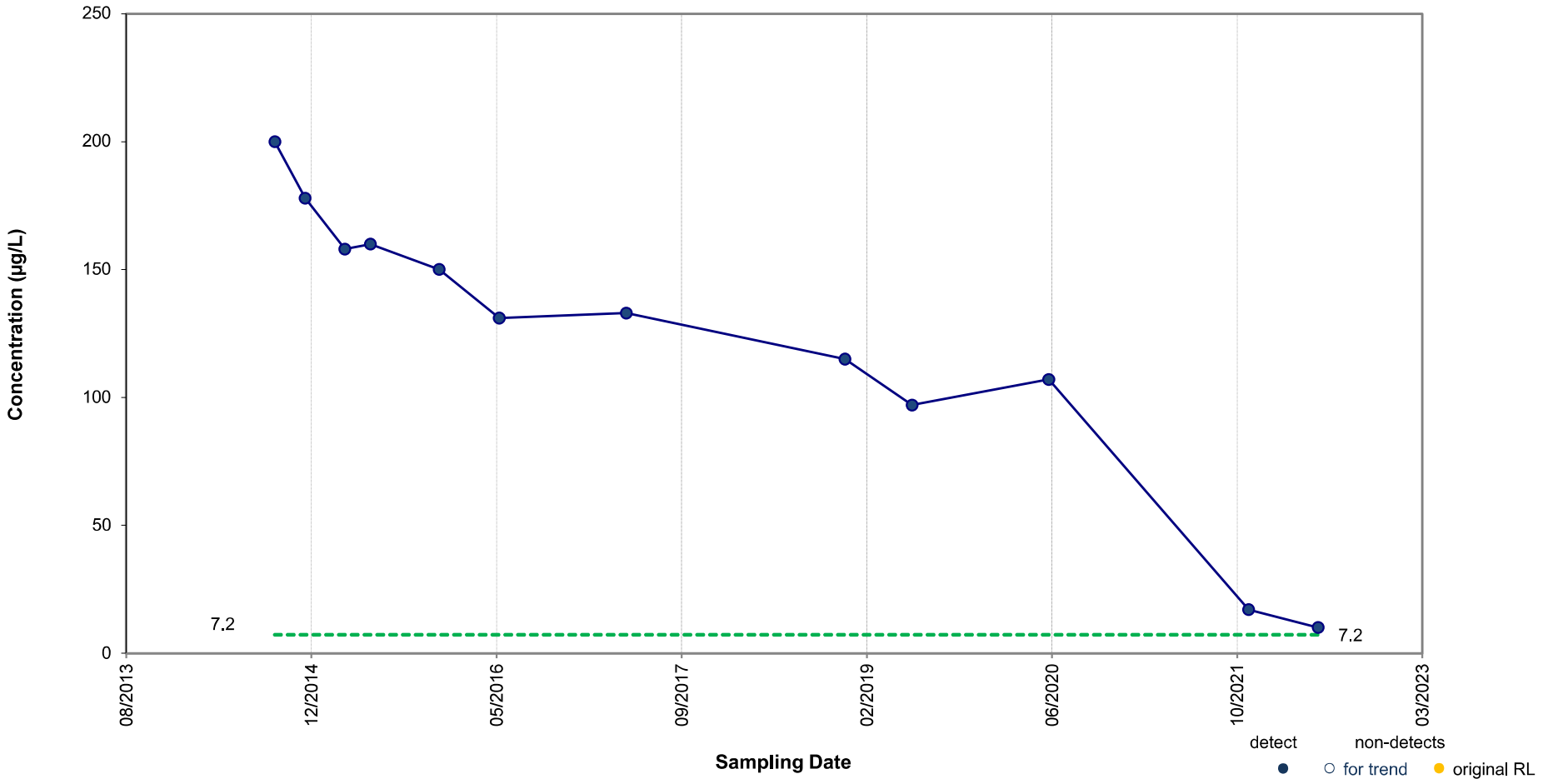
p value = 0.32 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-59, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

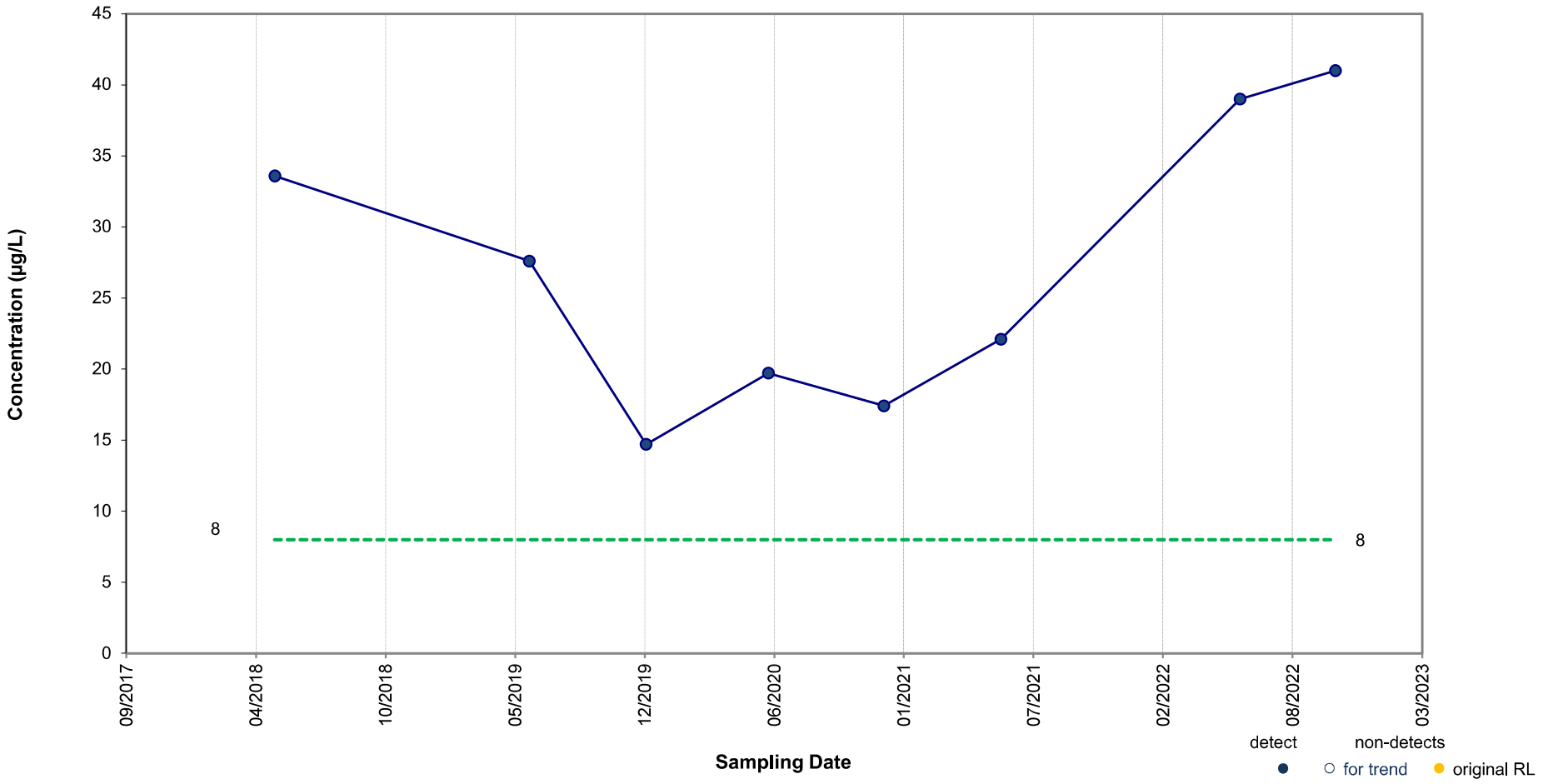
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-60, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

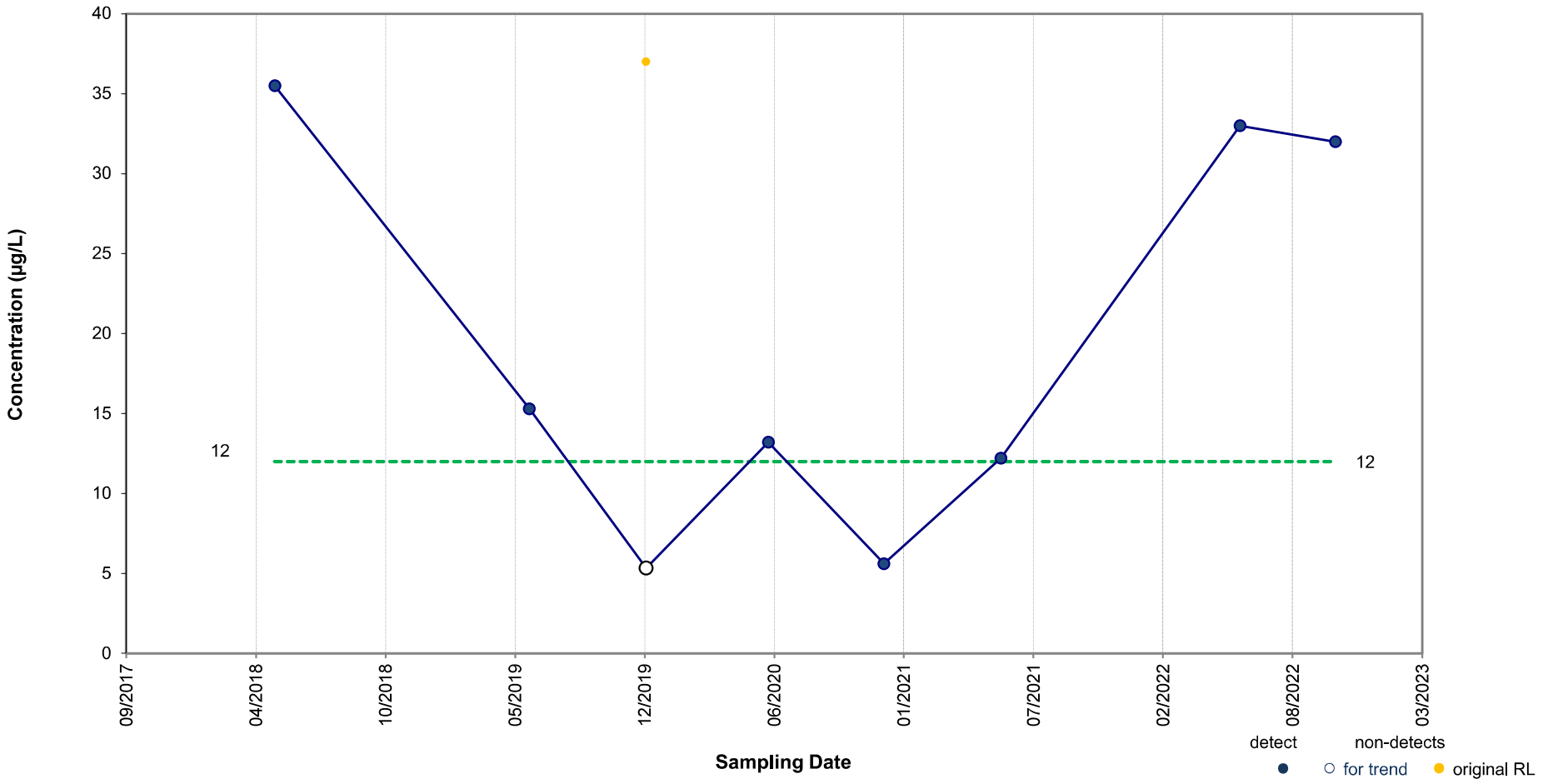
p value = 0.20 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-60, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

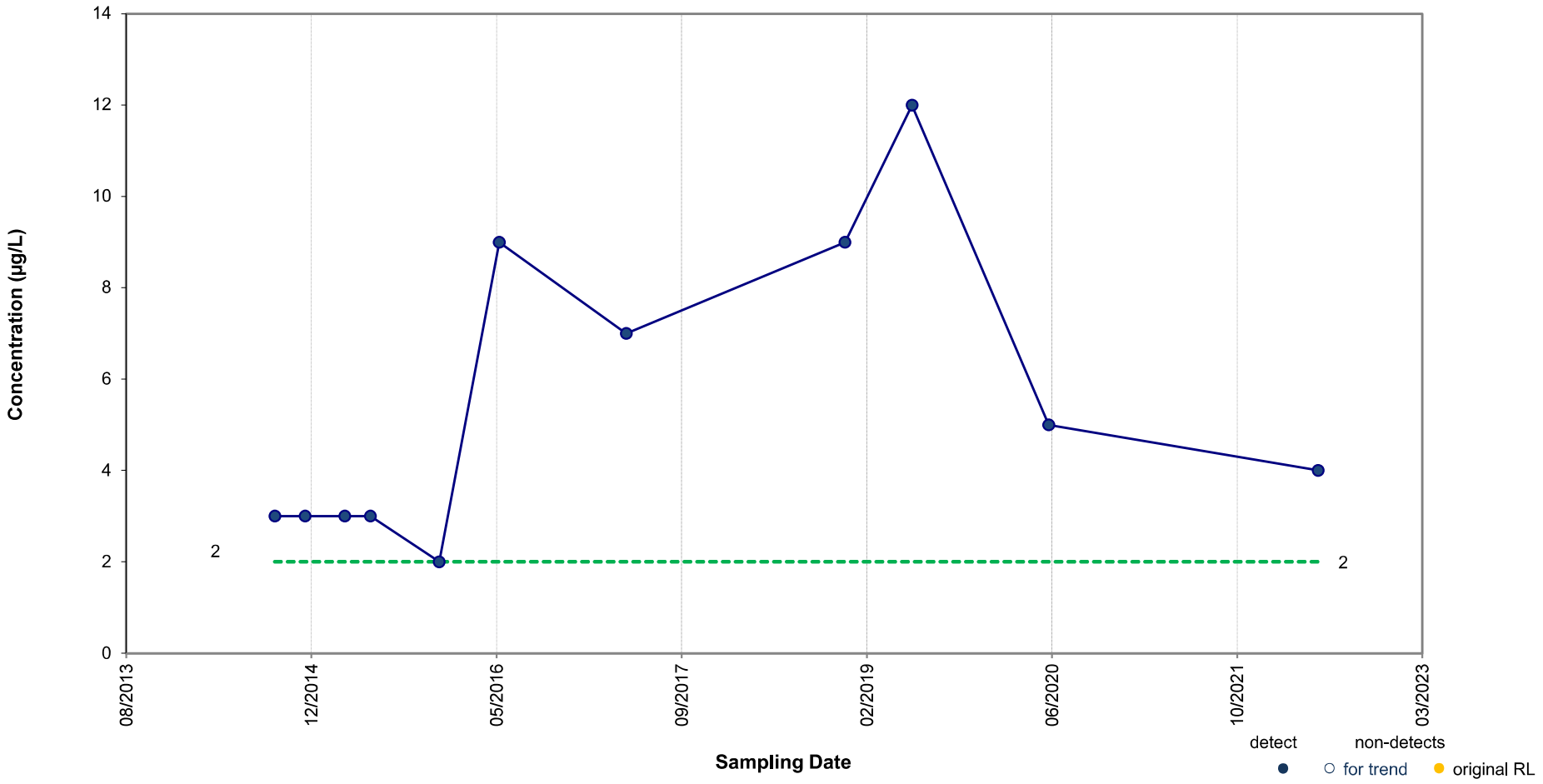
p value = 0.55 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-60, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

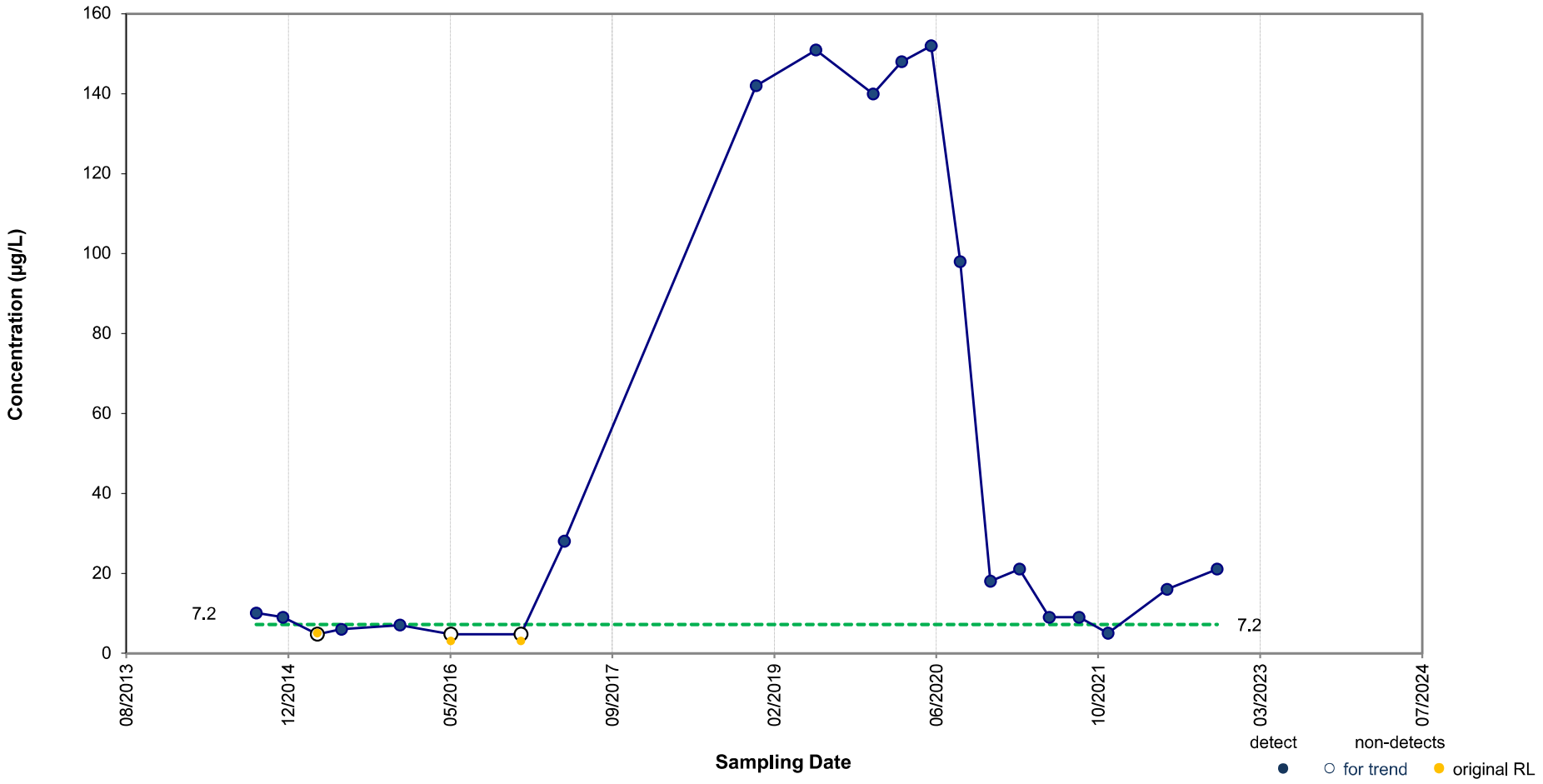
p value = 0.06 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-60, Vinyl chloride

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

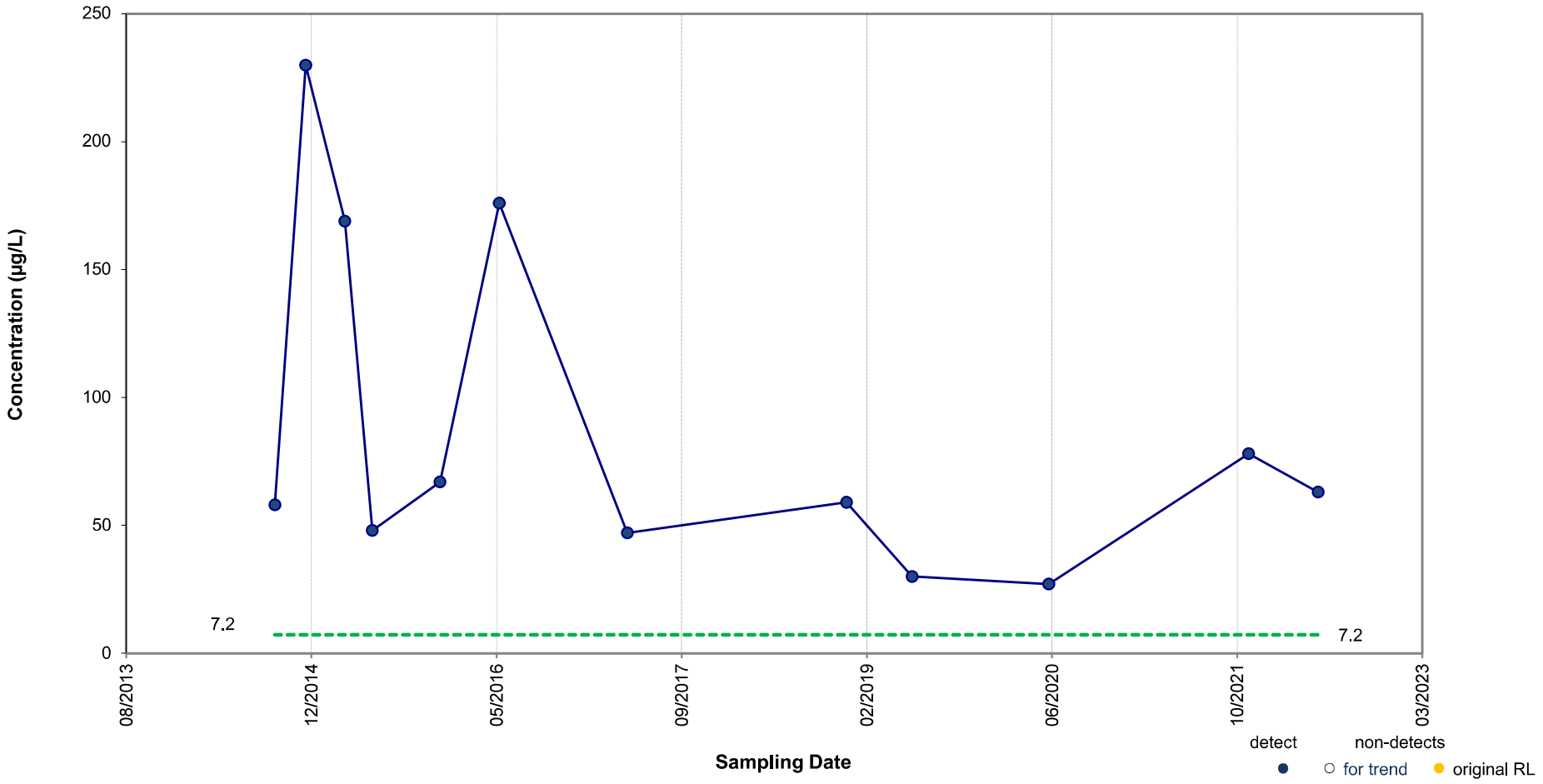
p value = 0.22 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-61, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

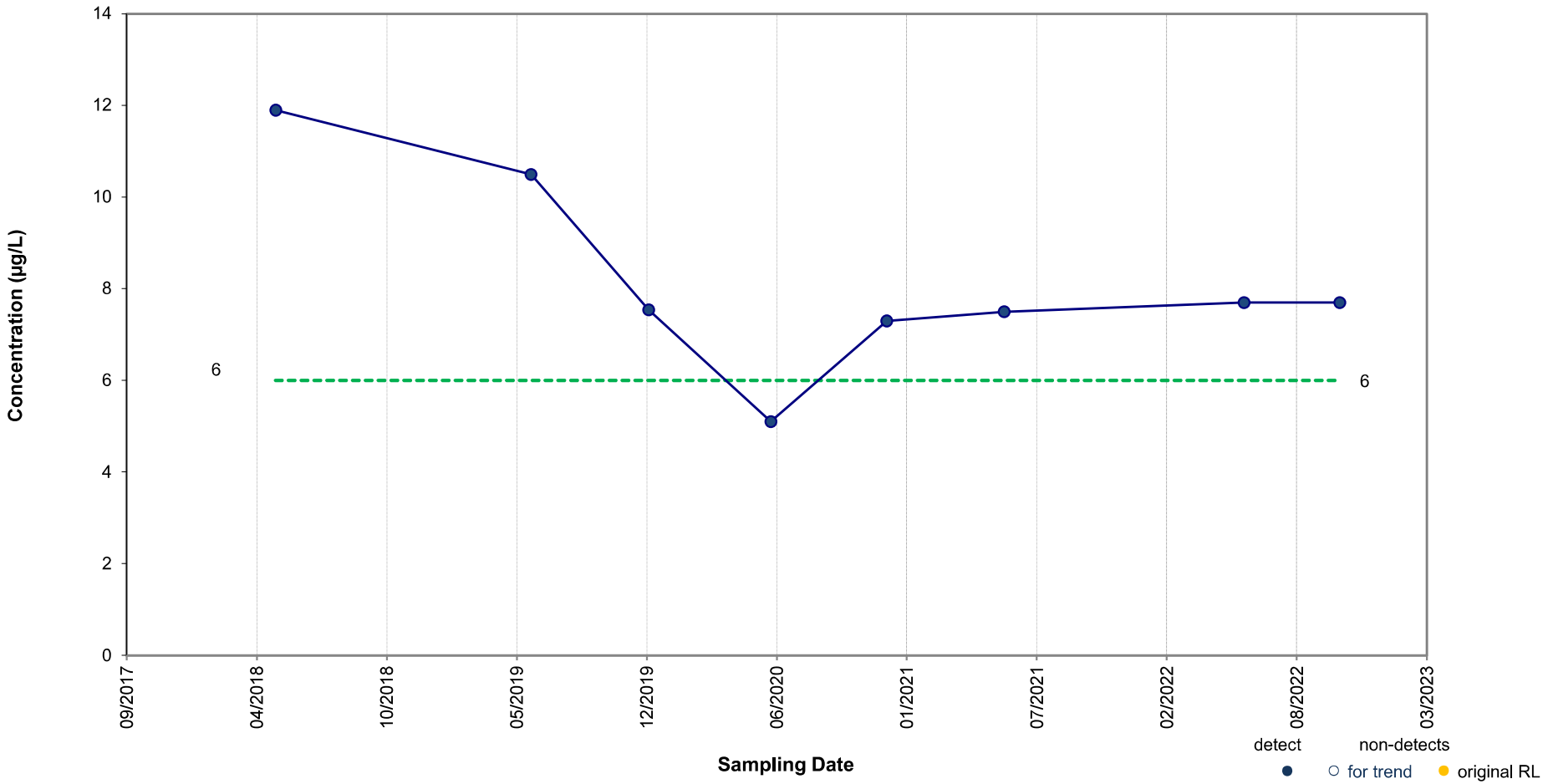
p value = 0.12 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-62, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

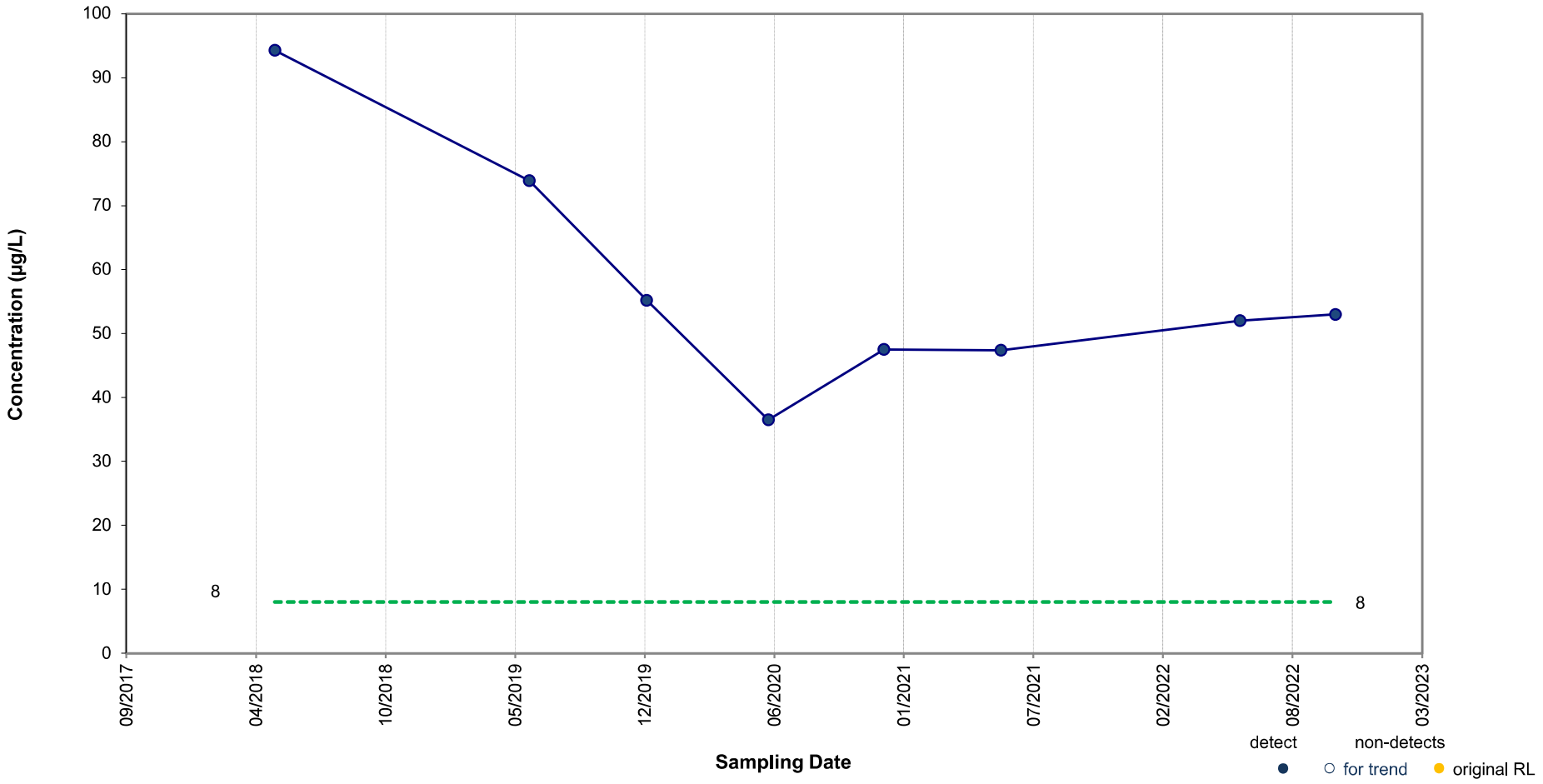
p value = 0.32 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-62, PFNA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

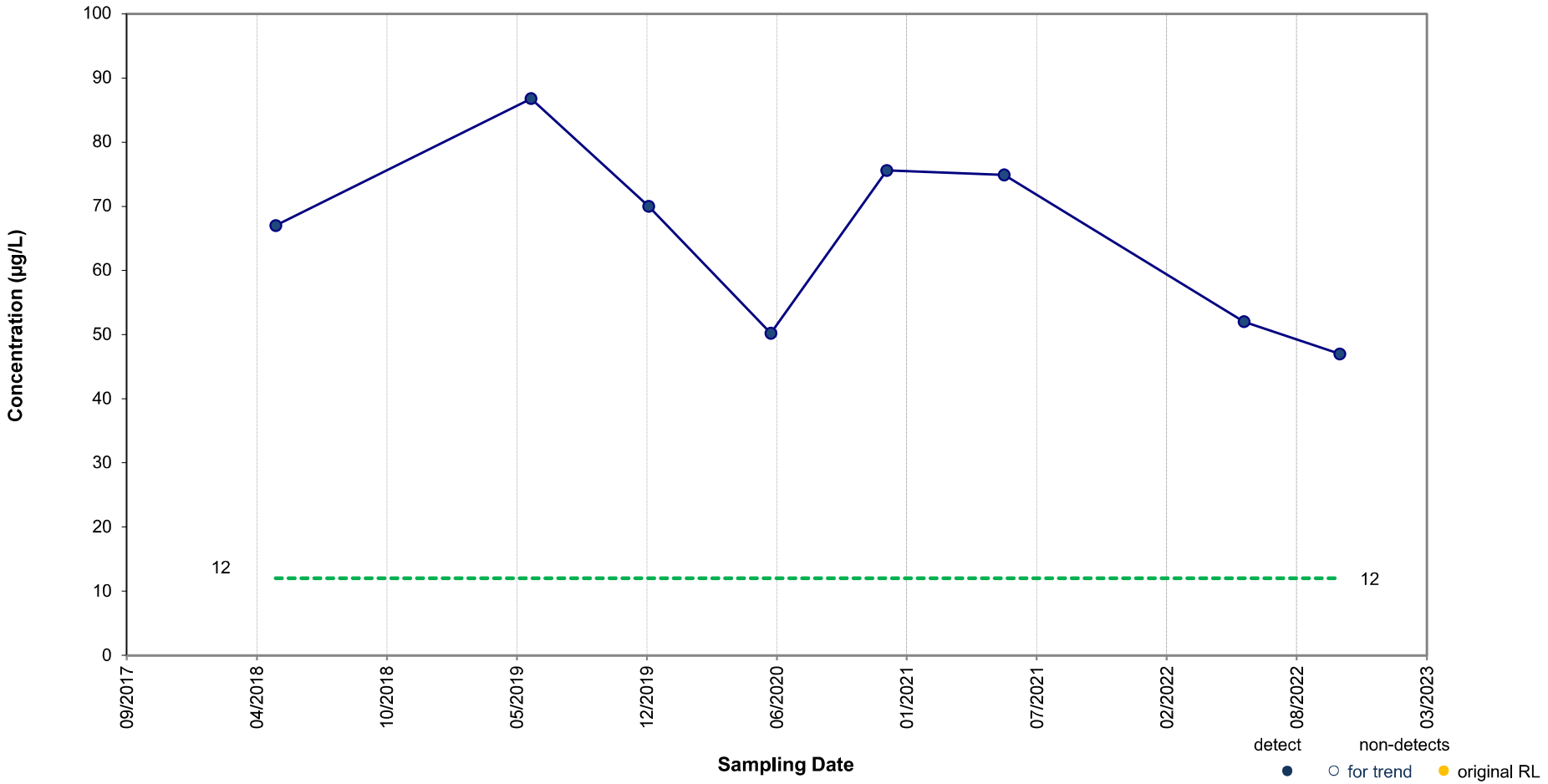
p value = 0.14 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-62, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

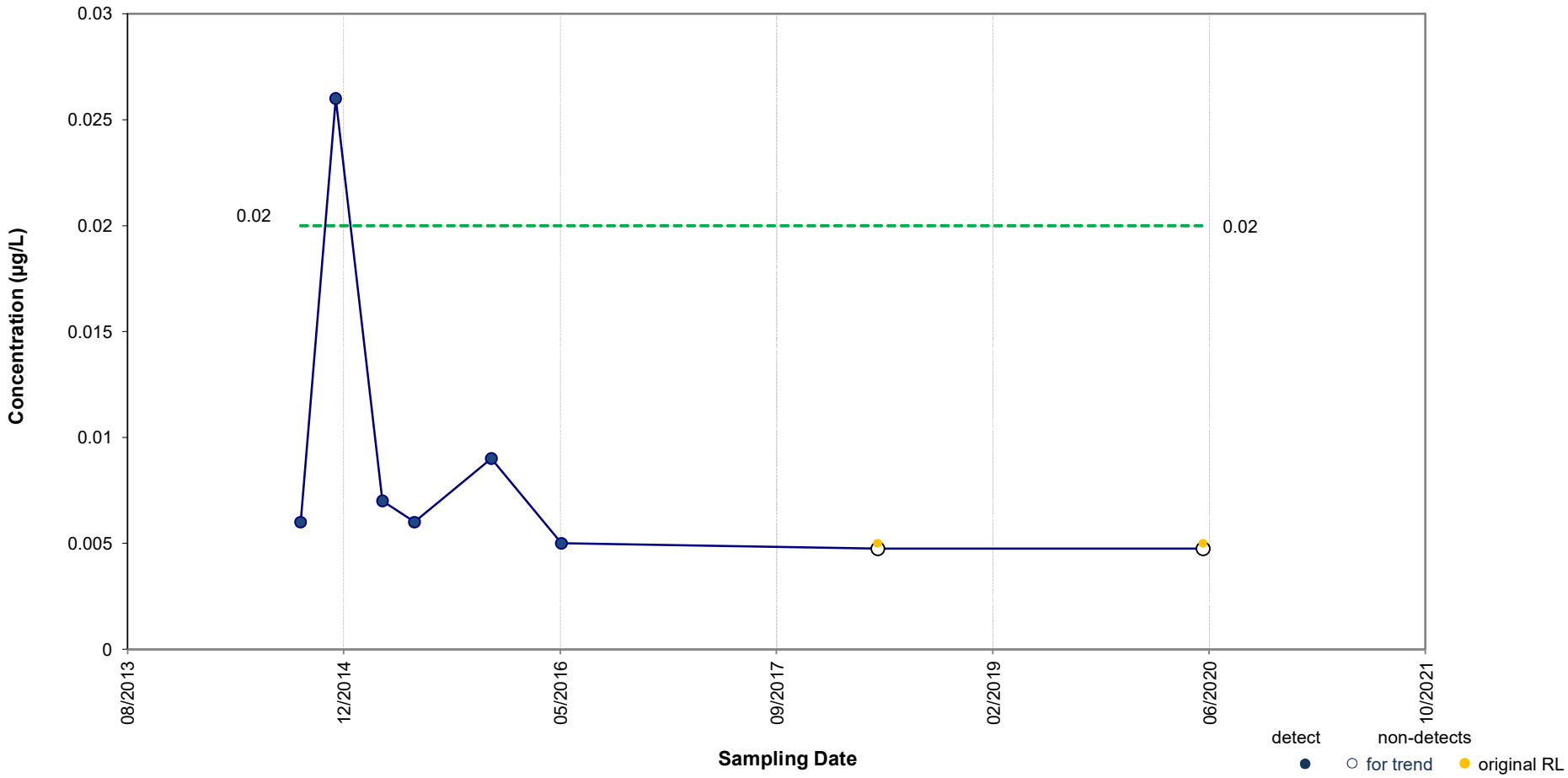
p value = 0.14 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-62, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

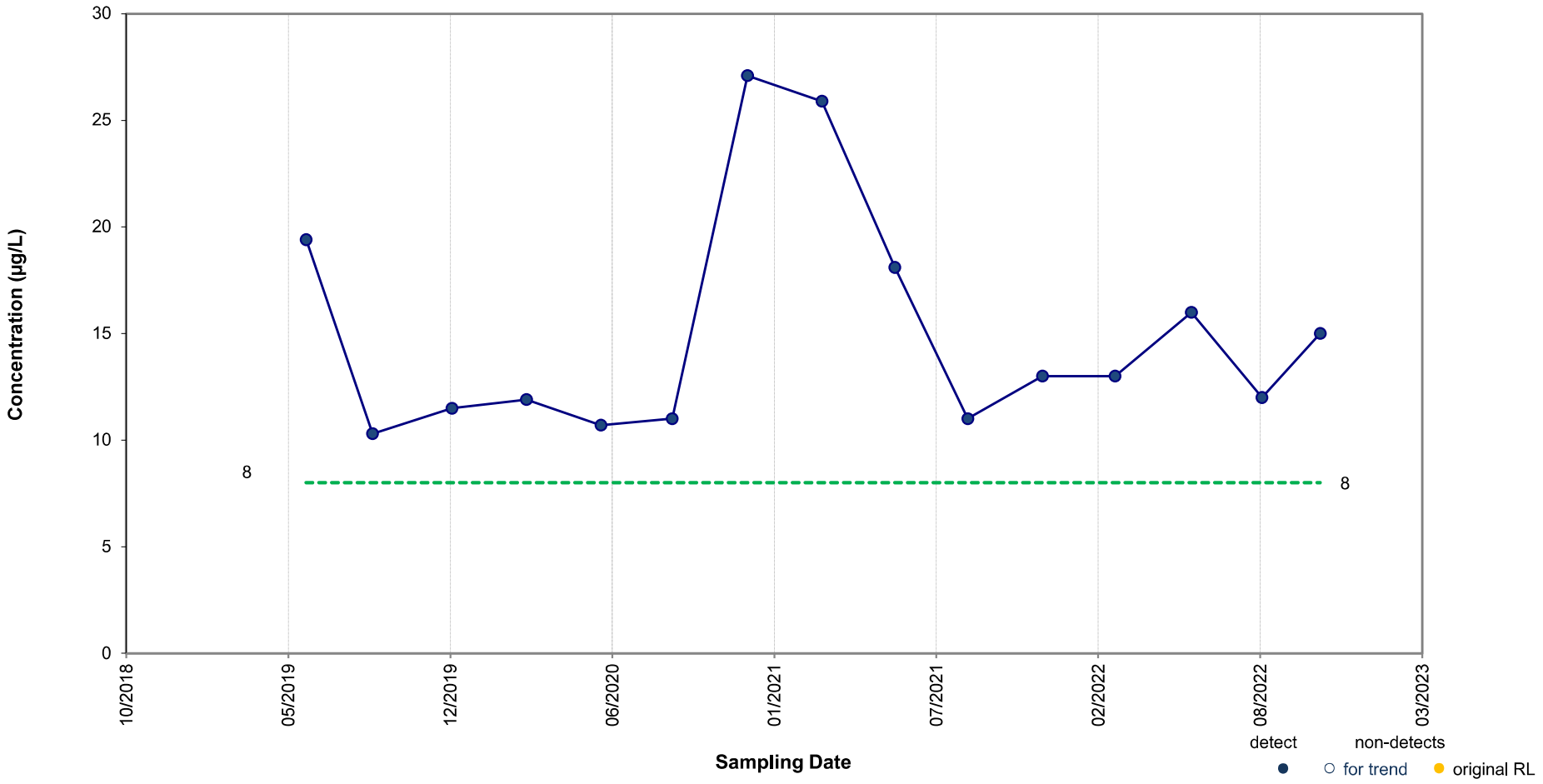
p value = 0.03 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-67, Copper

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

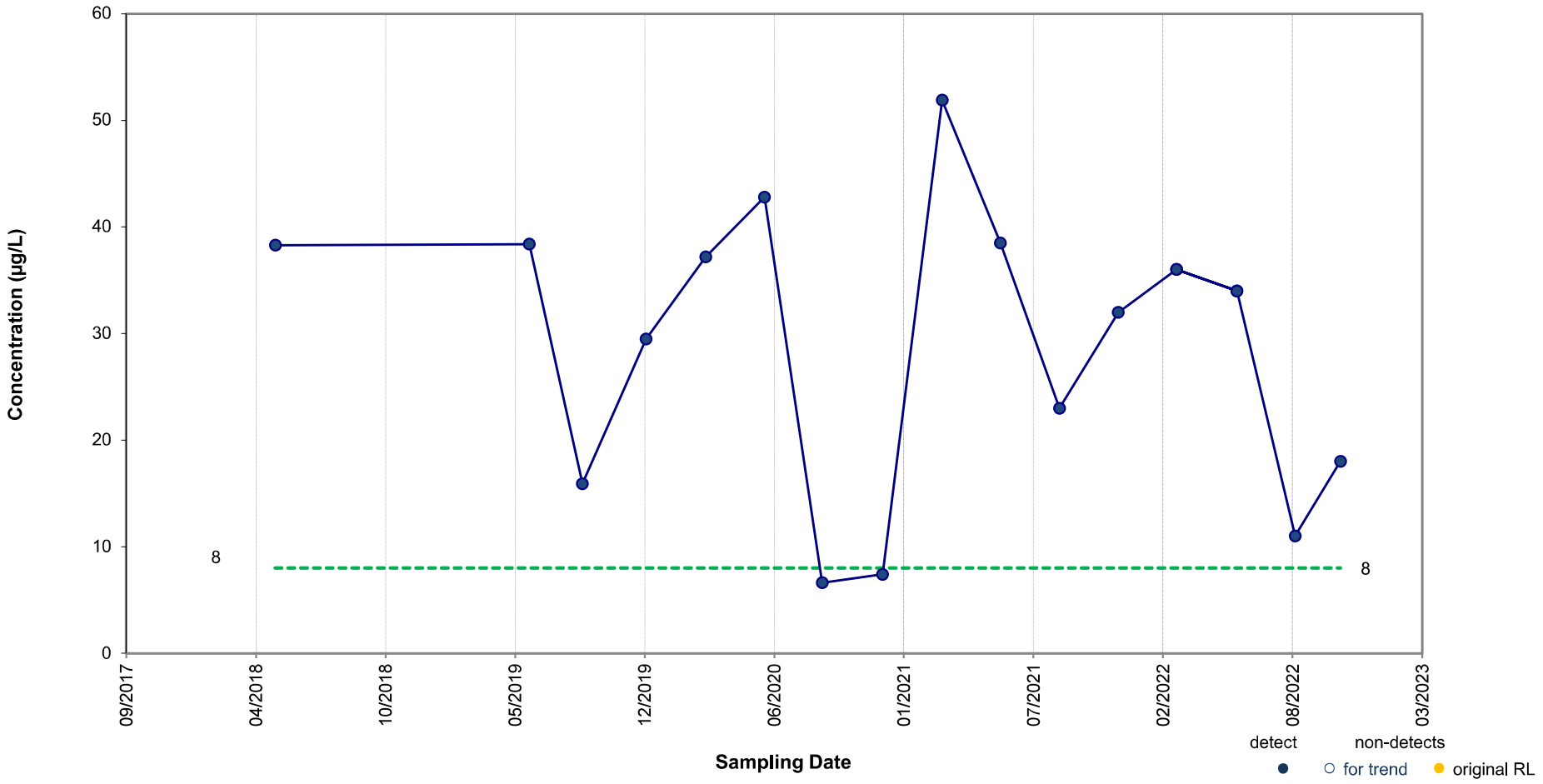
p value = 0.21 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-67, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

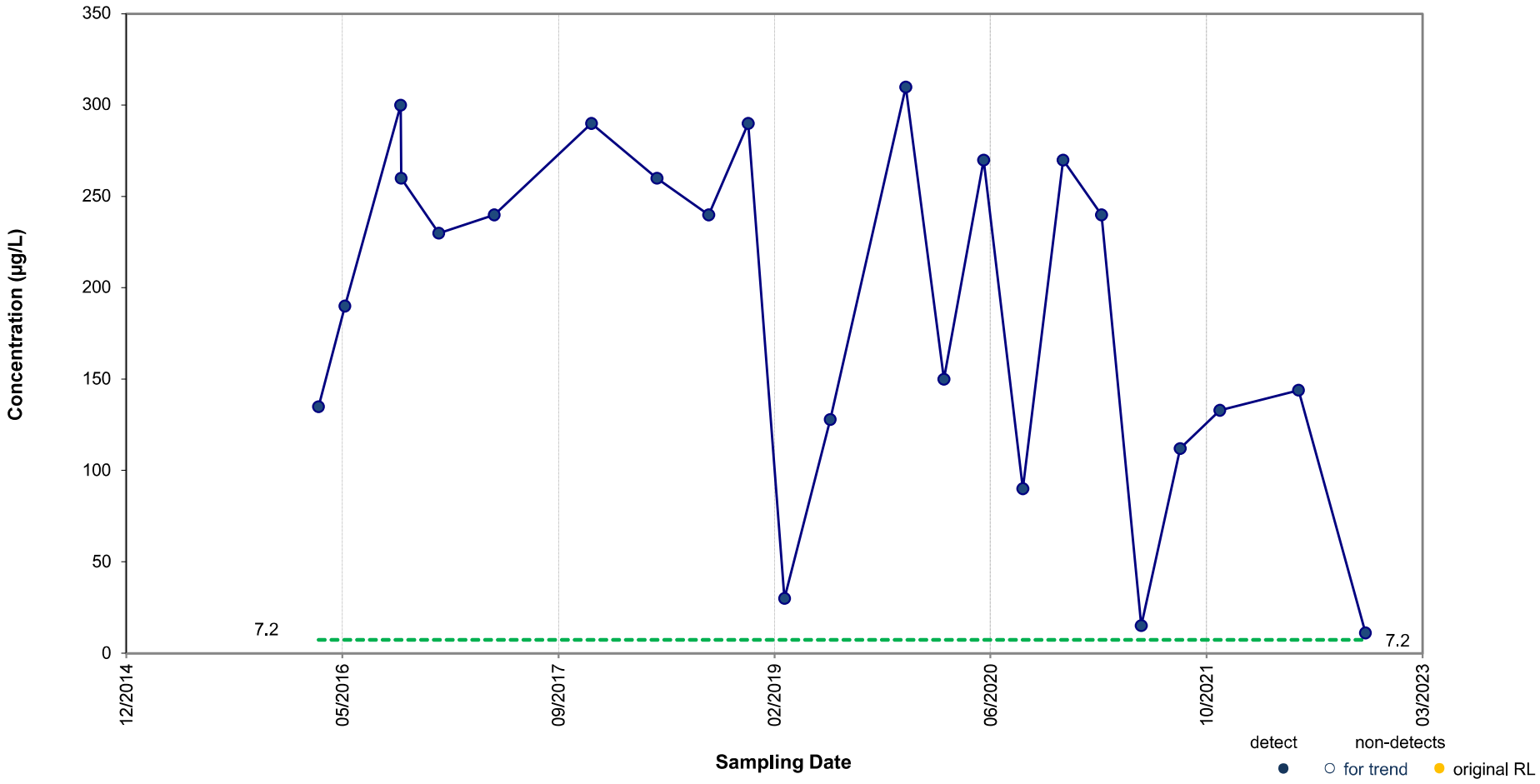
p value = 0.20 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-14-70, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

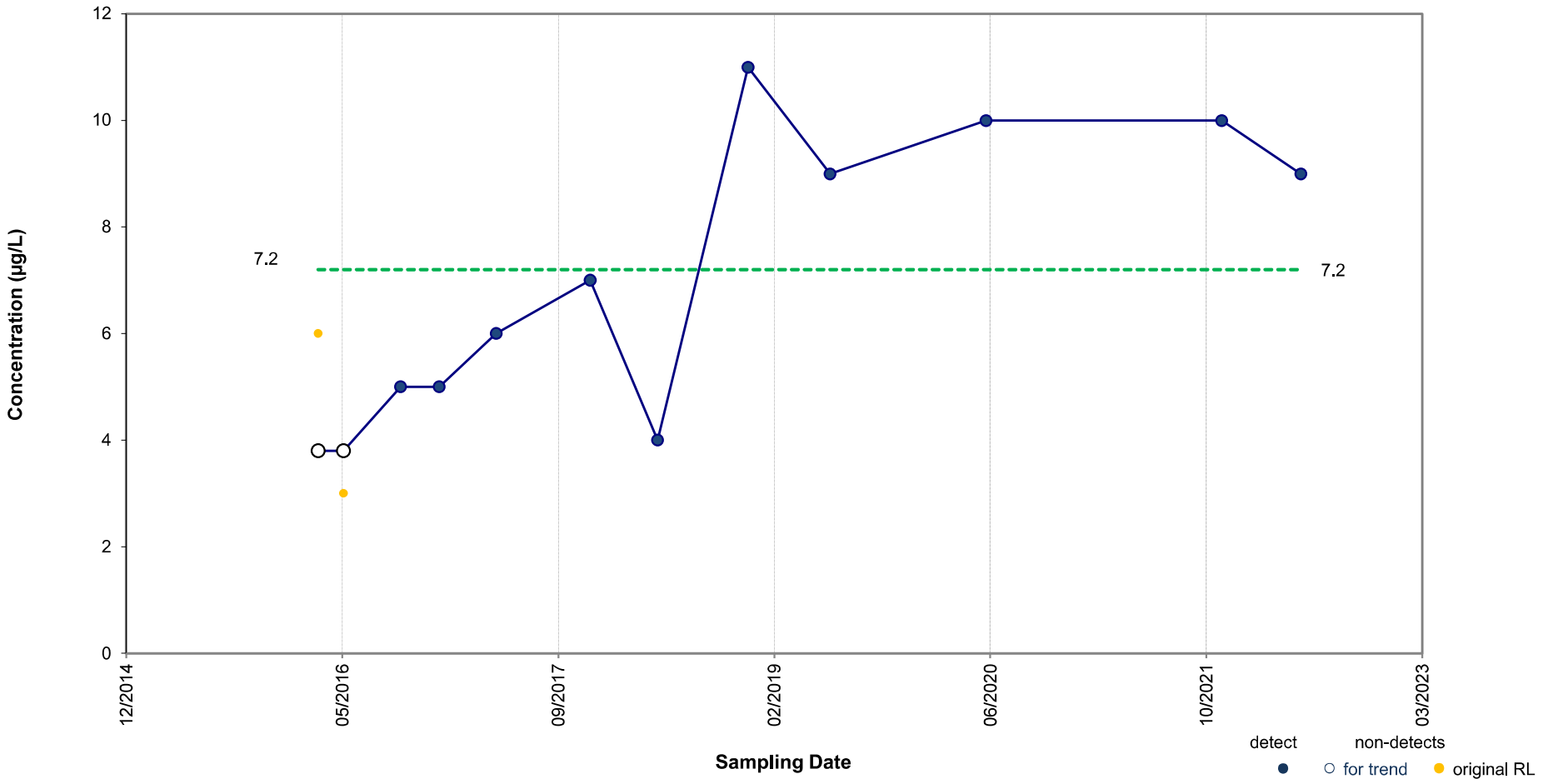
p value = 0.04 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-15-72, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

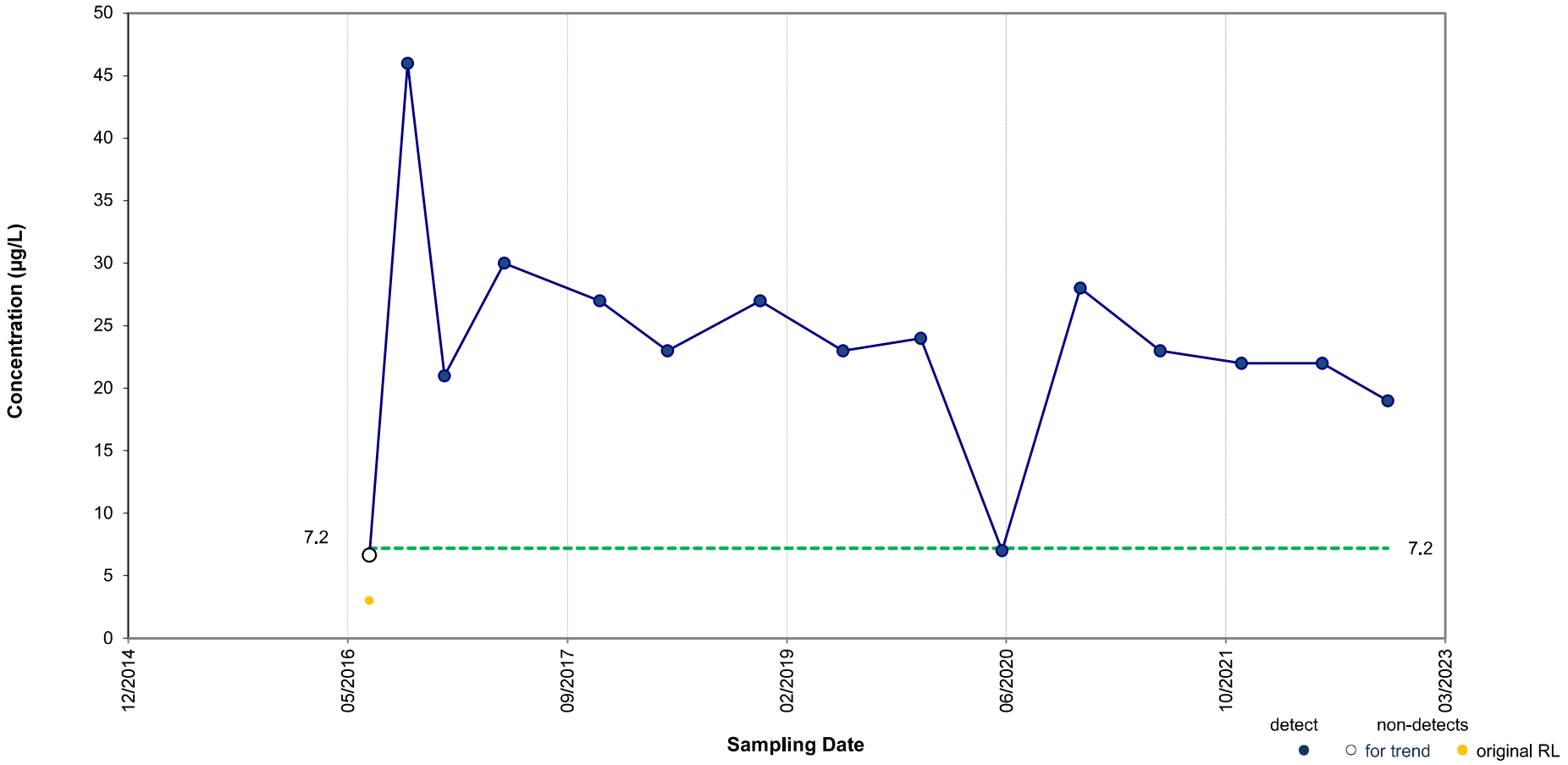
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-15-73, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

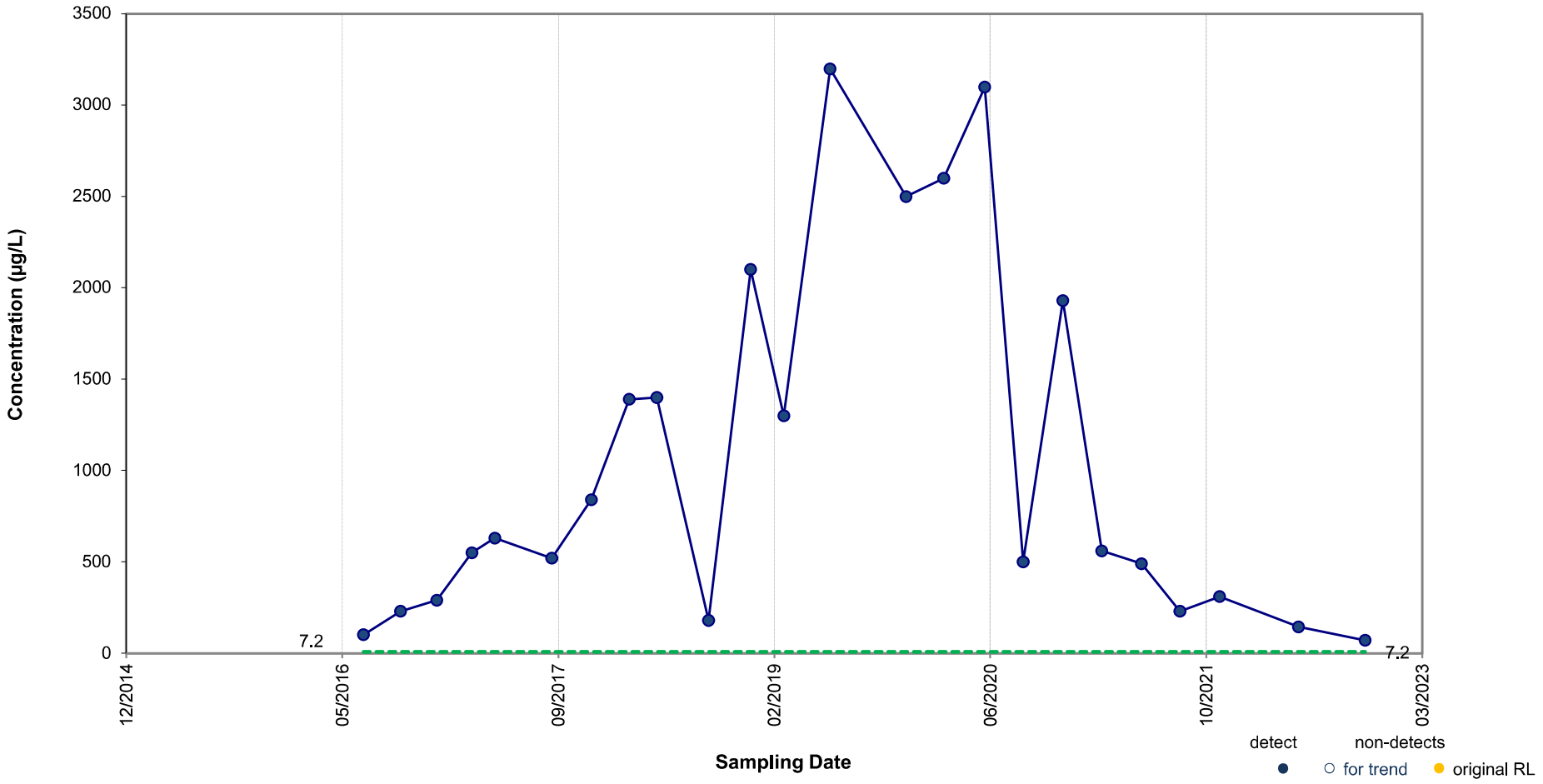
p value = 0.11 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-16-80, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

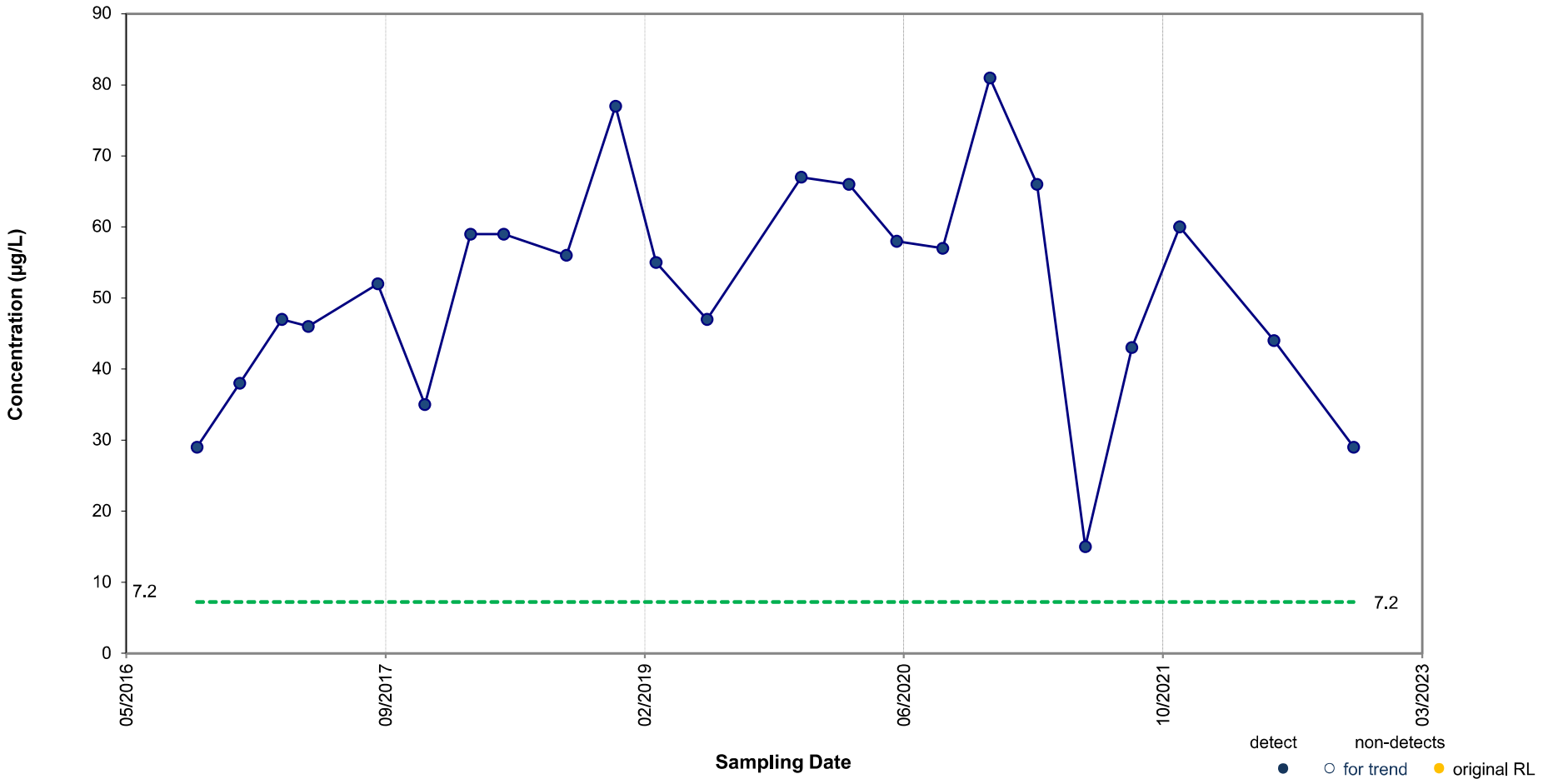
p value = 0.48 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-16-81, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

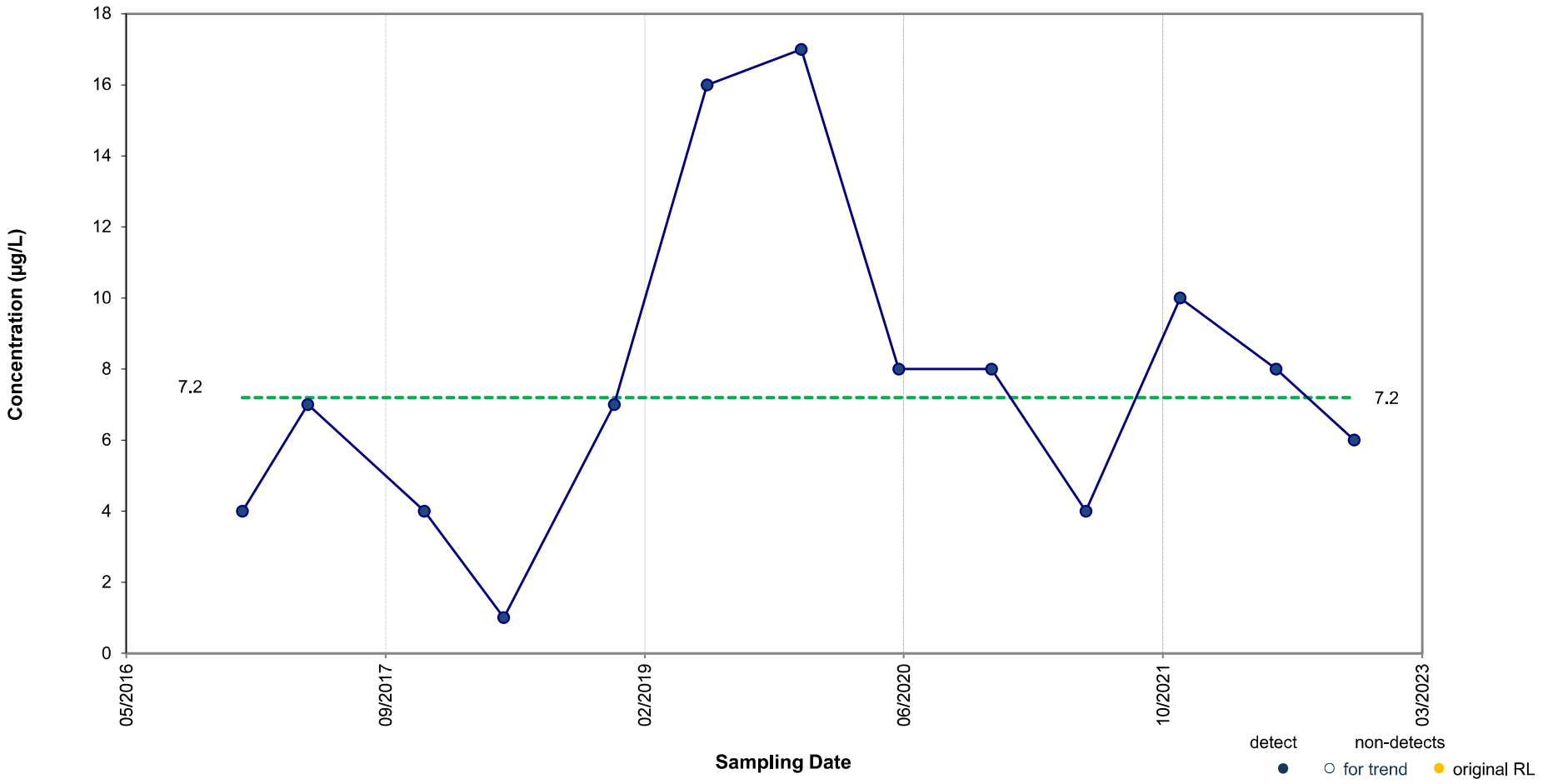
p value = 0.20 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-16-84, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

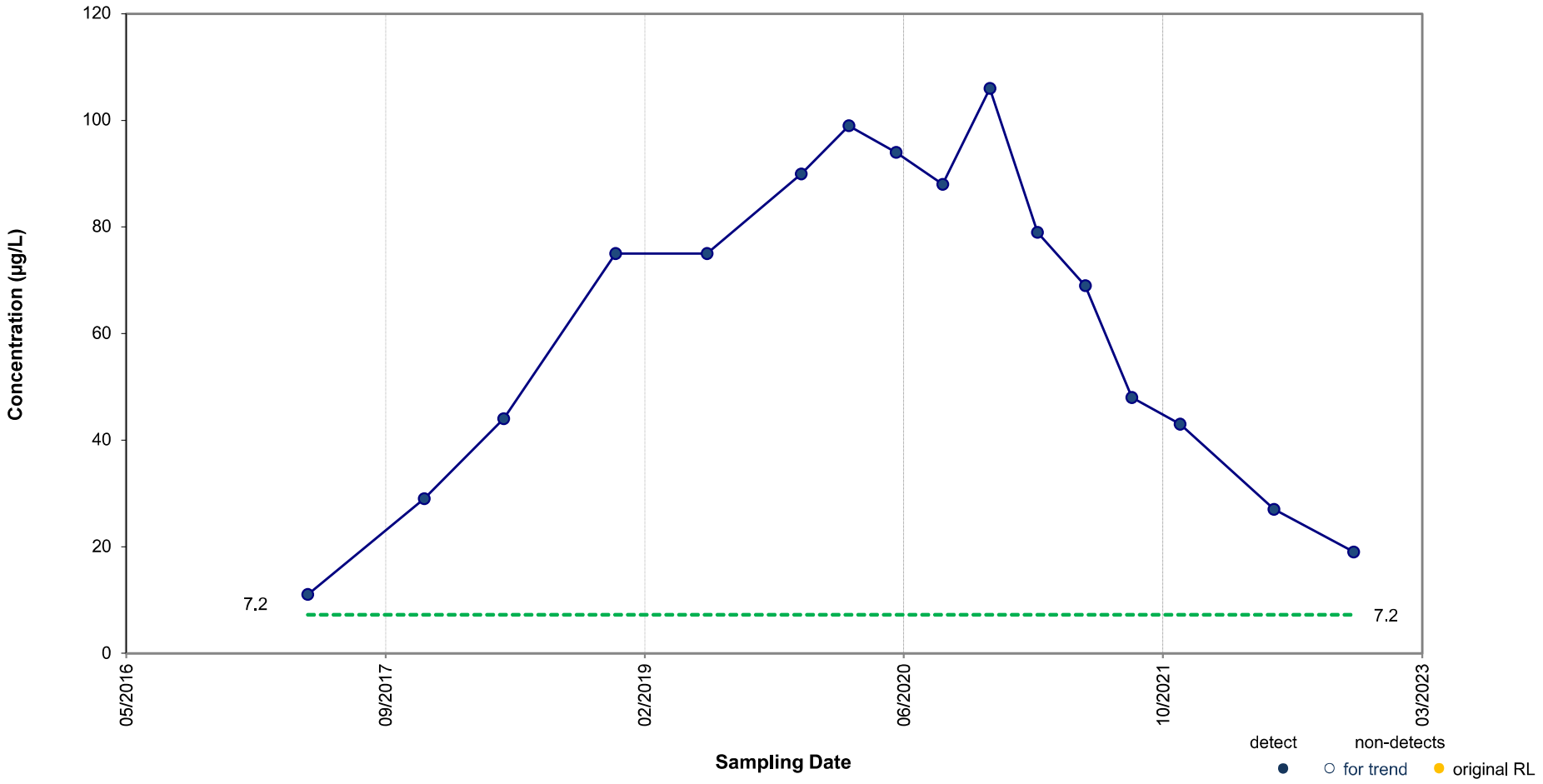
p value = 0.16 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-16-85, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

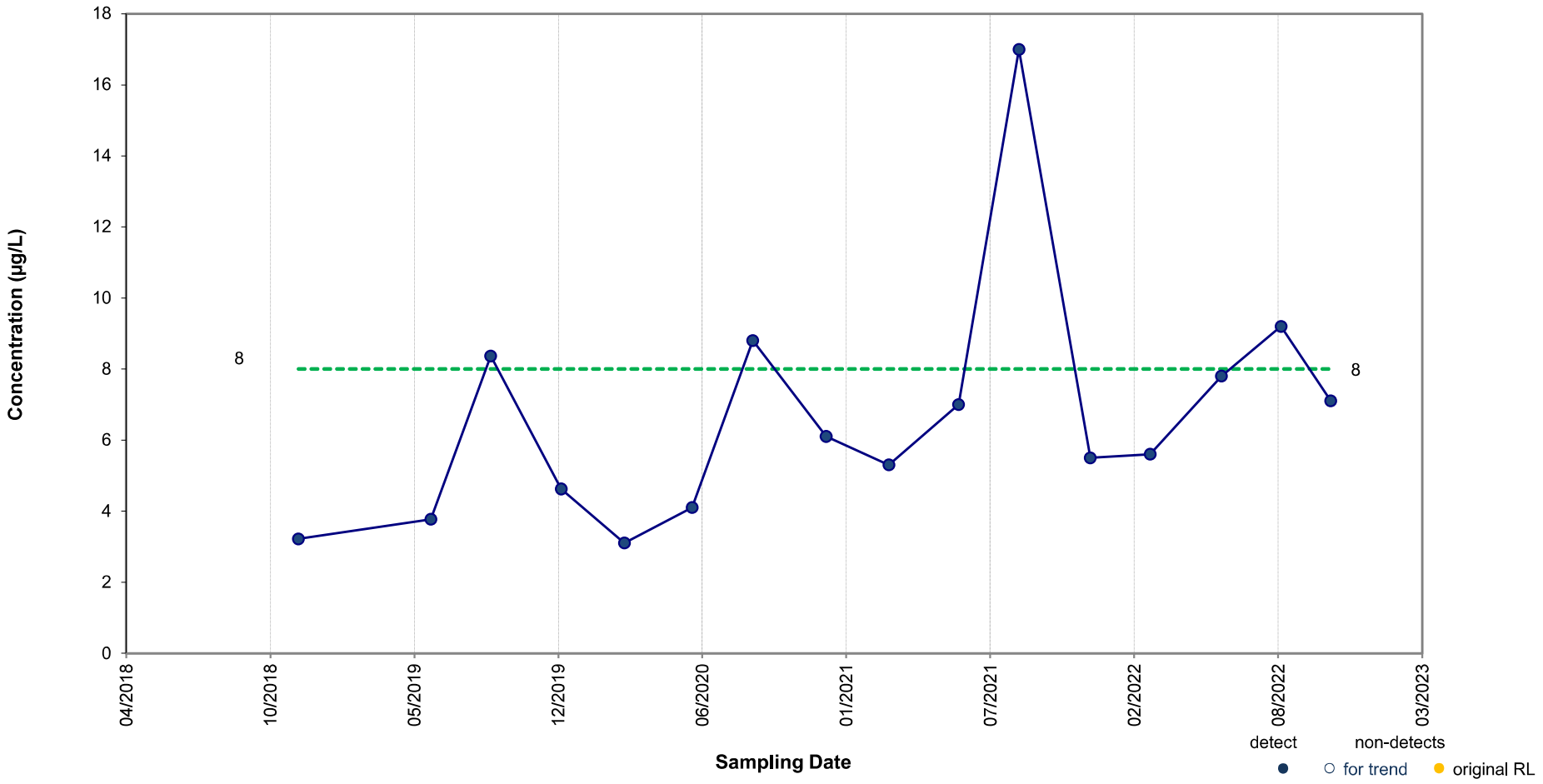
p value = 0.36 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-17-86, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

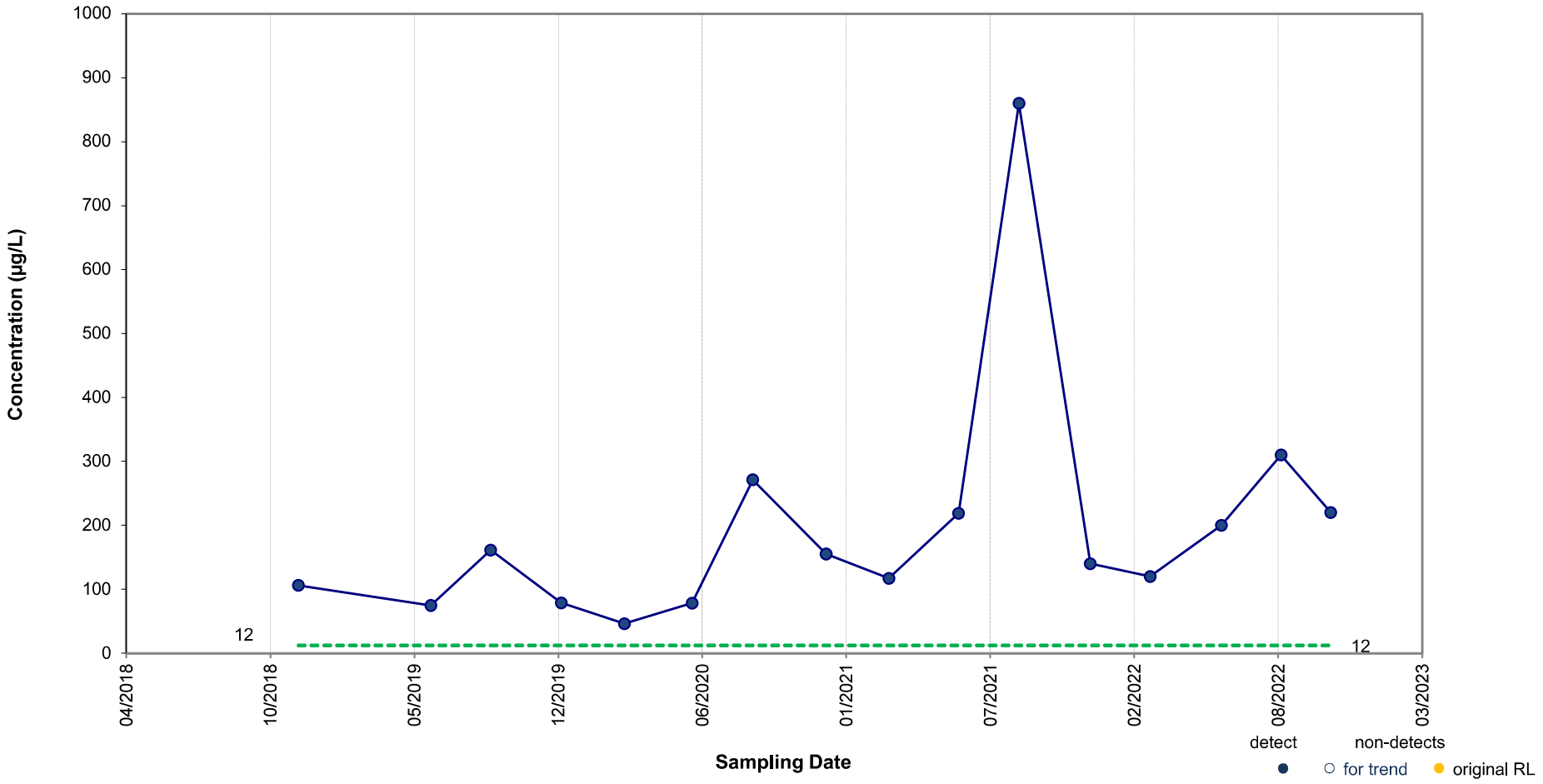
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-88, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

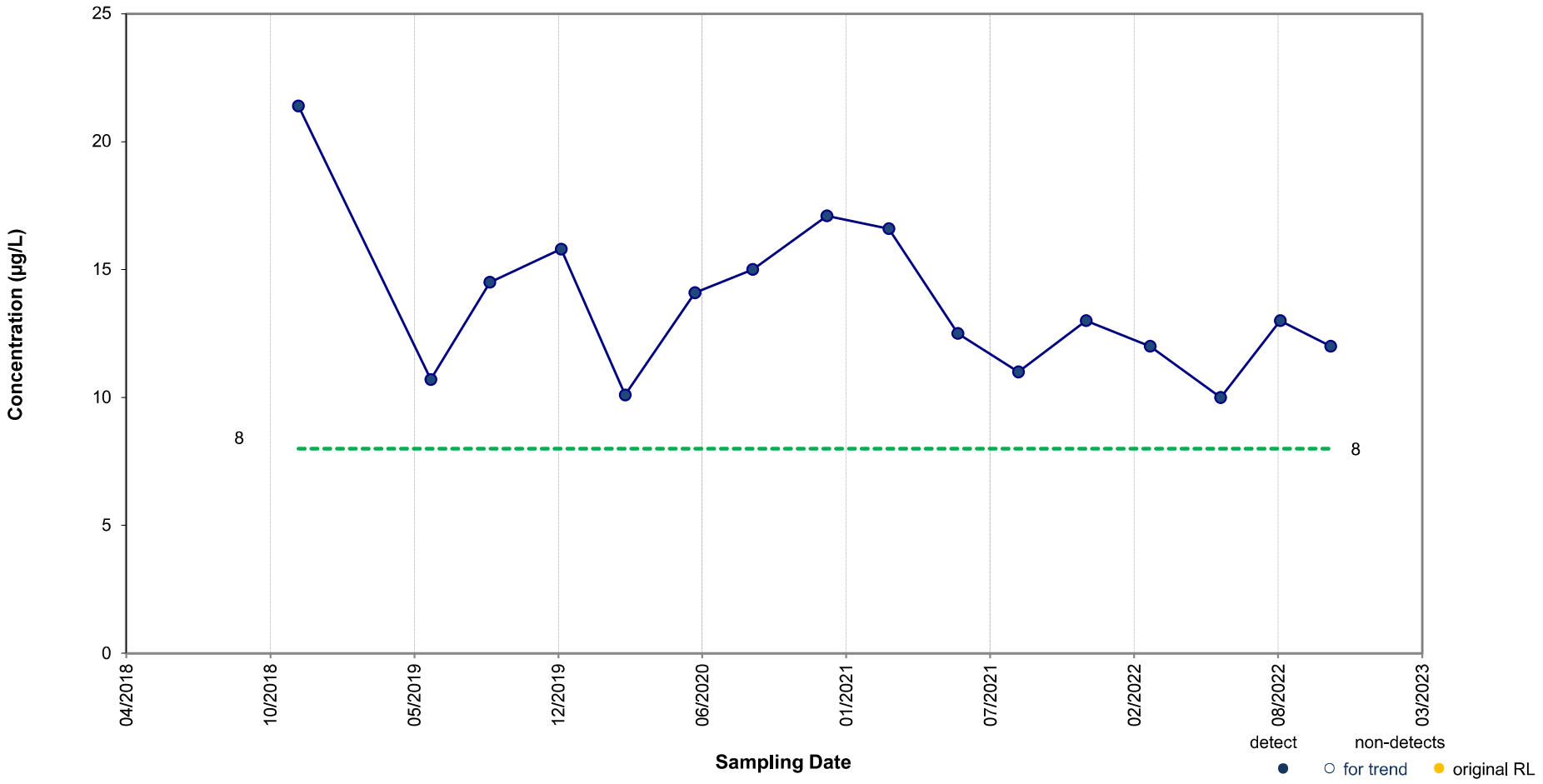
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-88, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

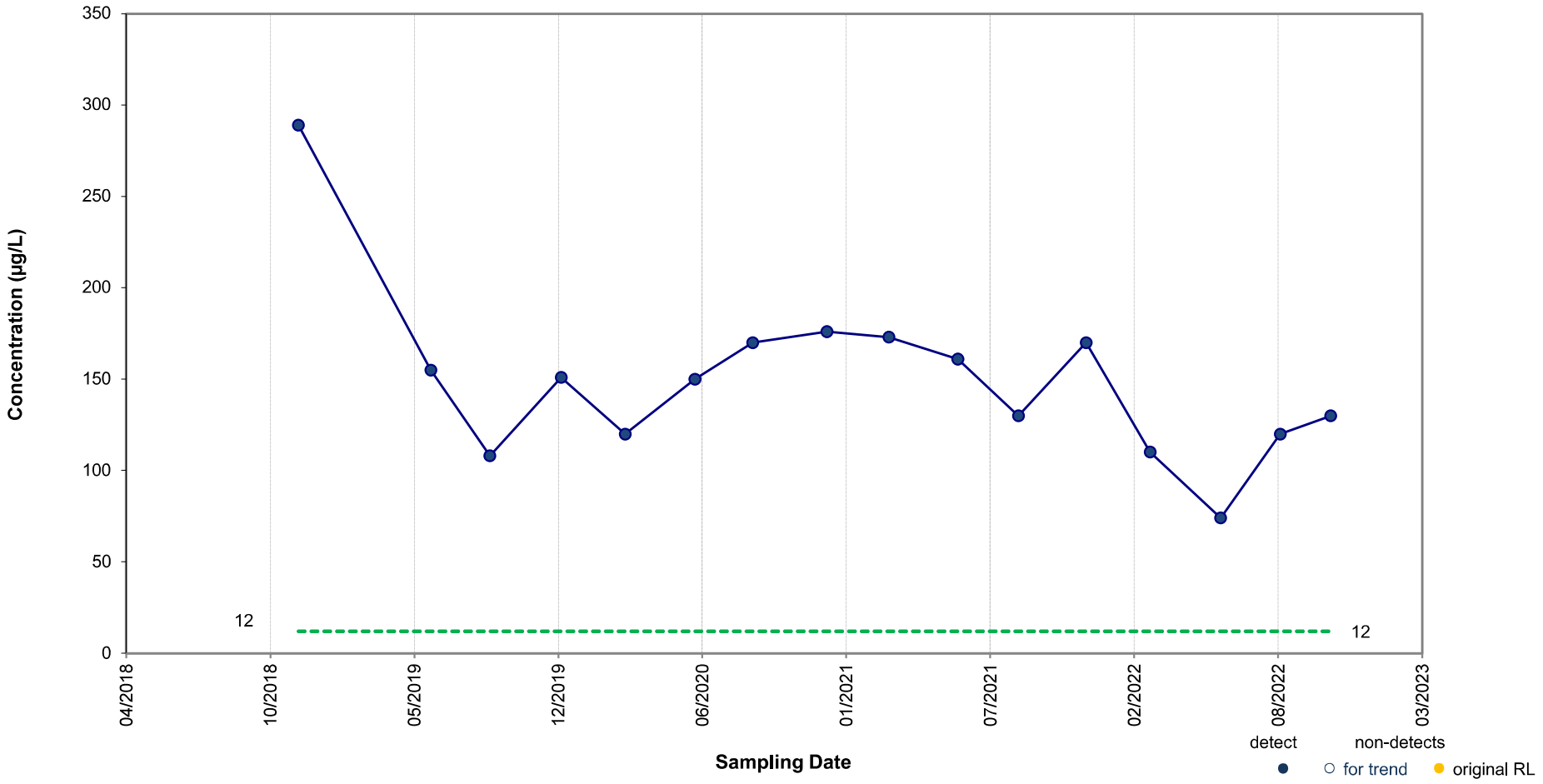
p value = 0.07 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-89, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

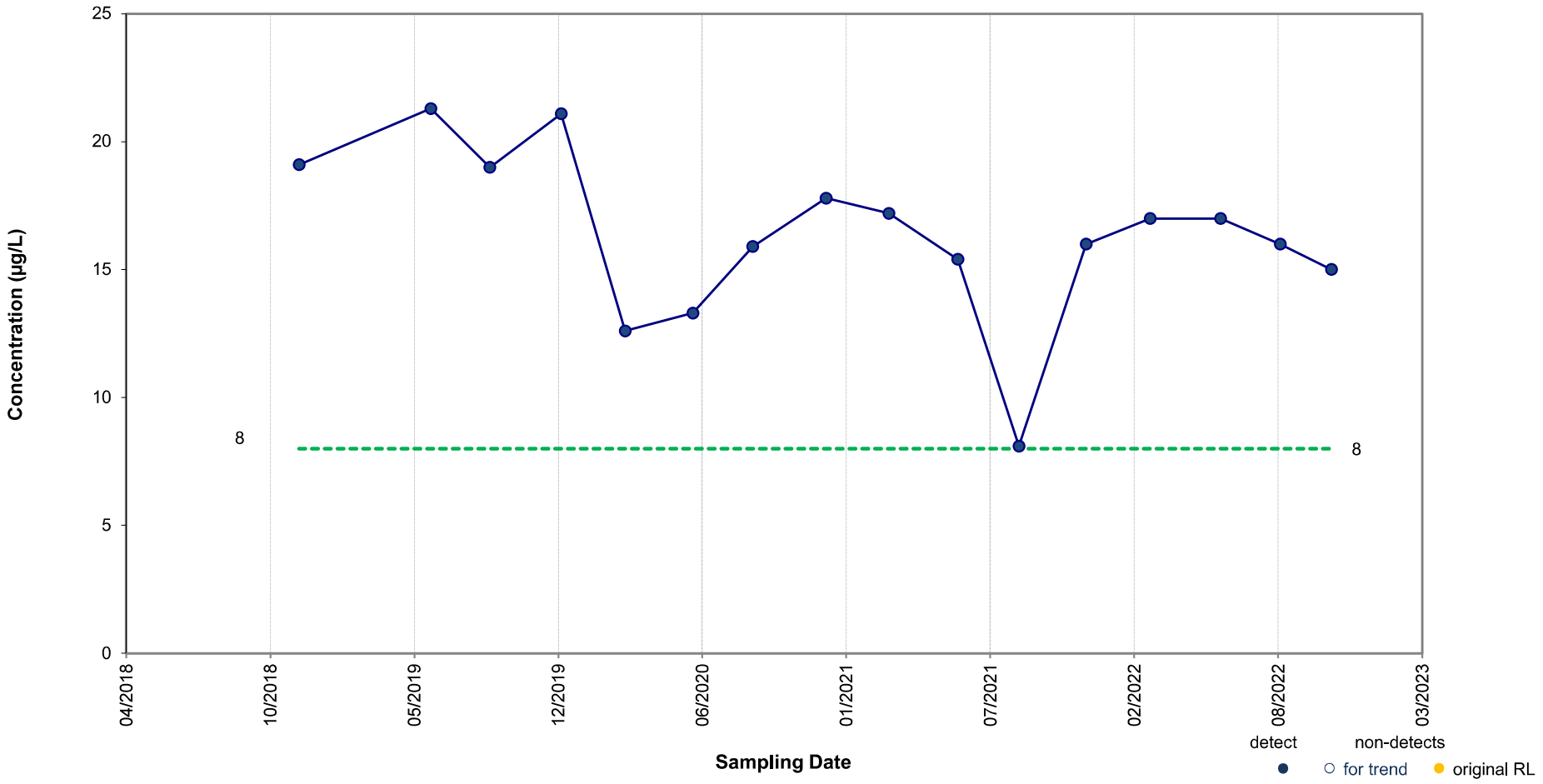
p value = 0.10 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-89, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

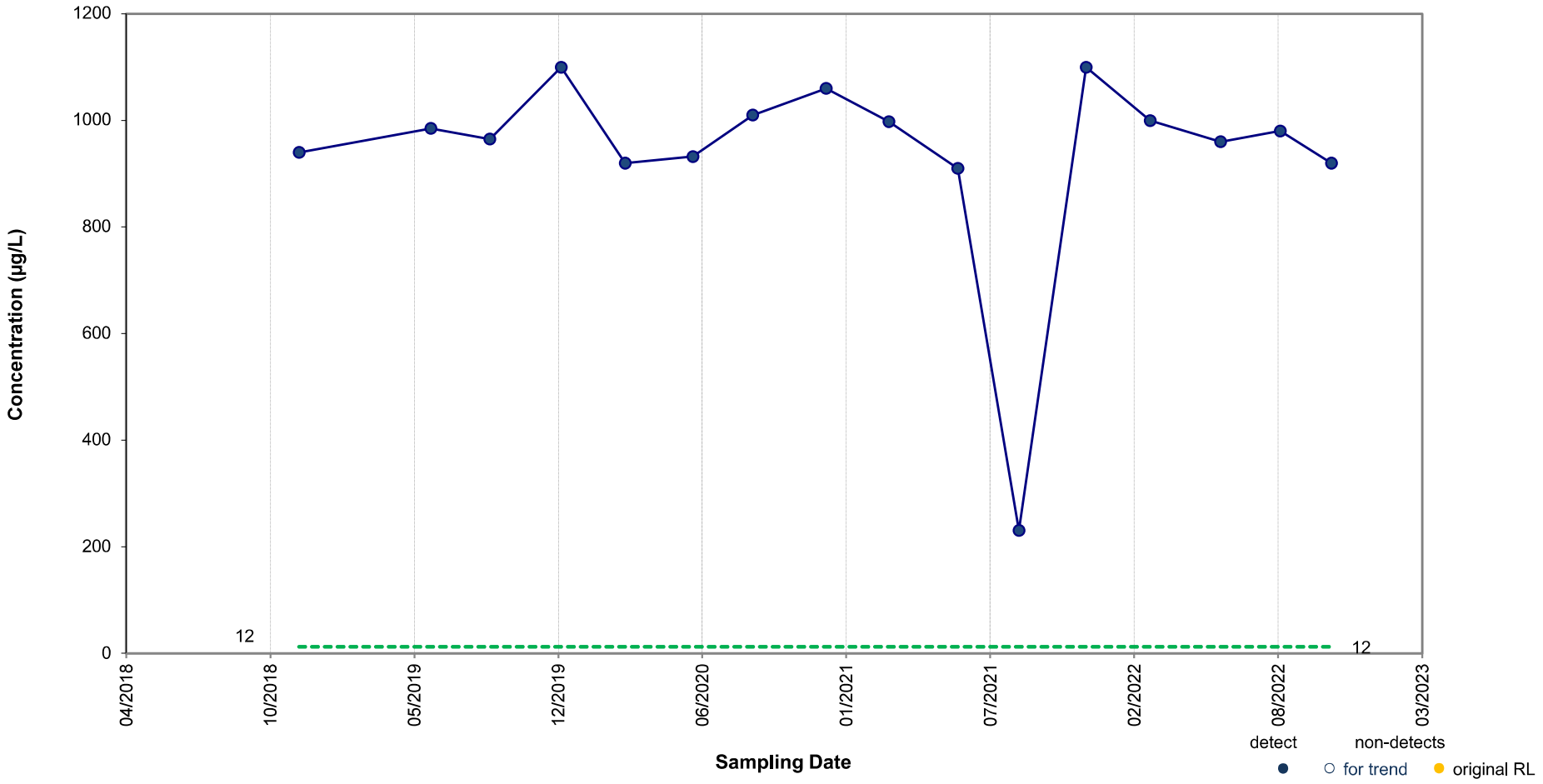
p value = 0.04 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-90, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

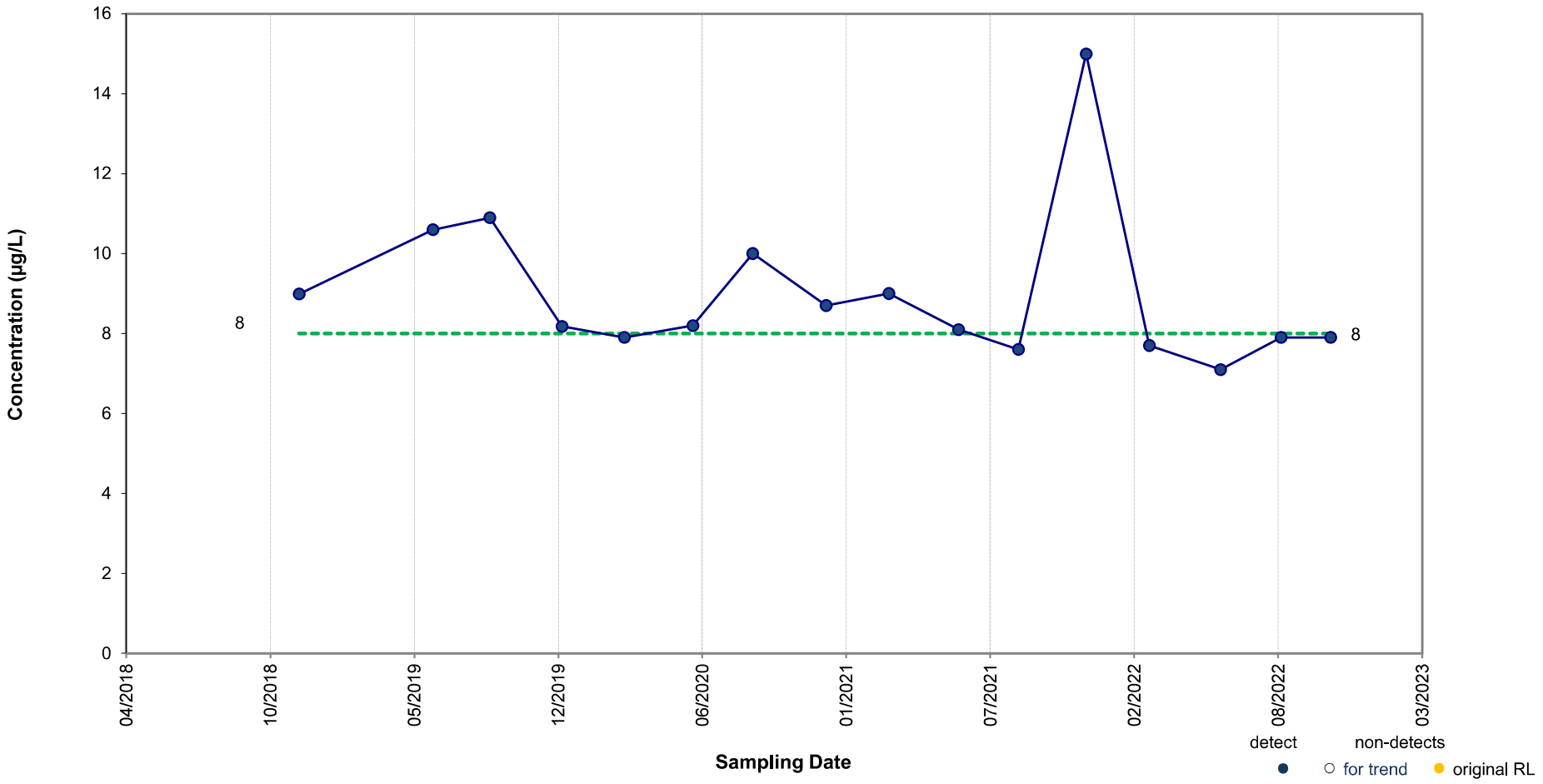
p value = 0.34 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-90, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

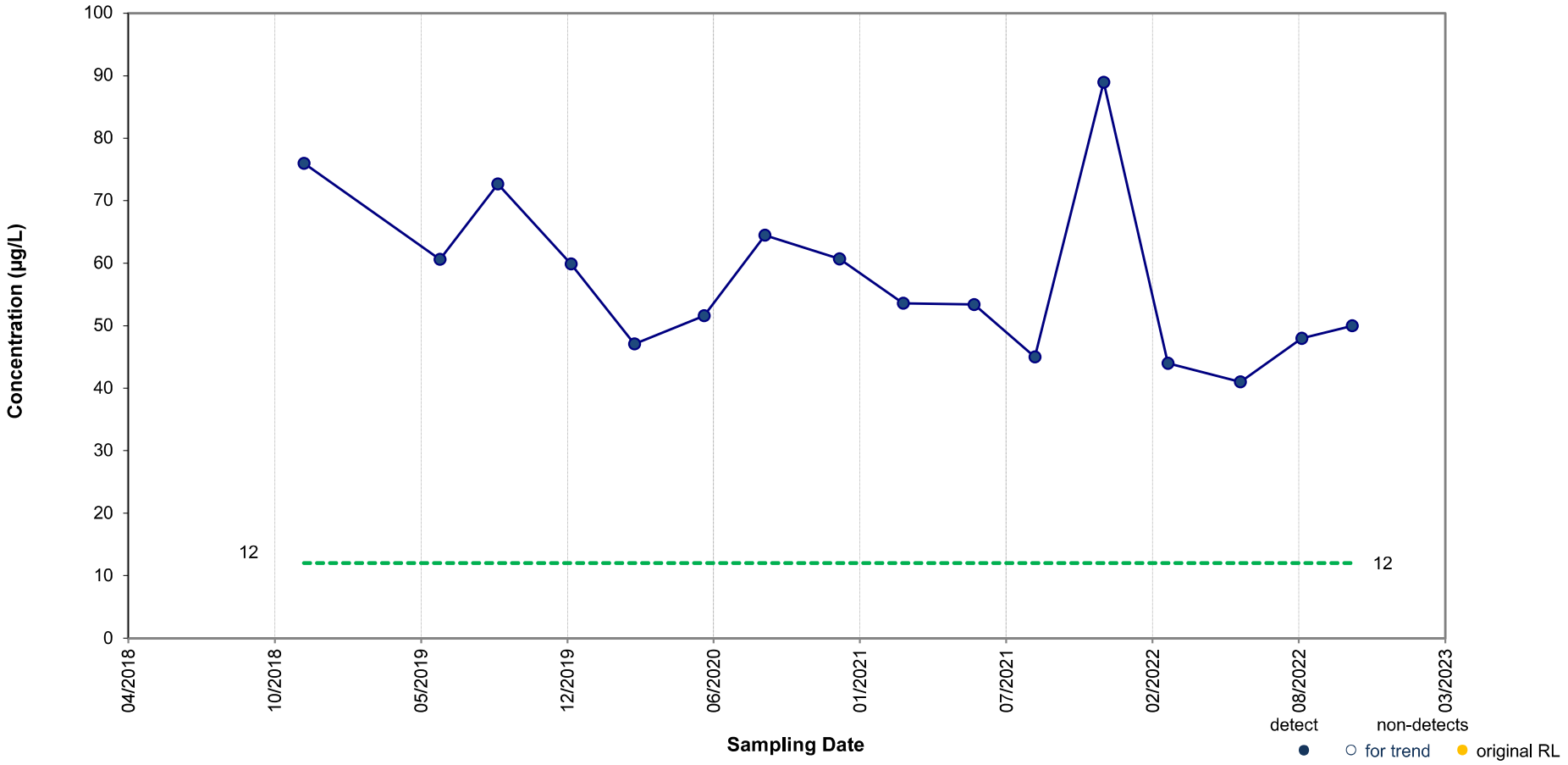
p value = 0.02 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-91, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

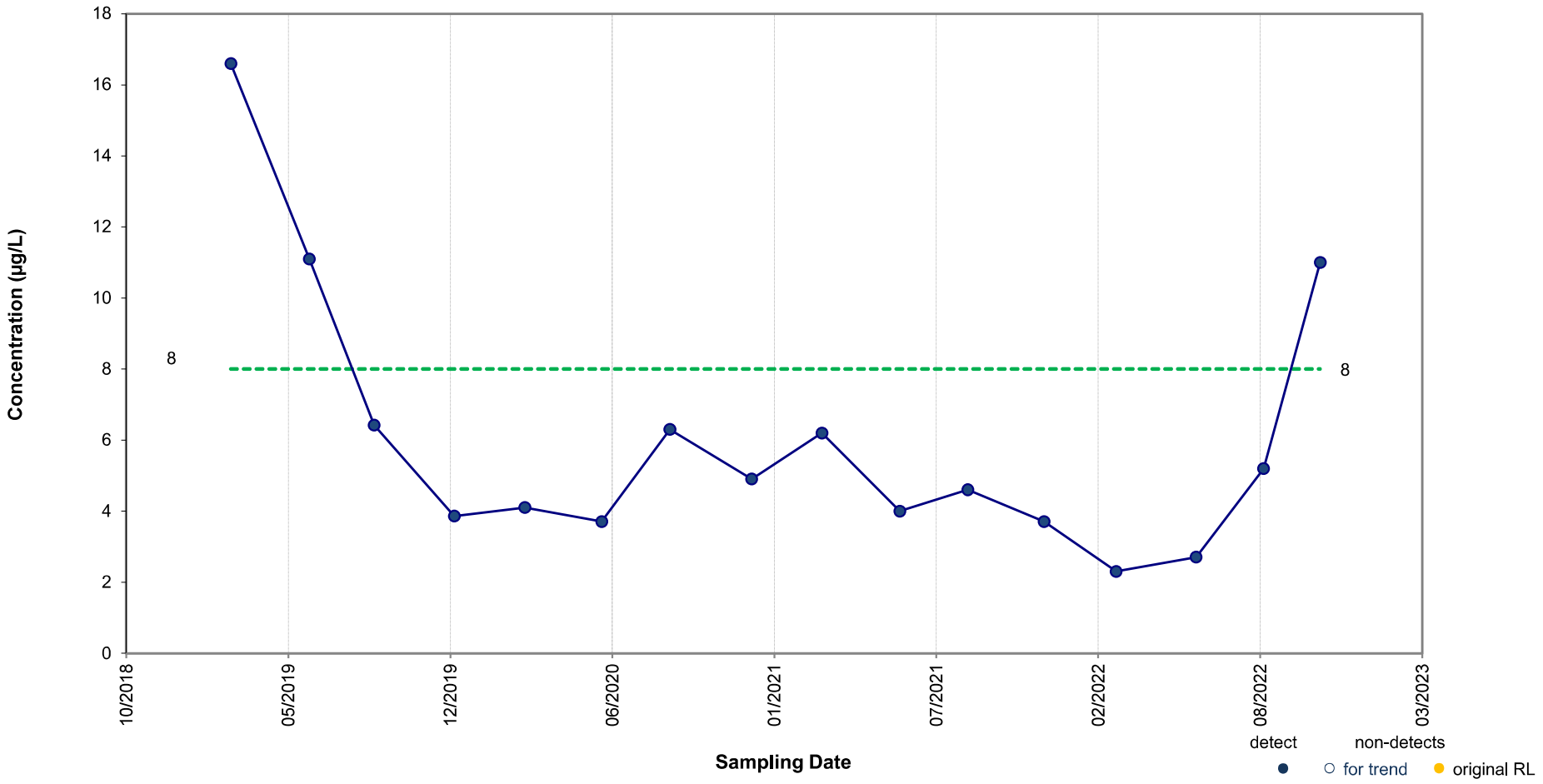
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-91, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

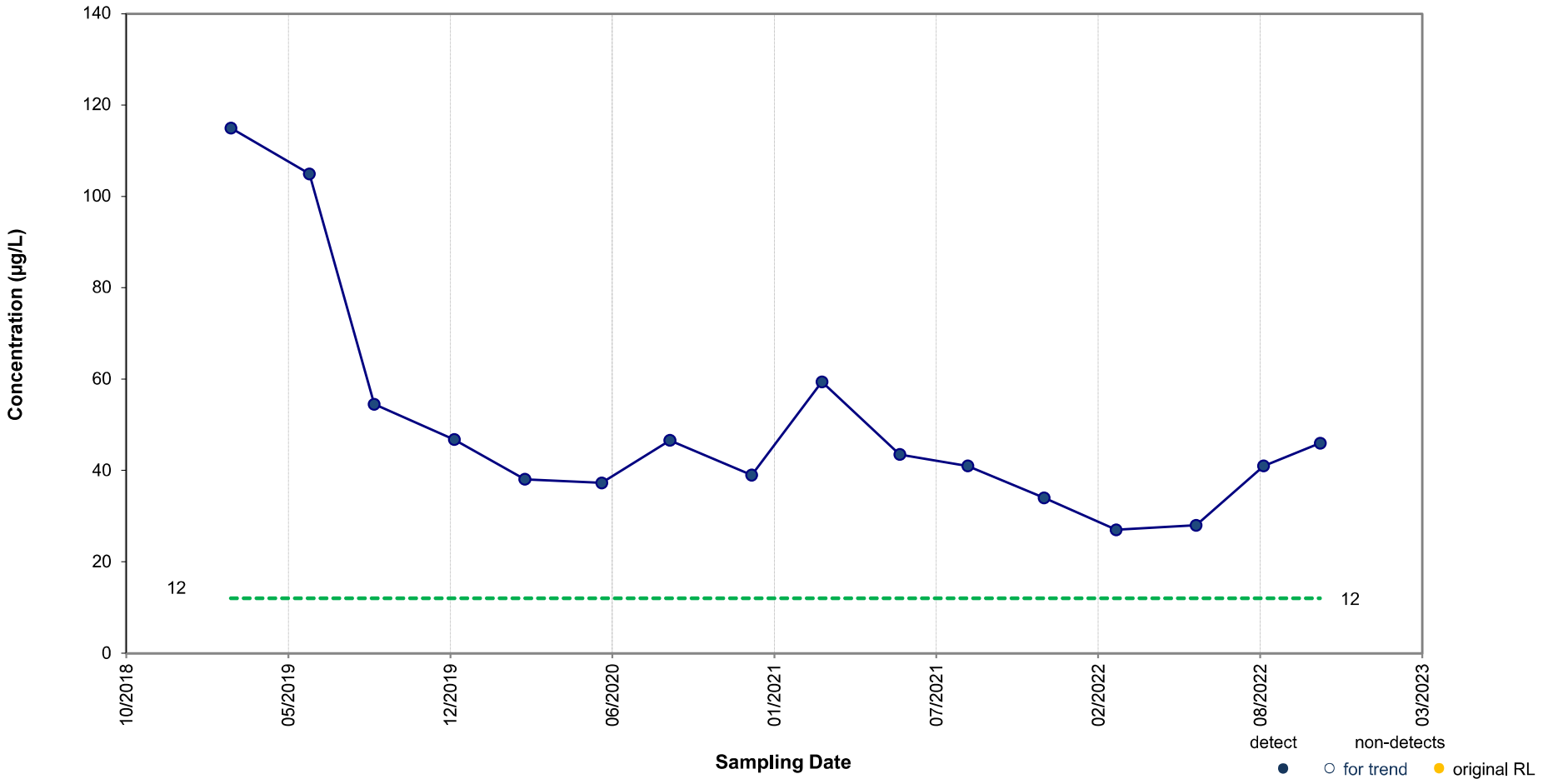
p value = 0.04 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-95, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

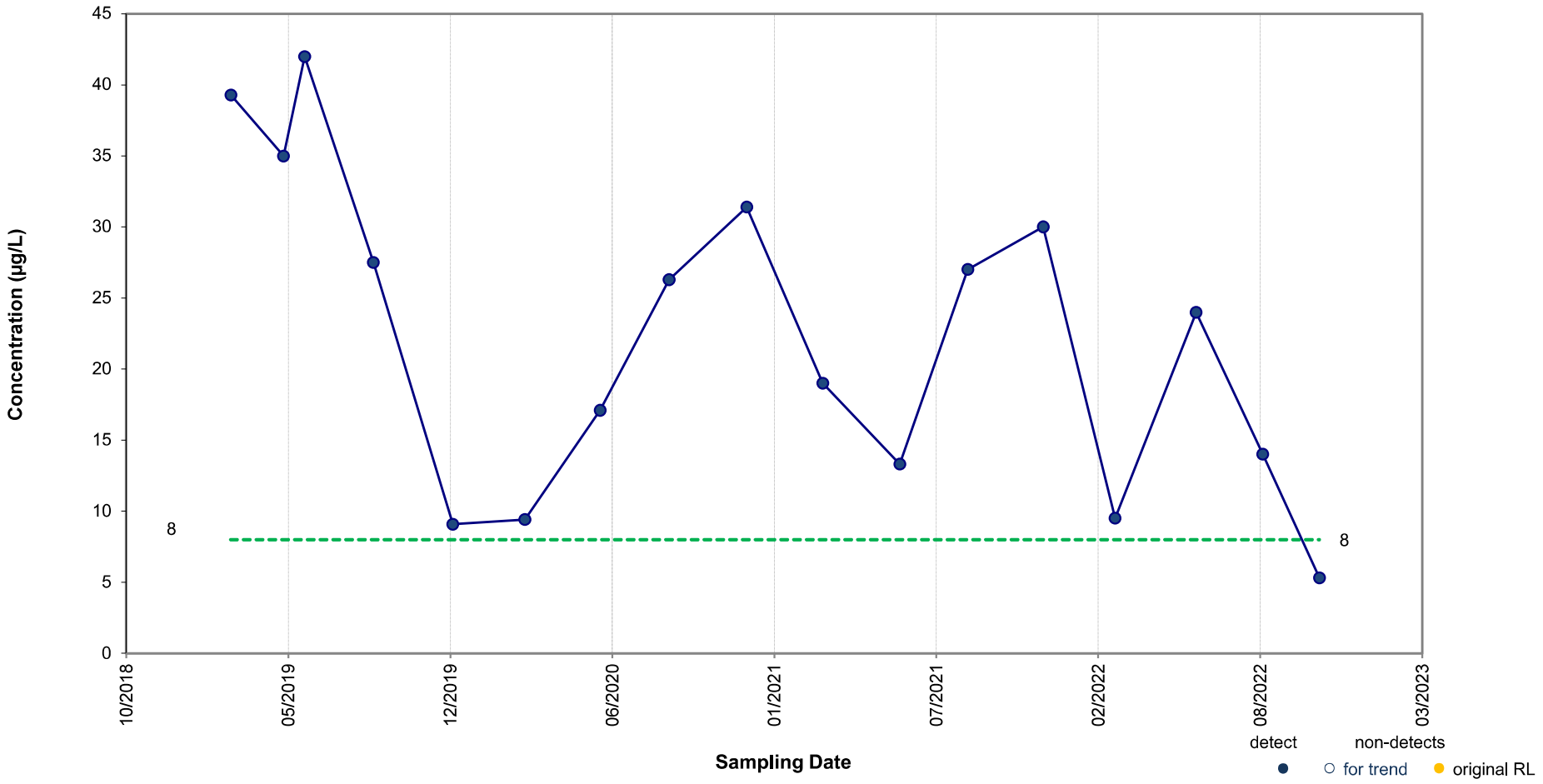
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-95, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

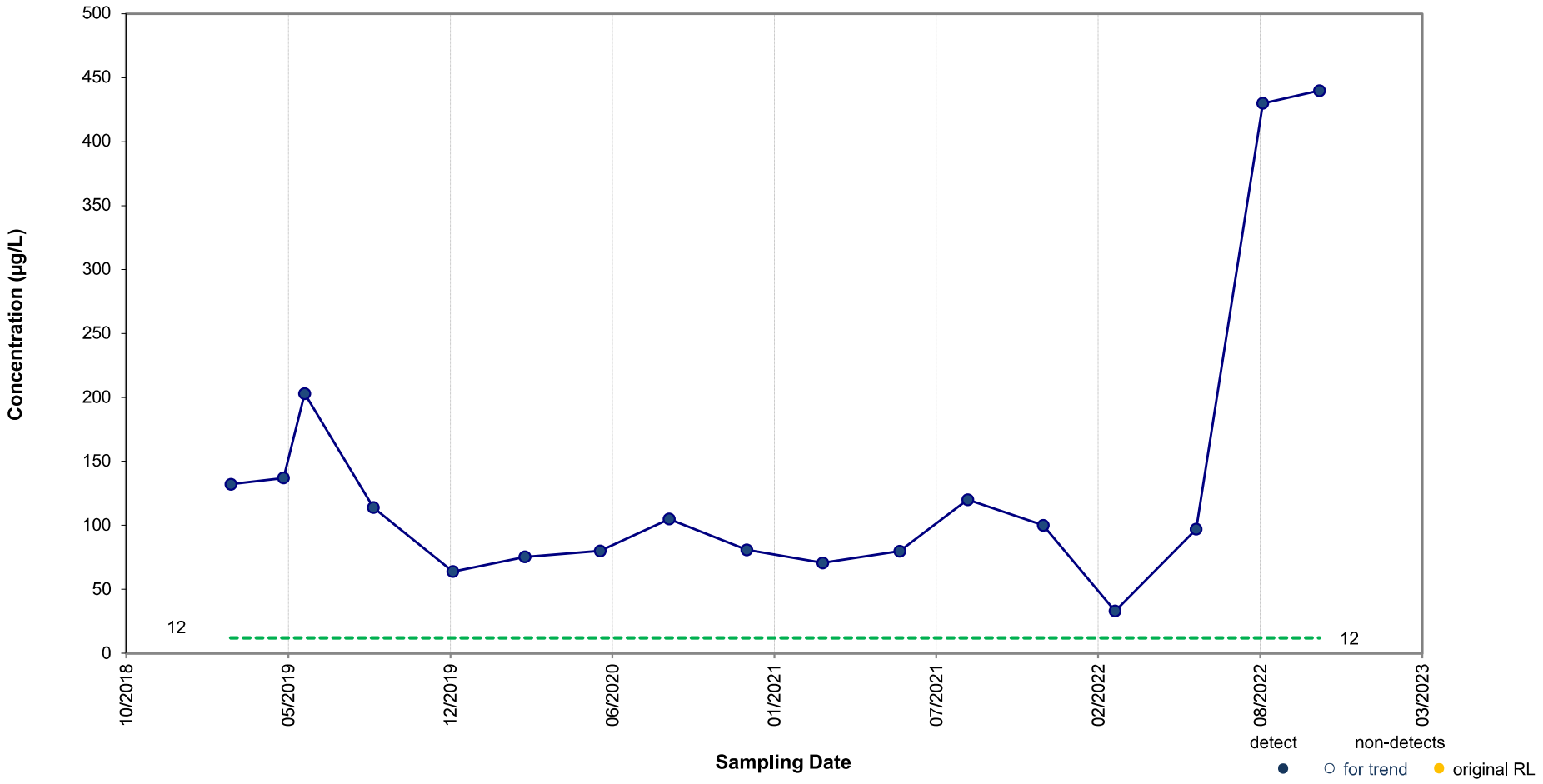
p value = 0.03 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-98, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

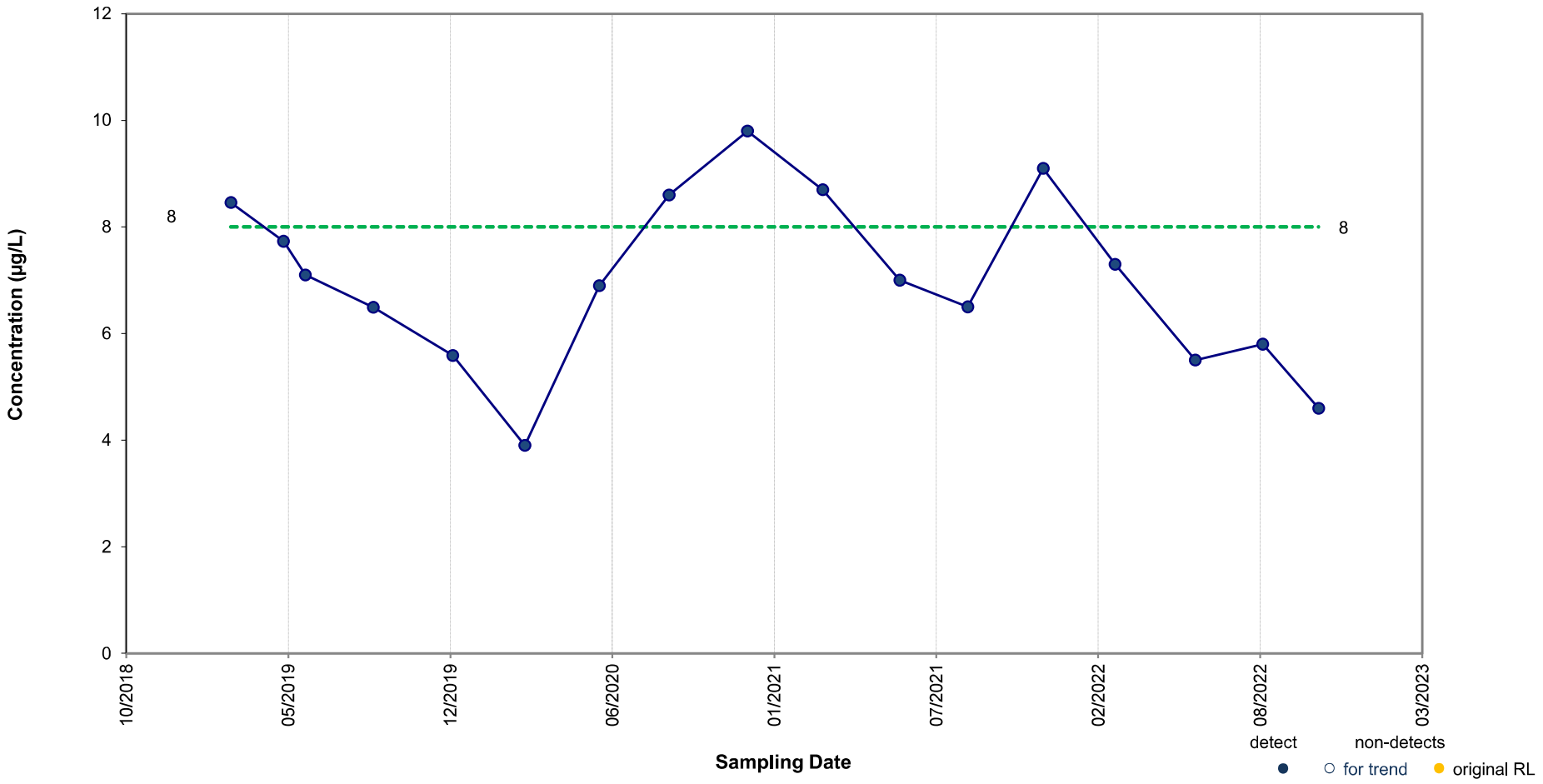
p value = 0.52 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-98, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

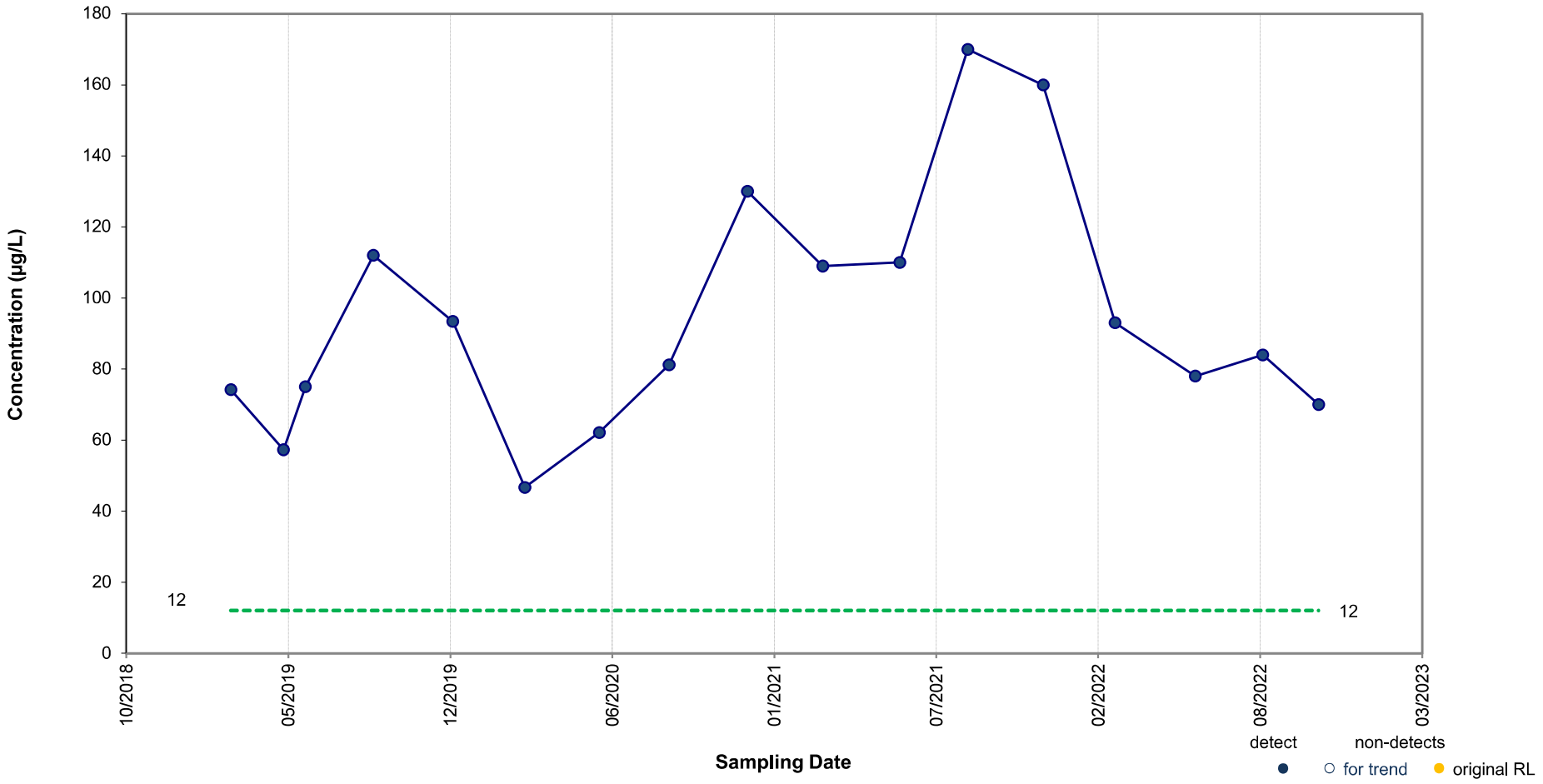
p value = 0.17 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-99, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

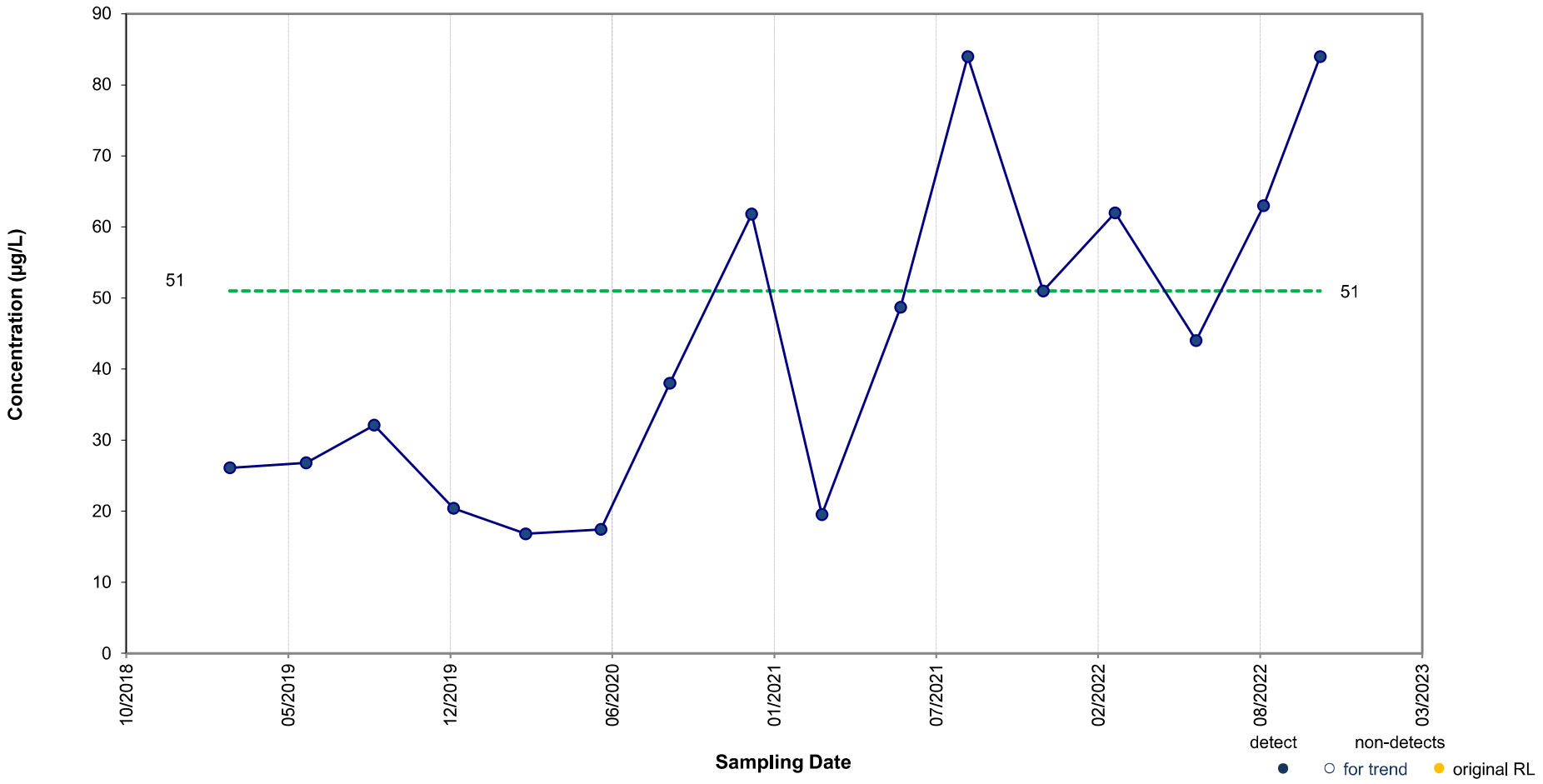
p value = 0.15 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-99, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

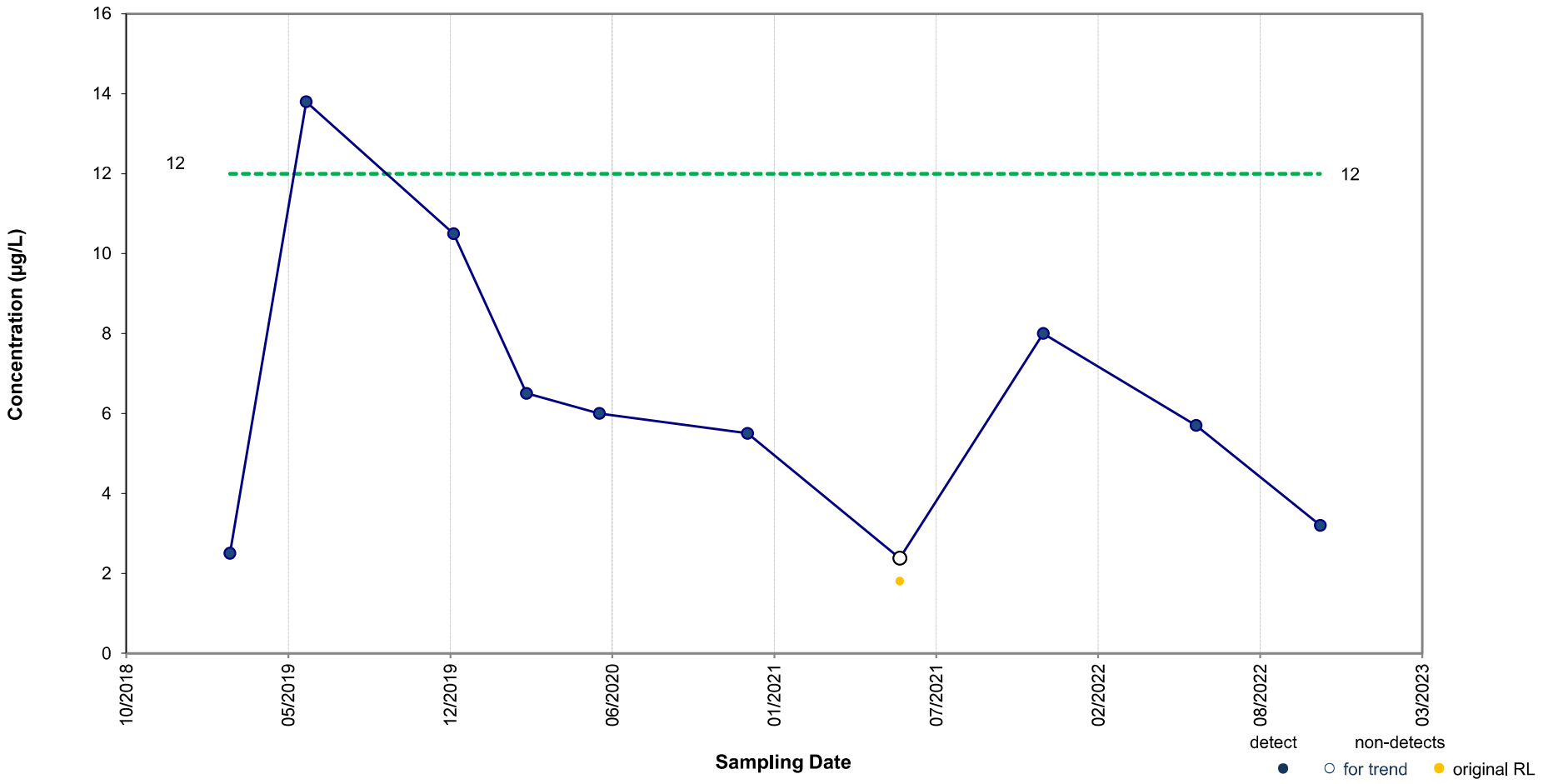
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-103, PFHxS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

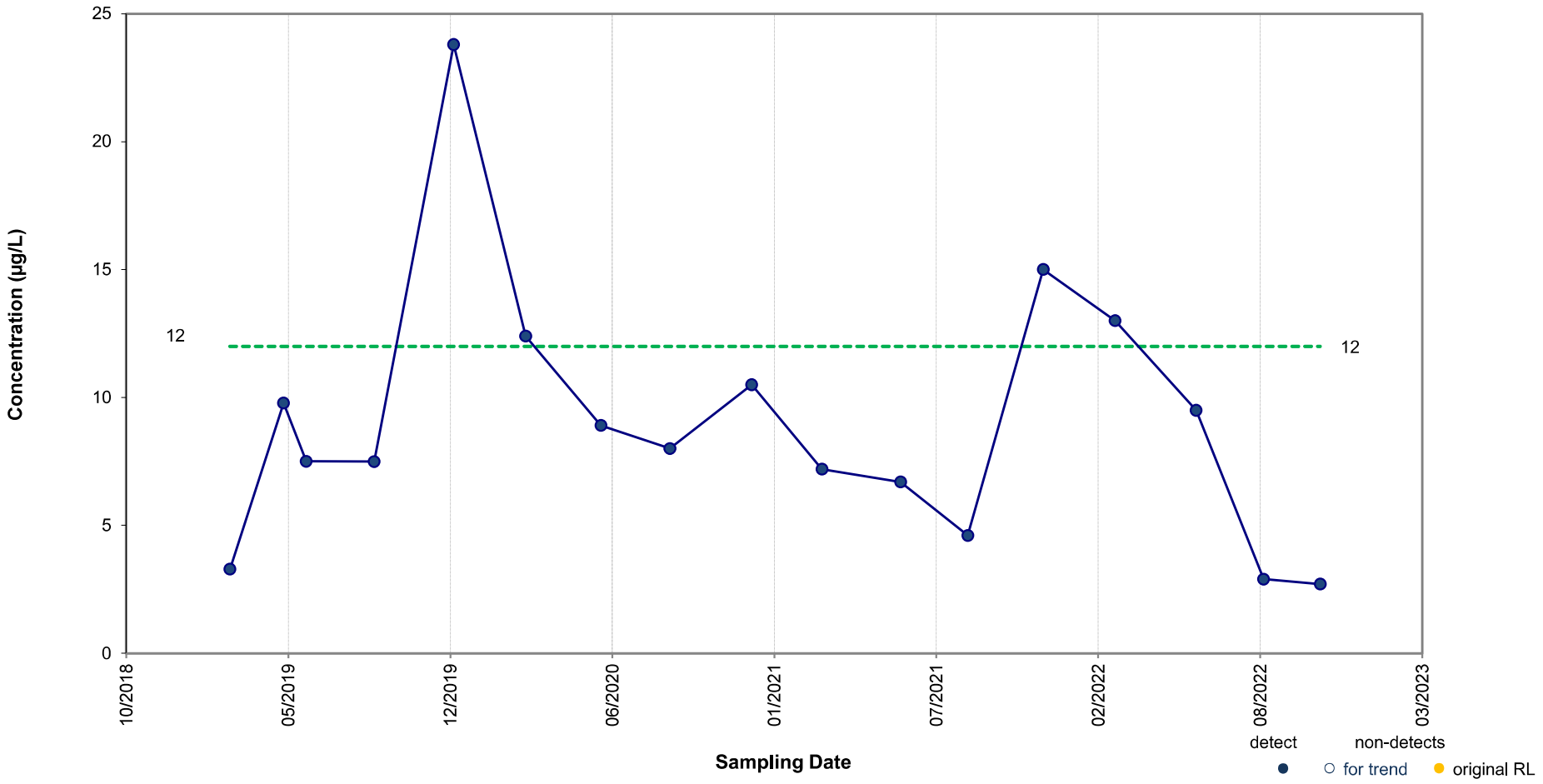
p value = 0.11 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-104, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

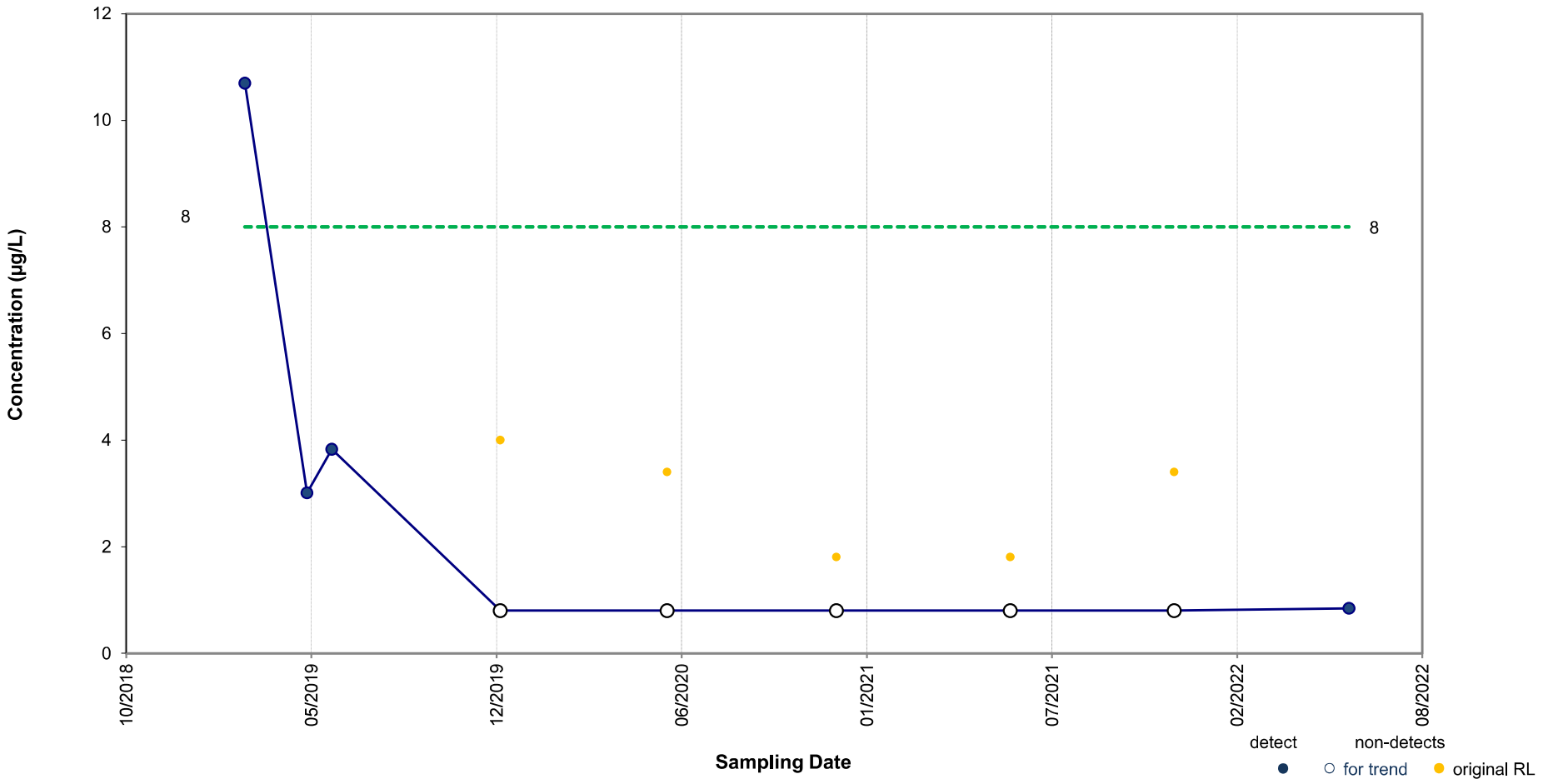
p value = 0.17 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-105, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

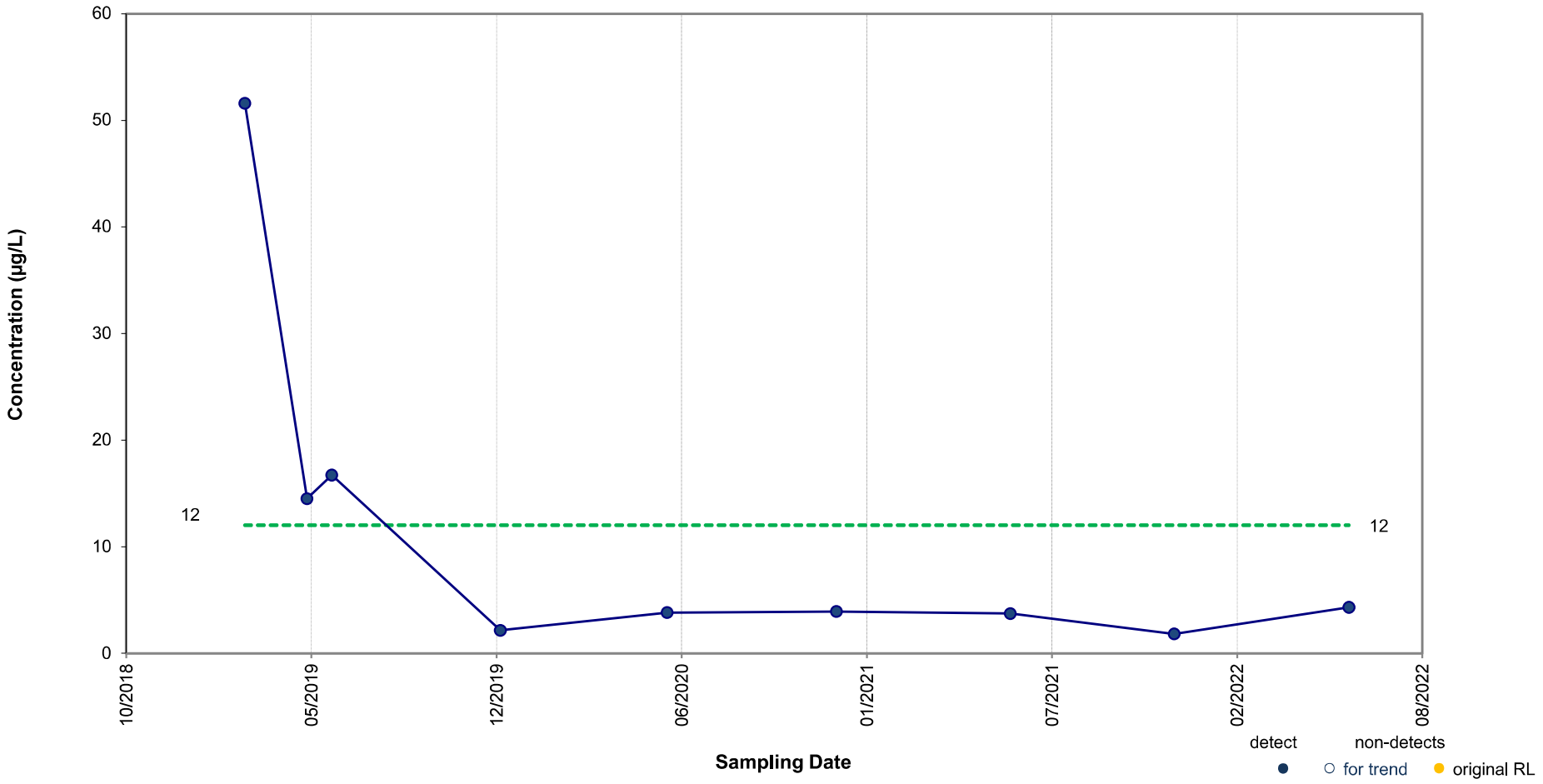
p value = 0.09 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-106, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

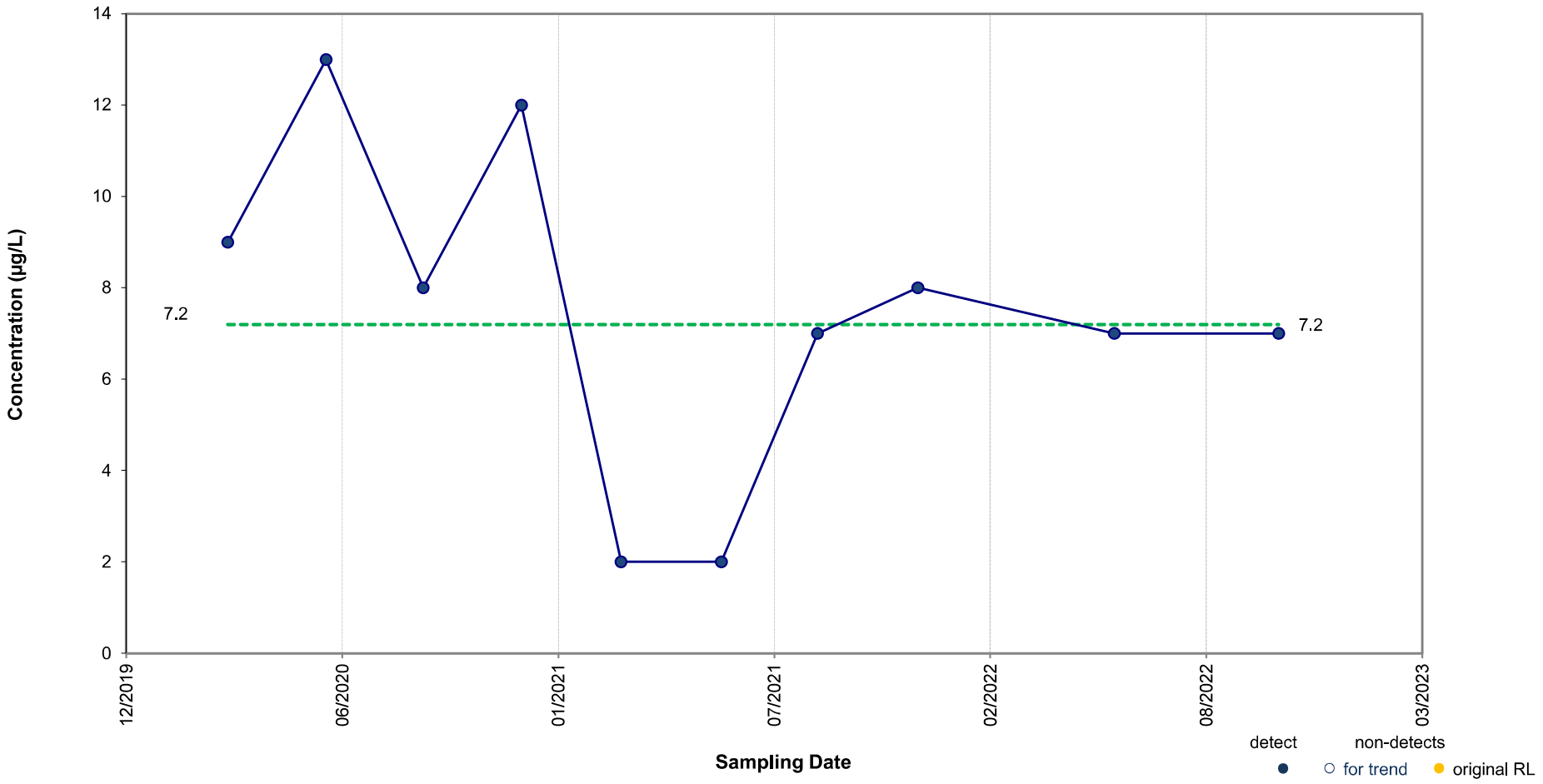
p value = 0.06 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-18-106, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

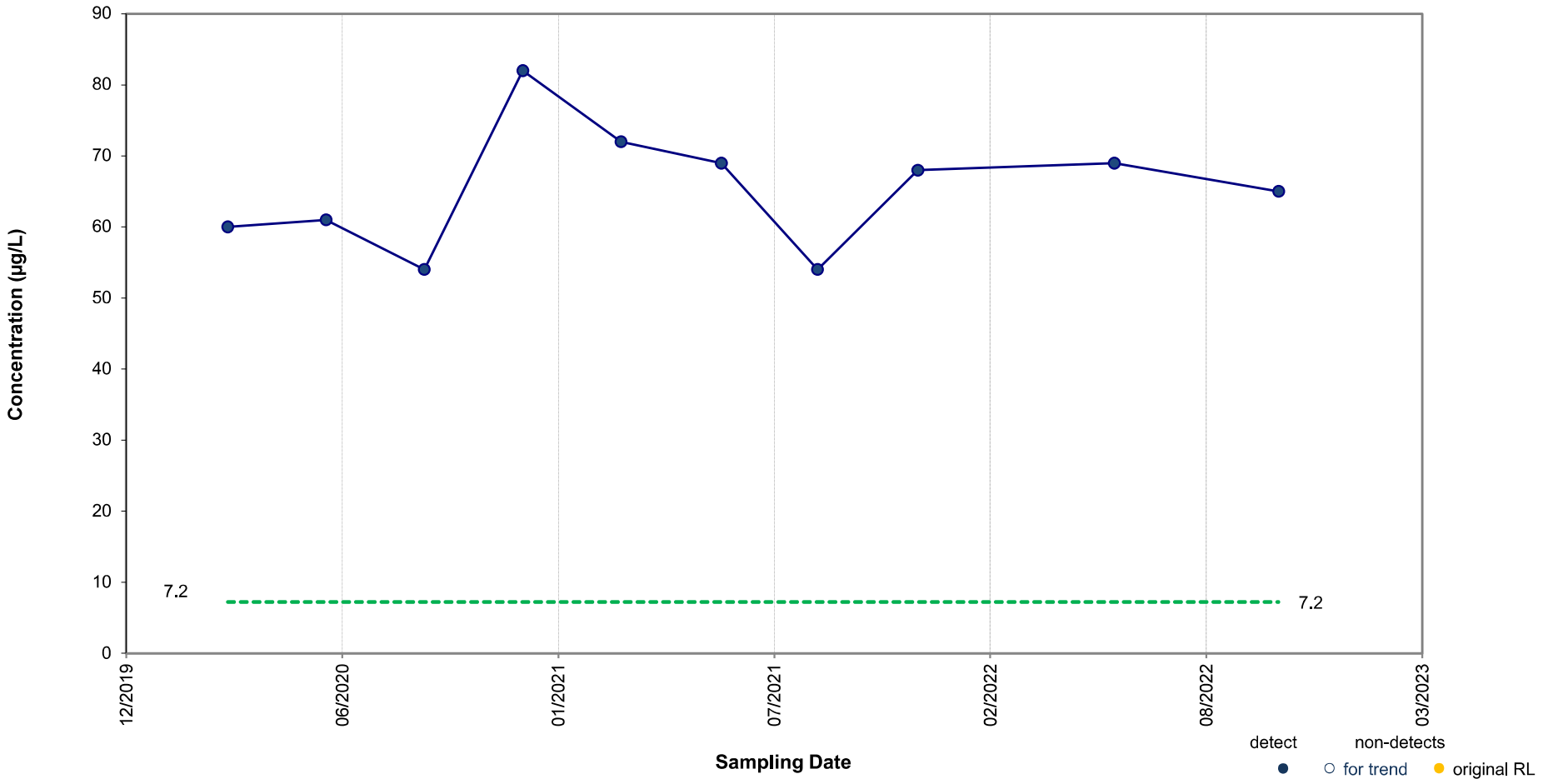
p value = 0.09 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-19-115, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

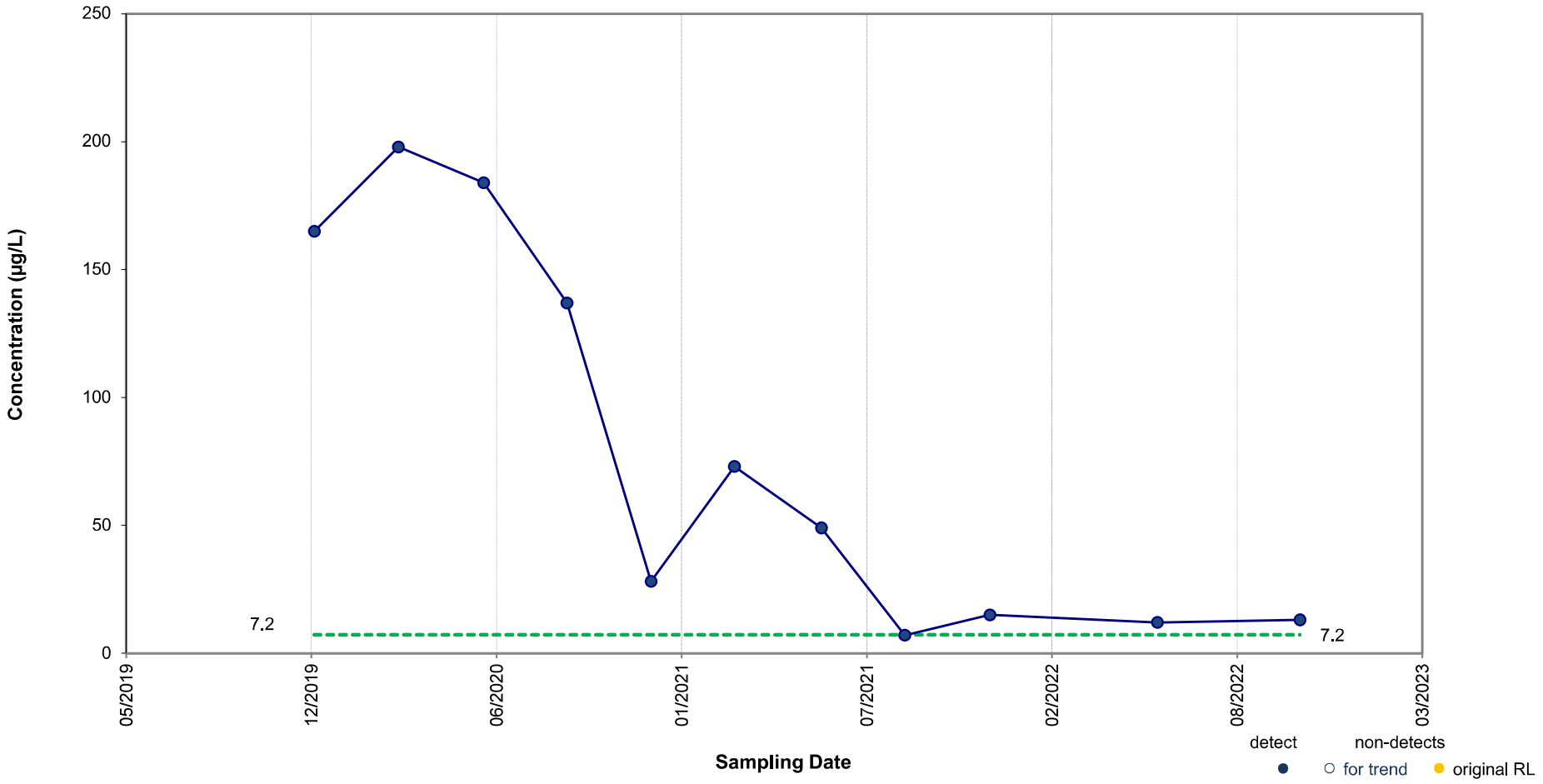
p value = 0.43 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-19-116, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

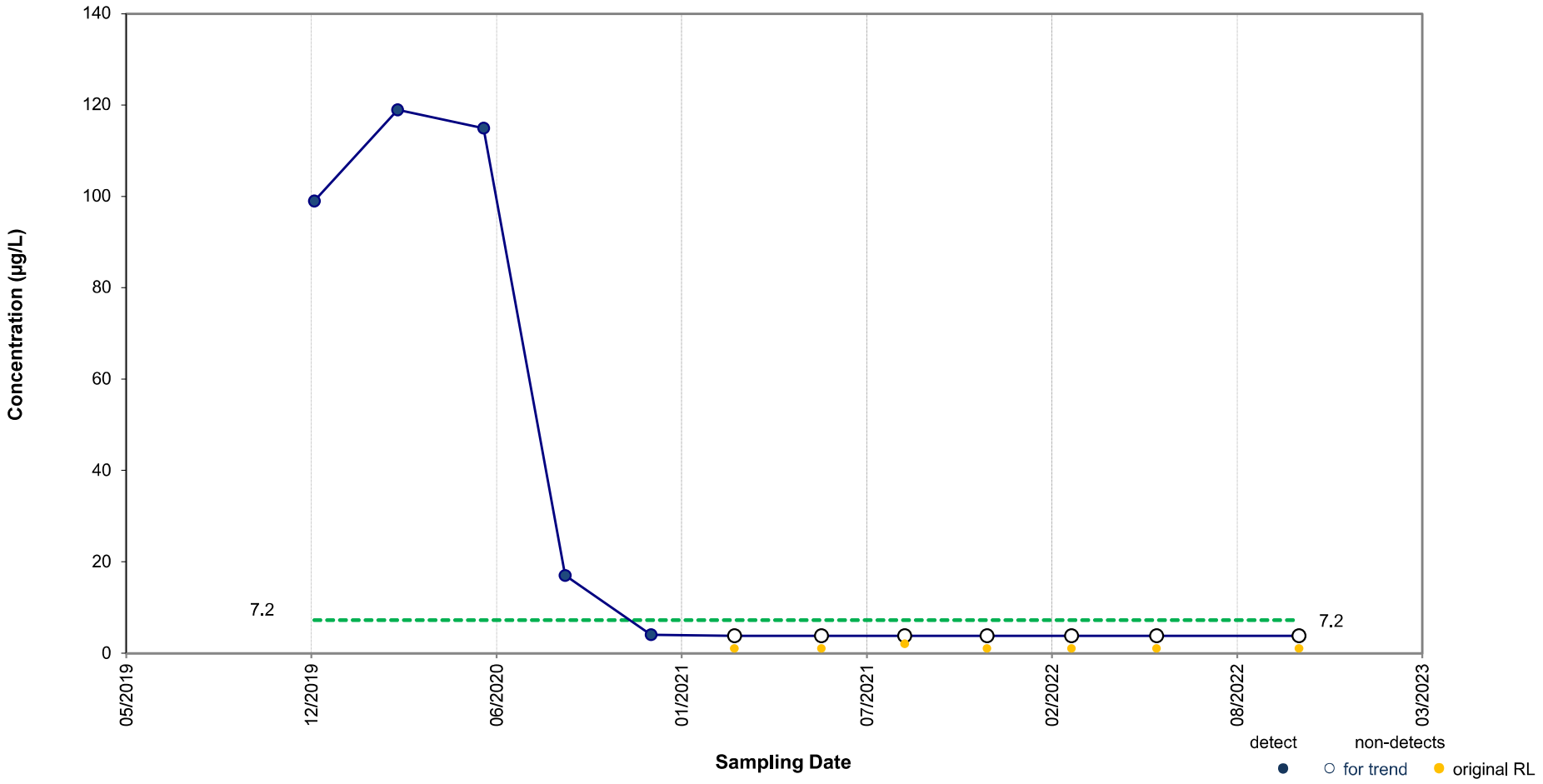
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-19-120, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

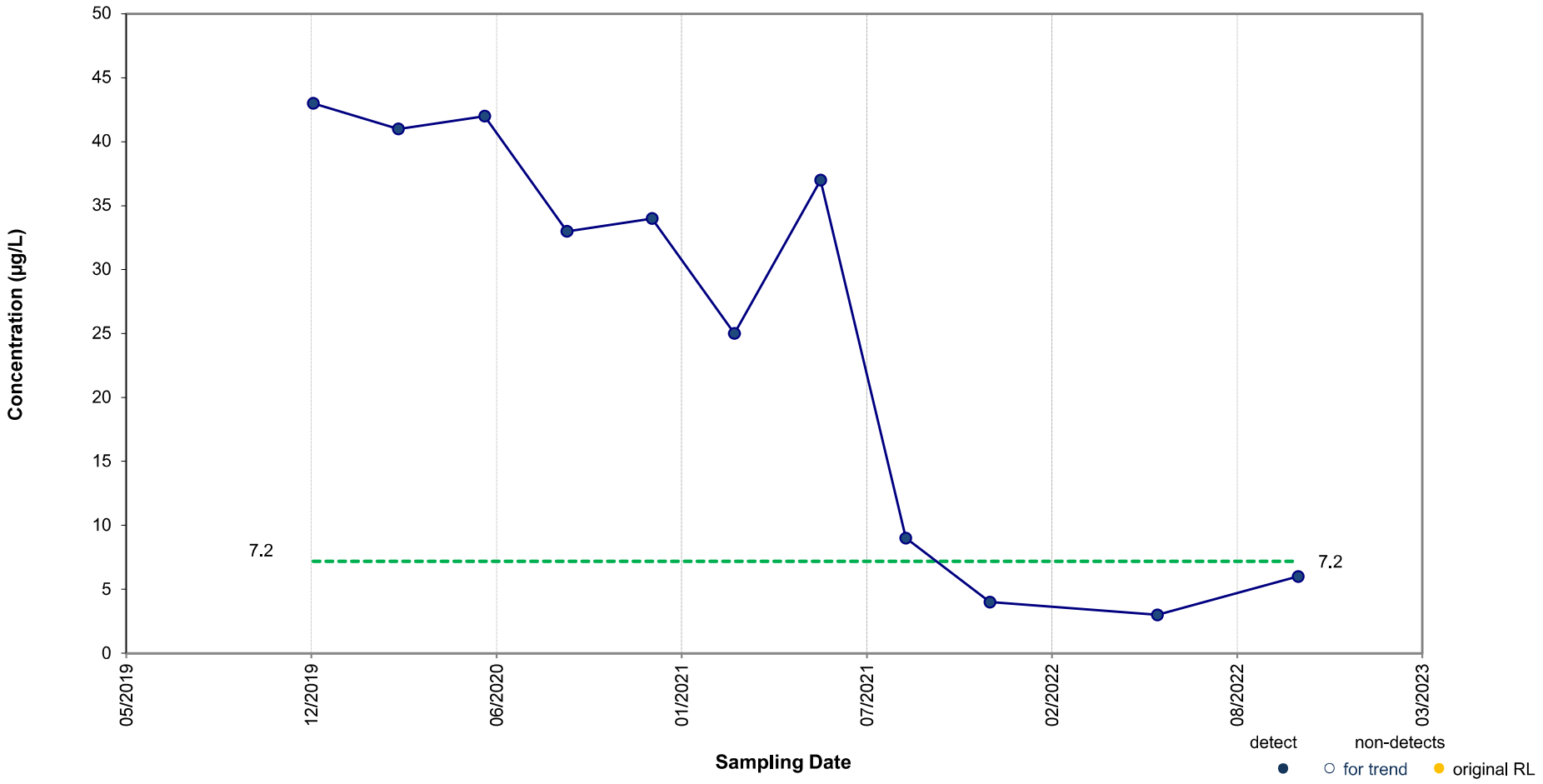
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-19-121, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

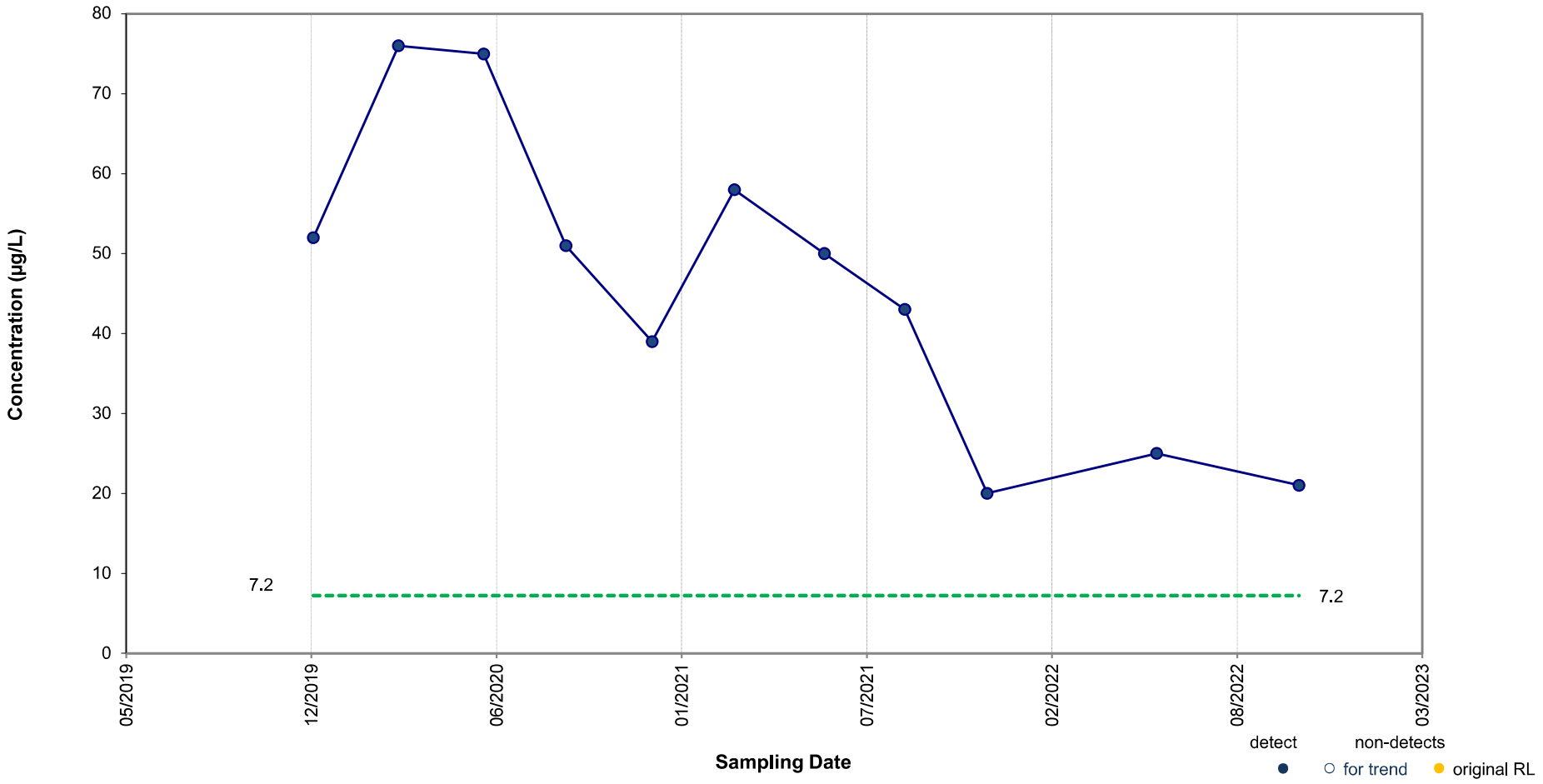
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-19-122, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

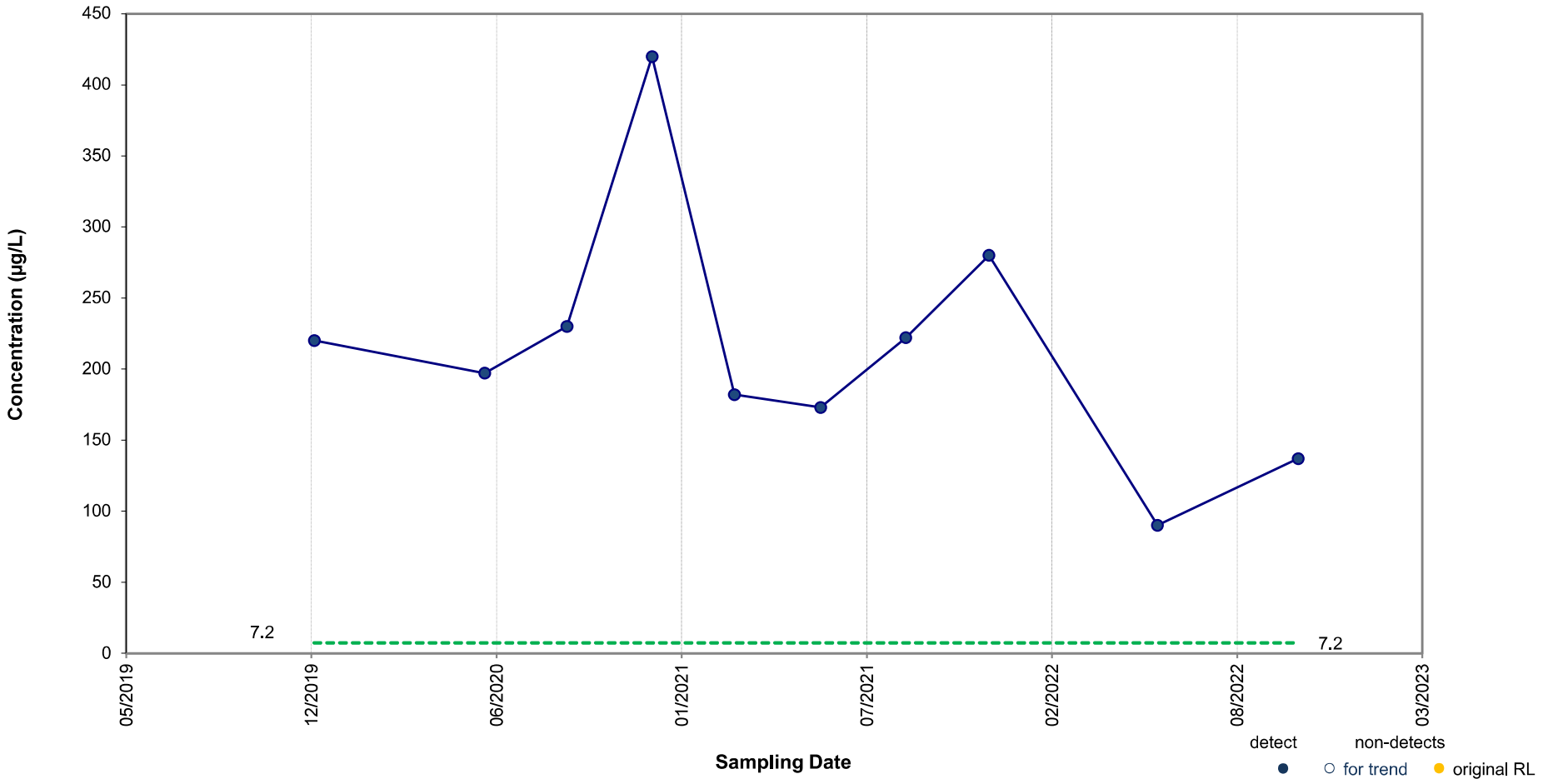
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-19-123, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

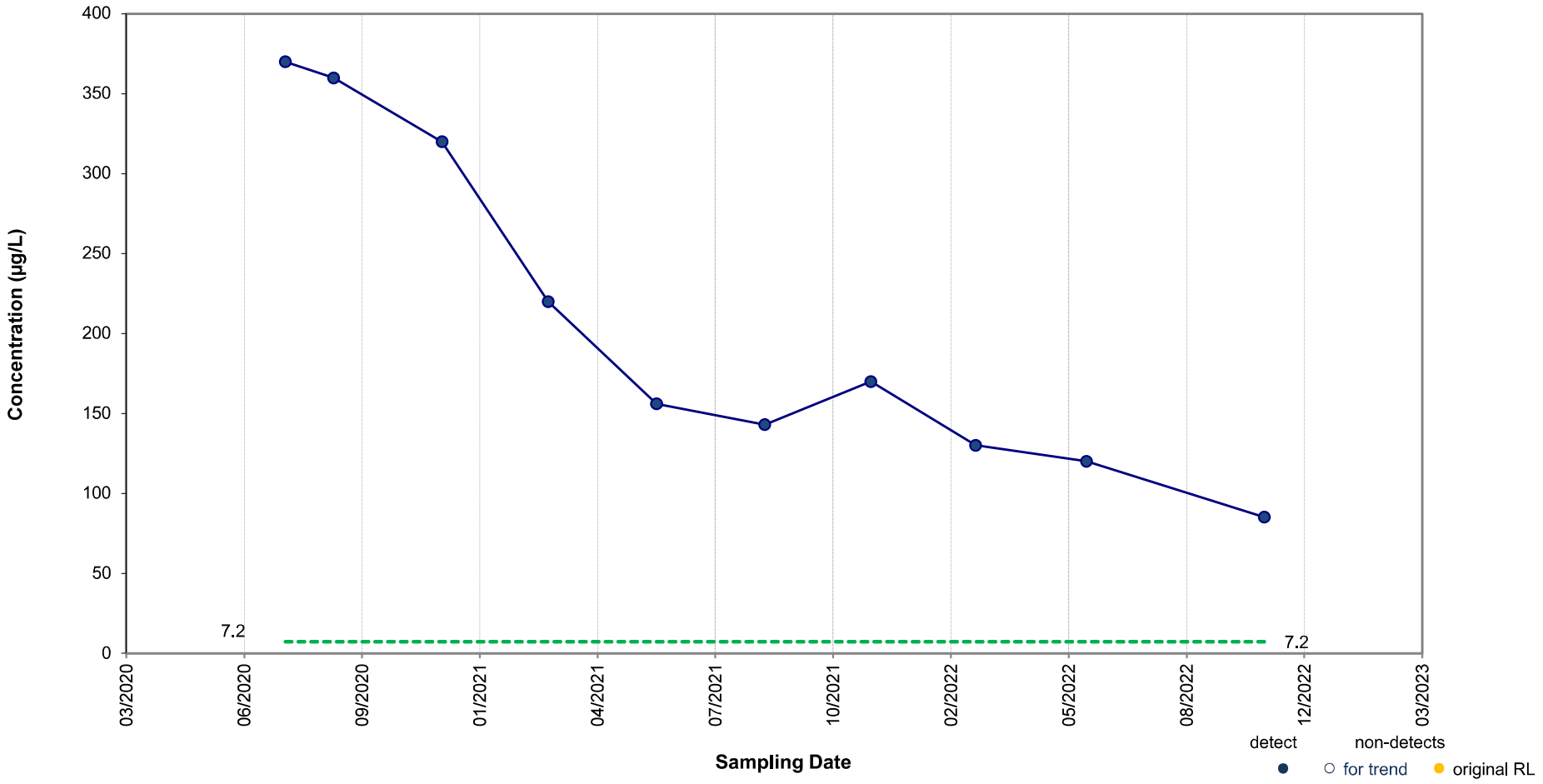
p value = 0.15 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-19-124, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

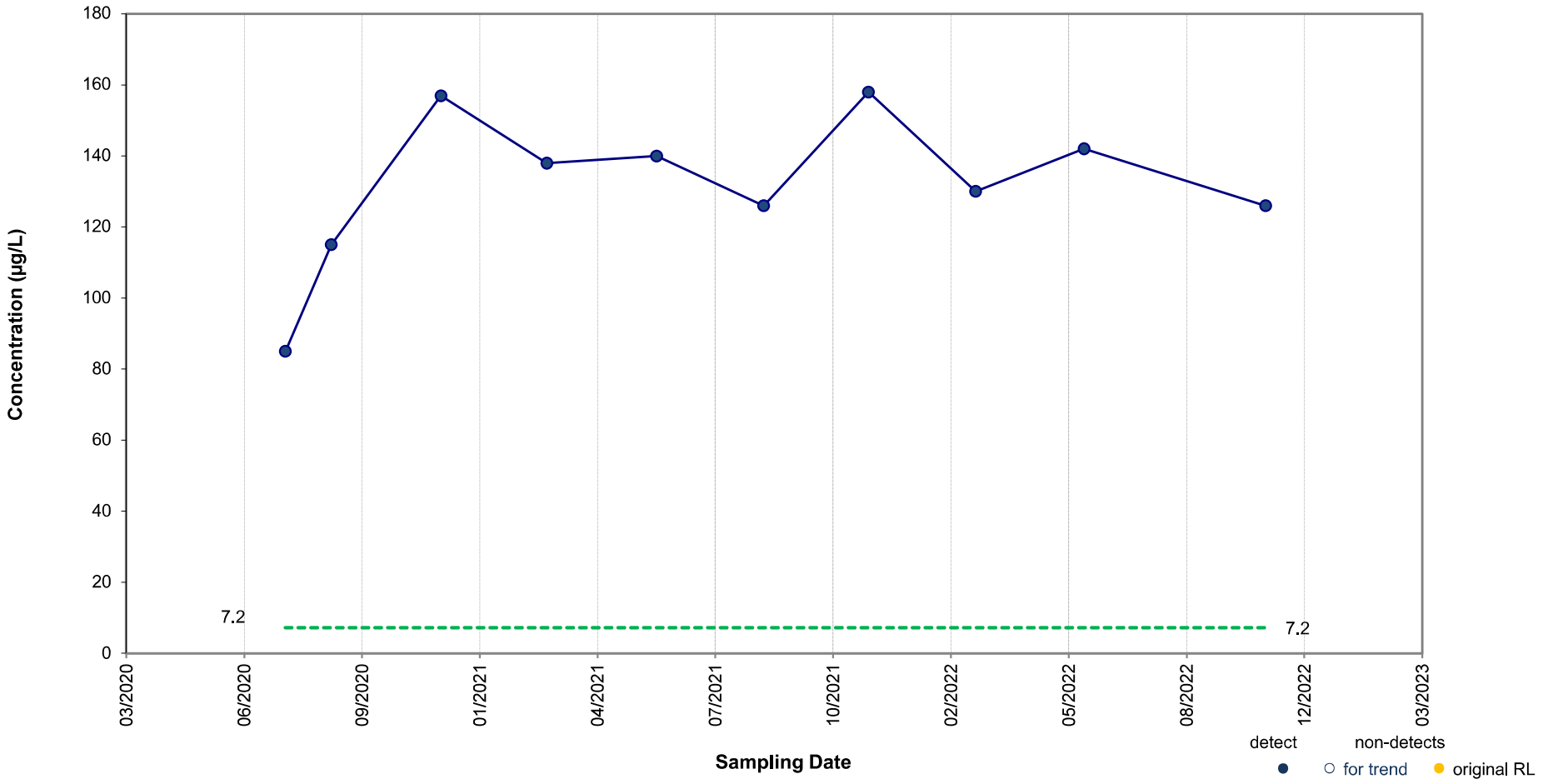
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-20-126, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

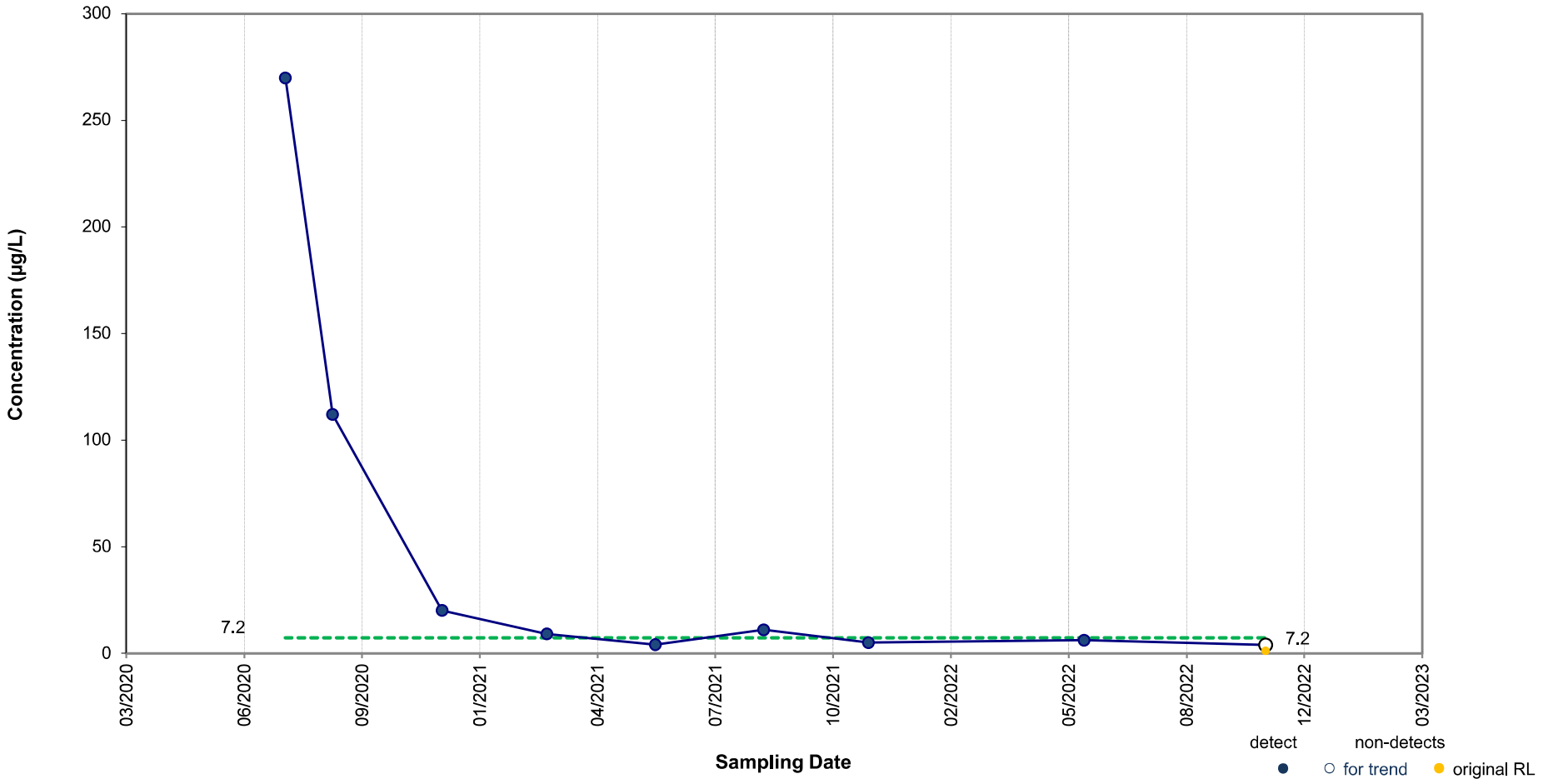
p value = 0.22 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-20-127, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

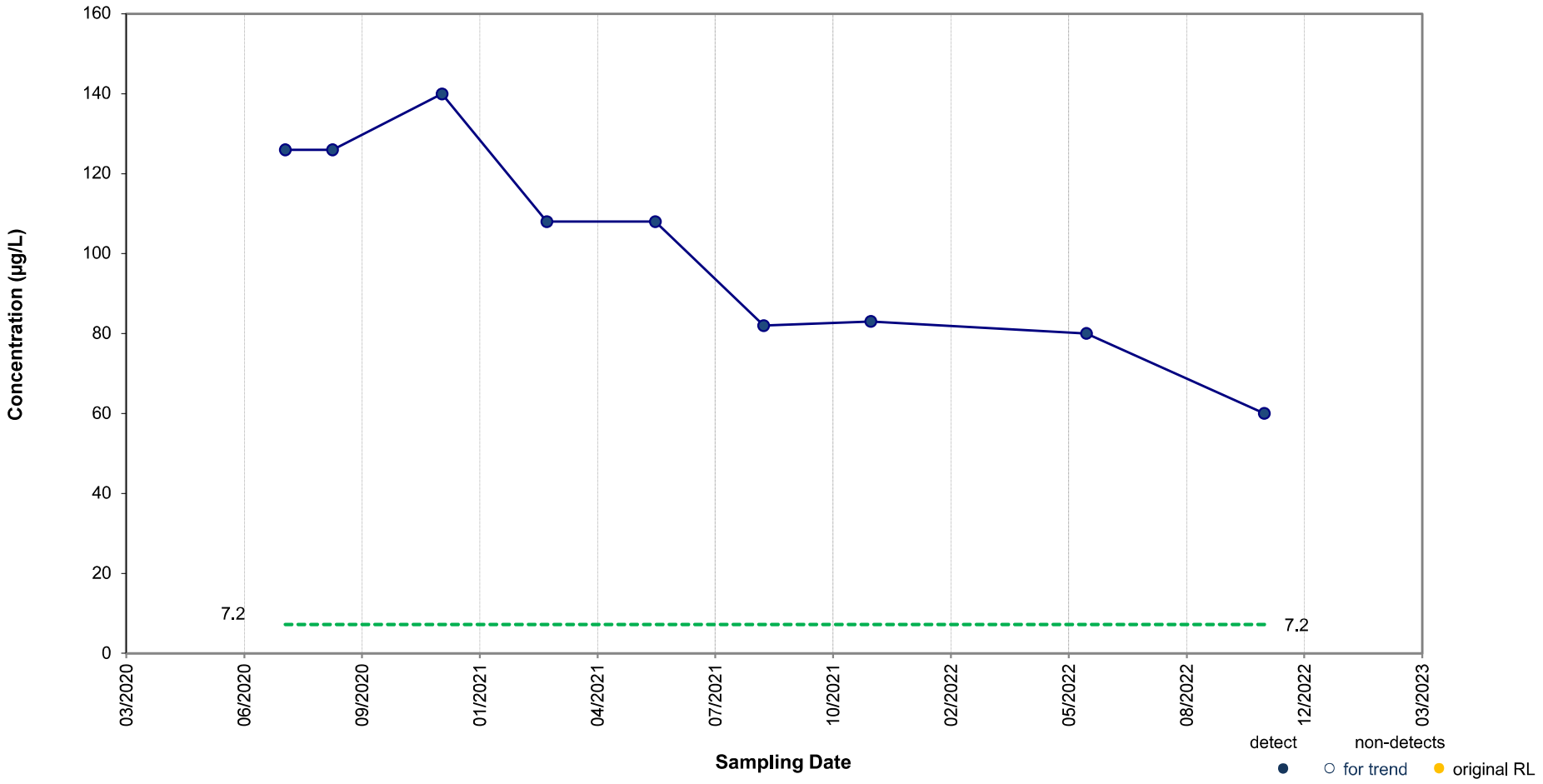
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-20-128, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

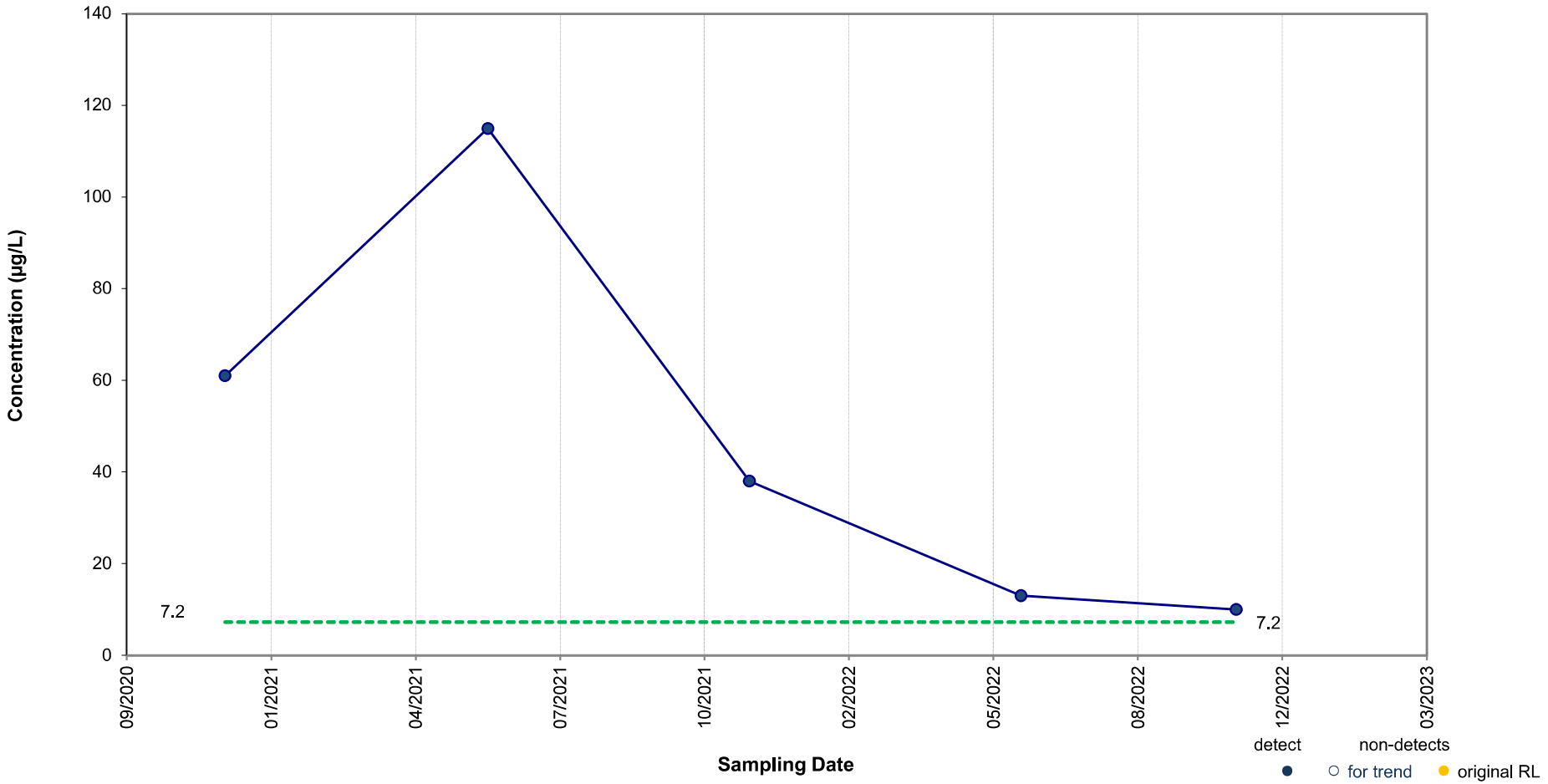
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-20-129, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

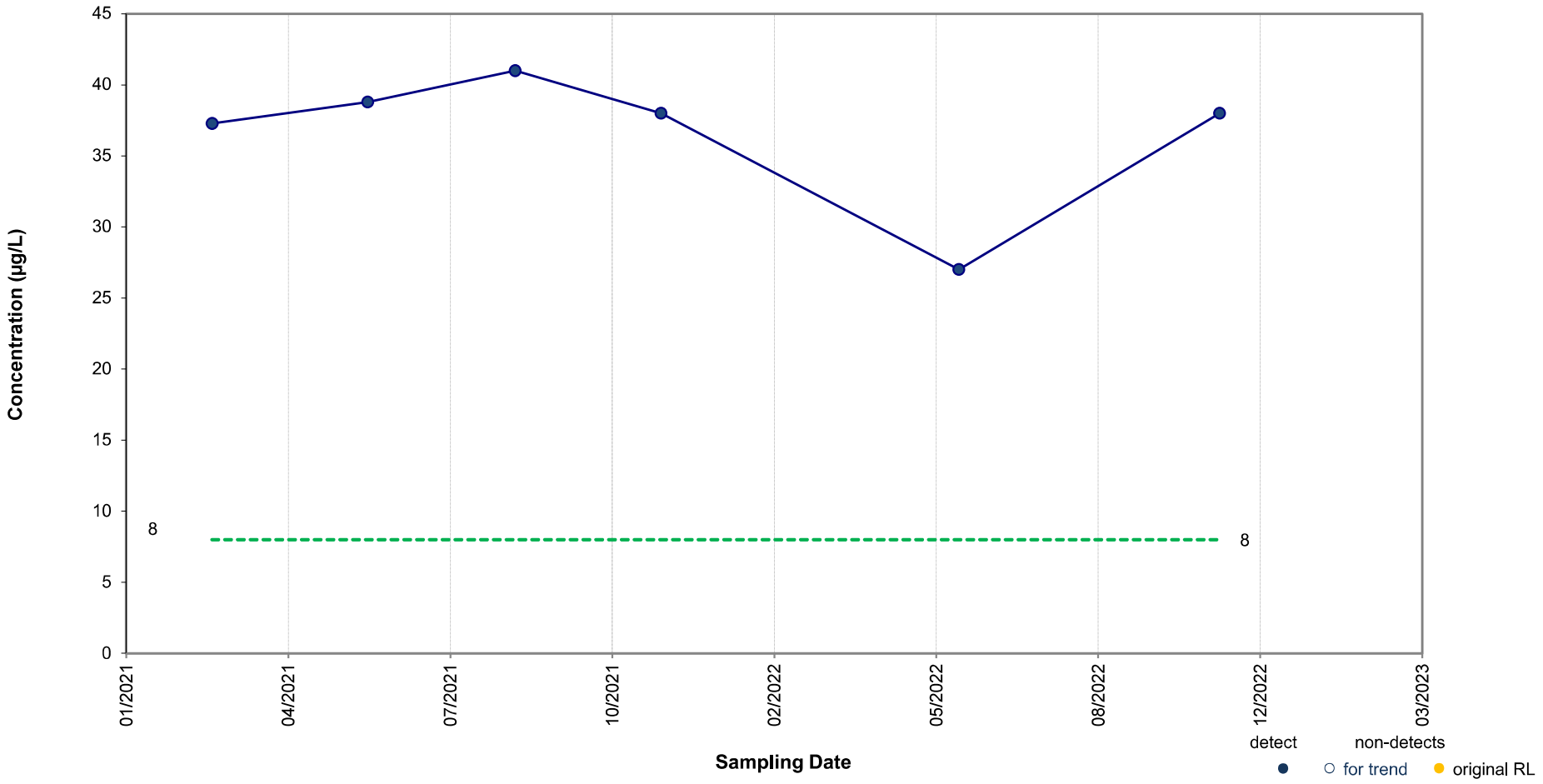
p value = 0.04 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-20-130, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

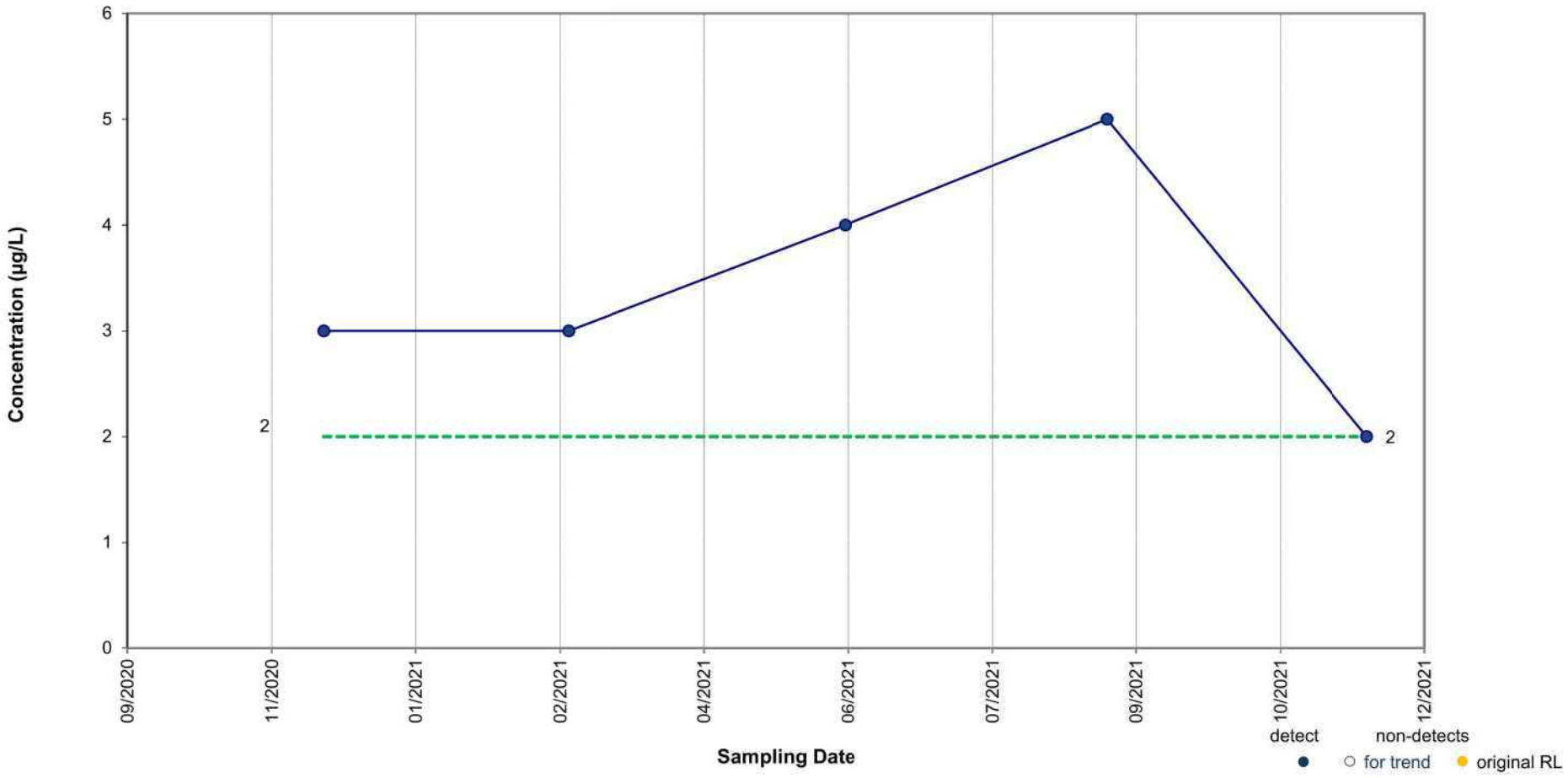
p value = 0.43 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-20-131, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

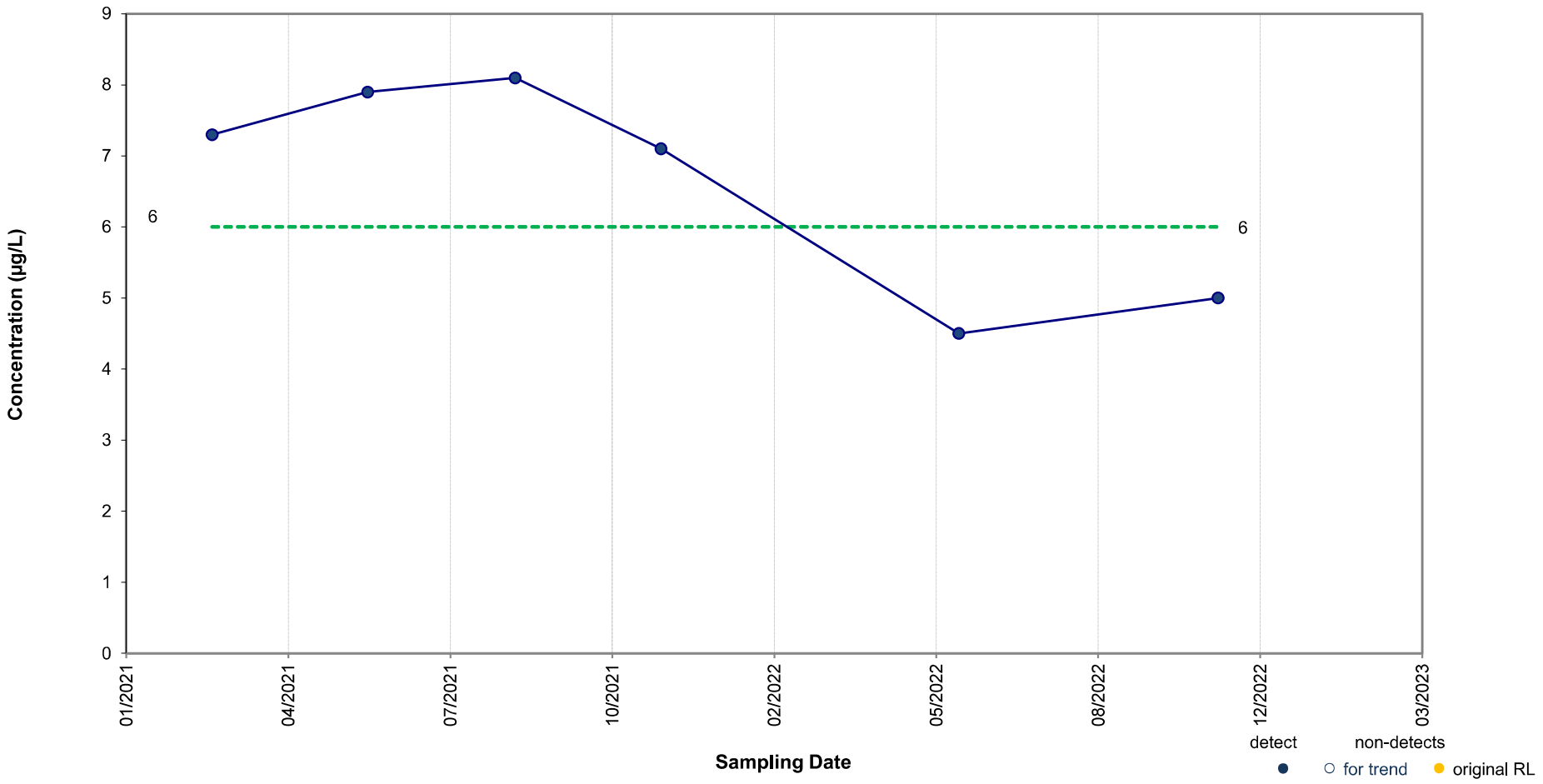
p value = 0.50 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-20-131, Vinyl chloride

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

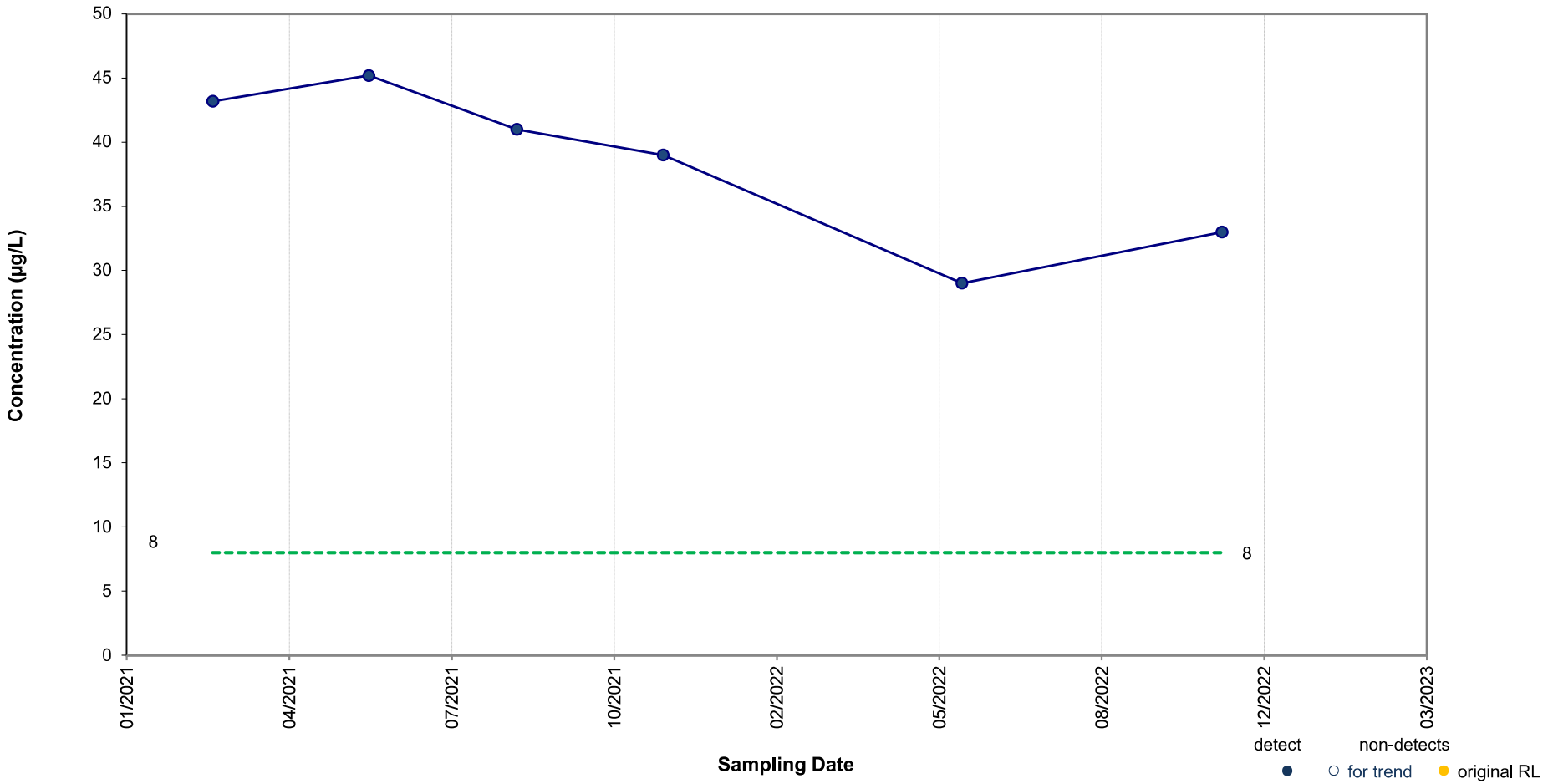
p value = 0.14 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-20-132, PFNA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

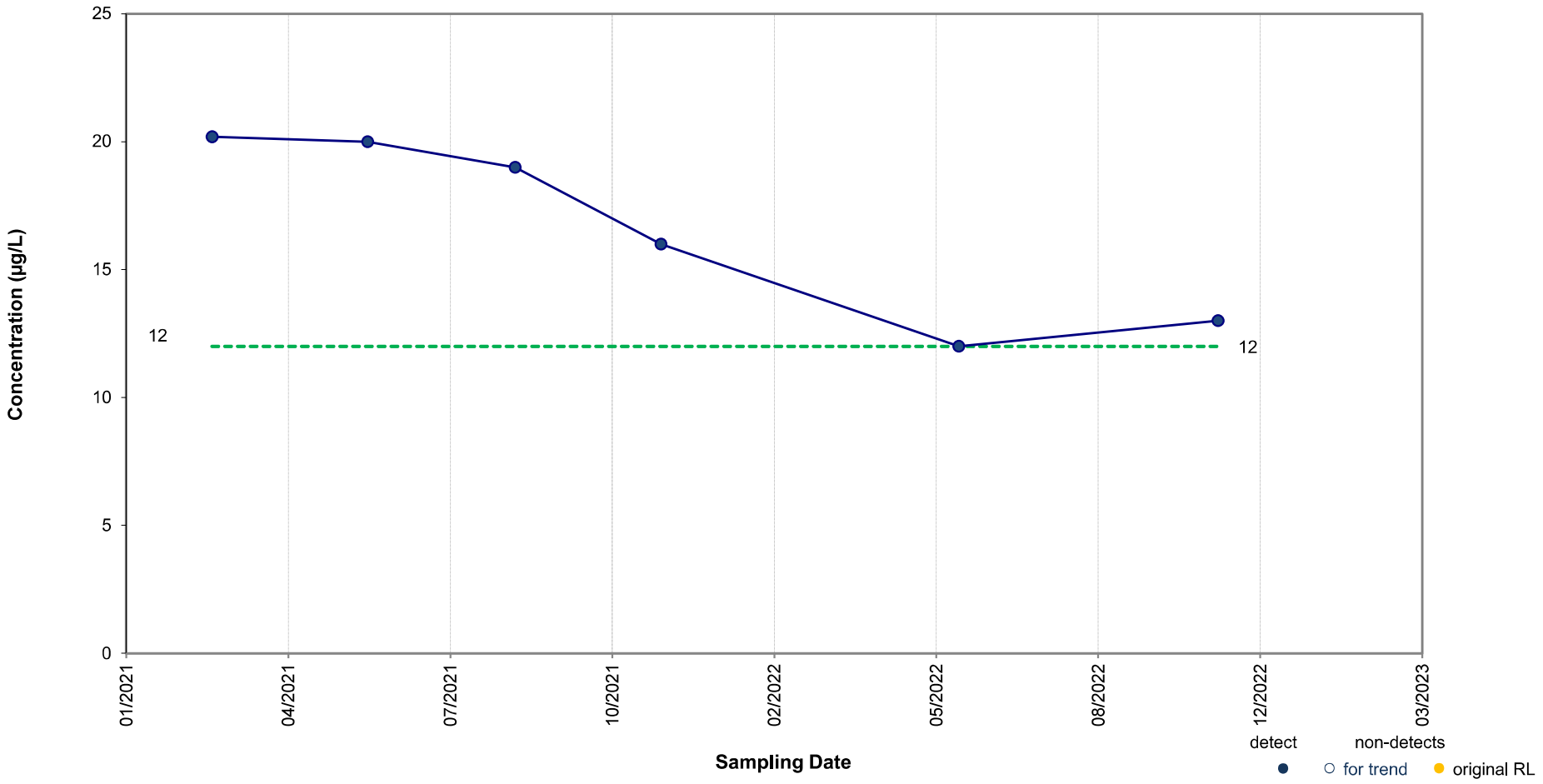
p value = 0.03 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-20-132, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

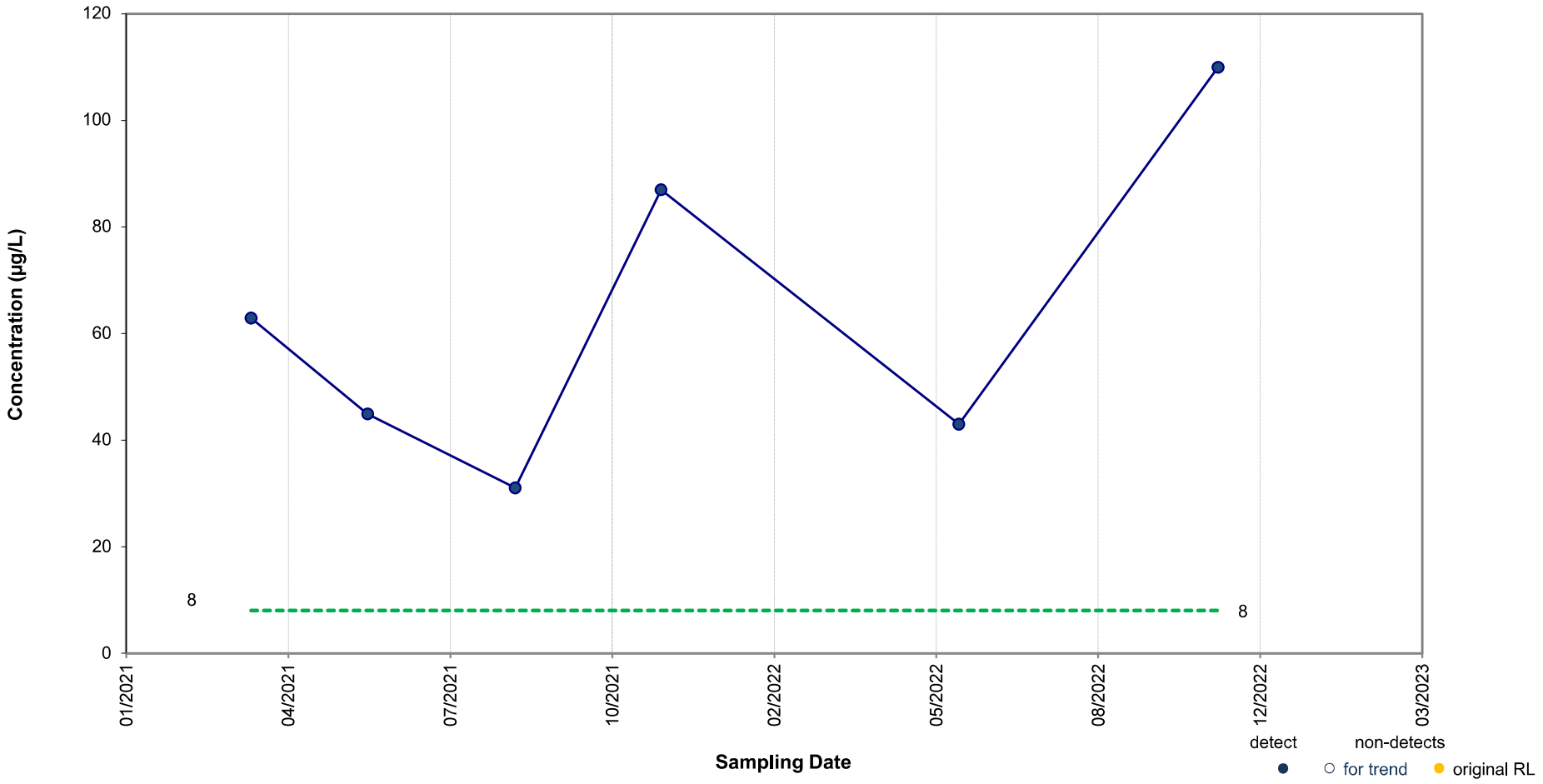
p value = 0.01 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-20-132, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

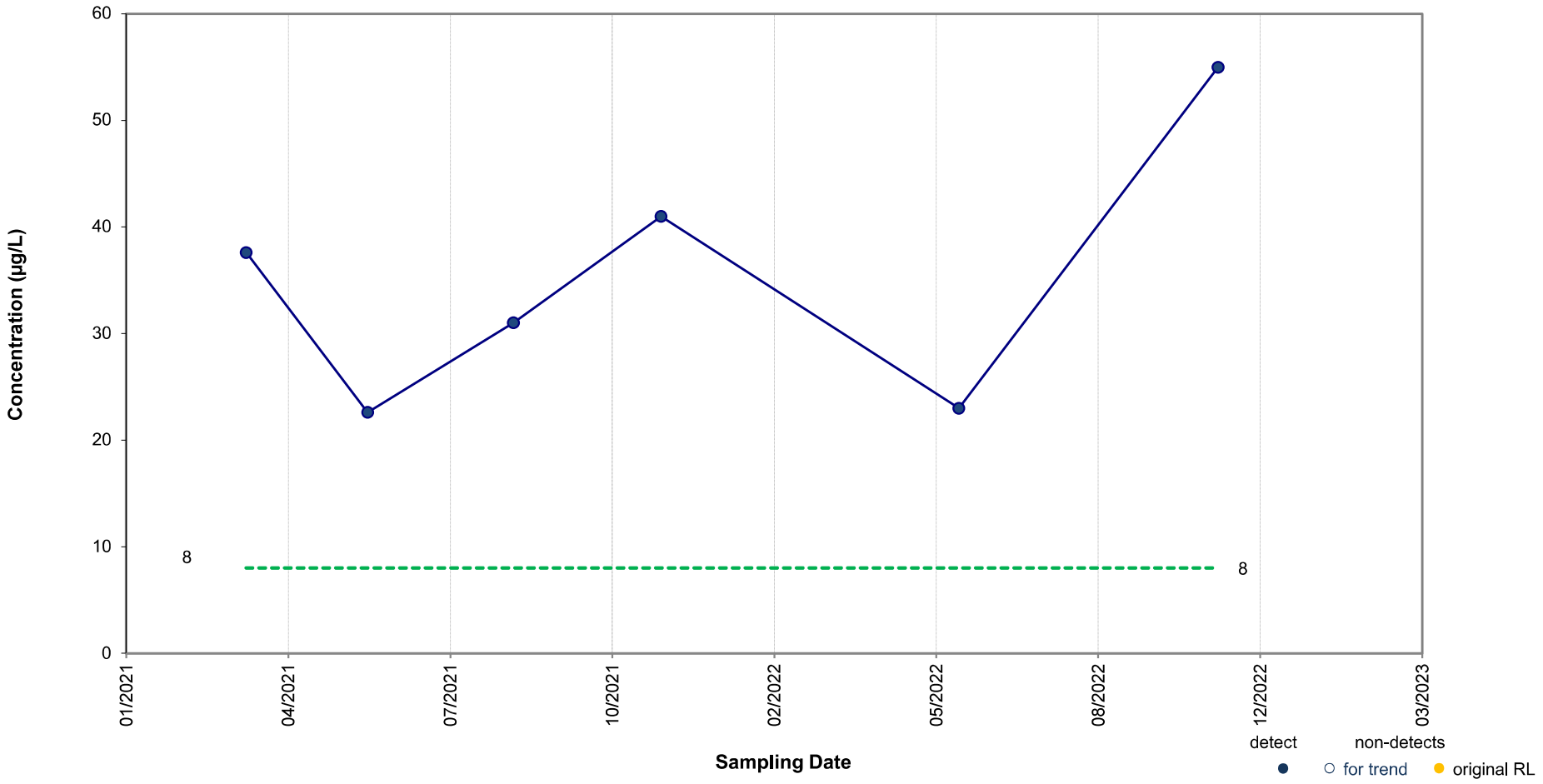
p value = 0.36 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-21-133, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

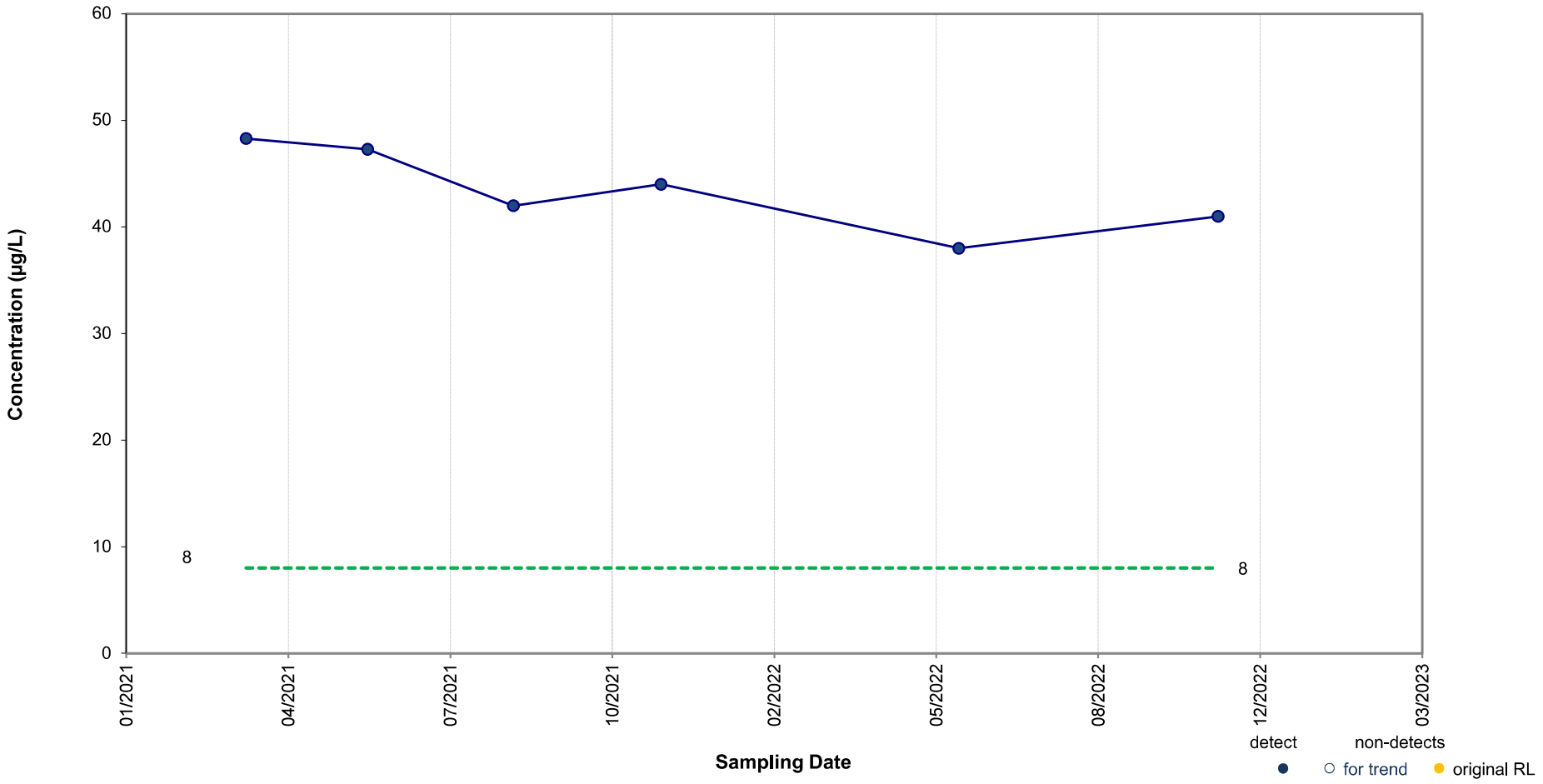
p value = 0.24 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-21-134, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

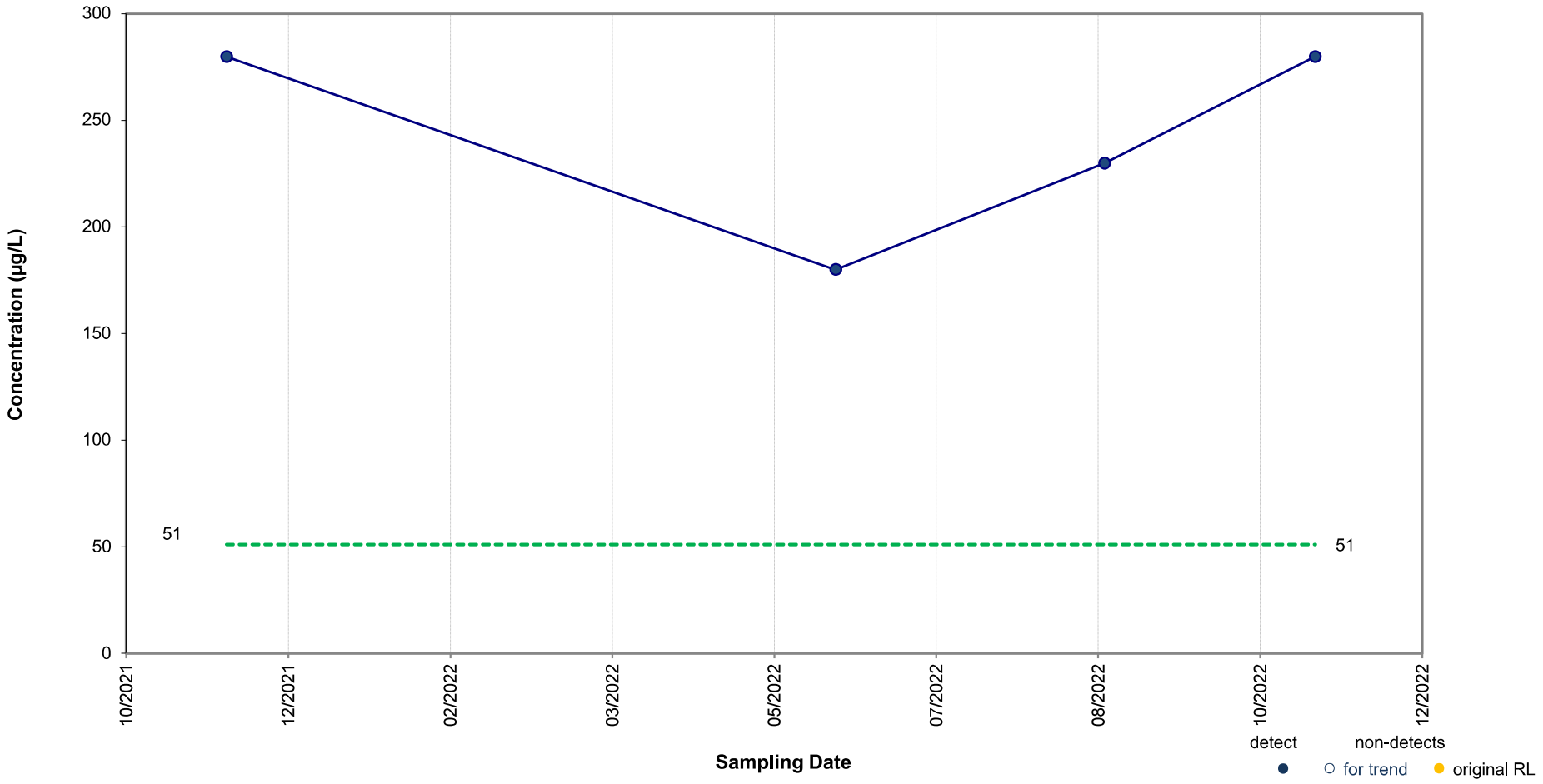
p value = 0.03 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-21-135, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

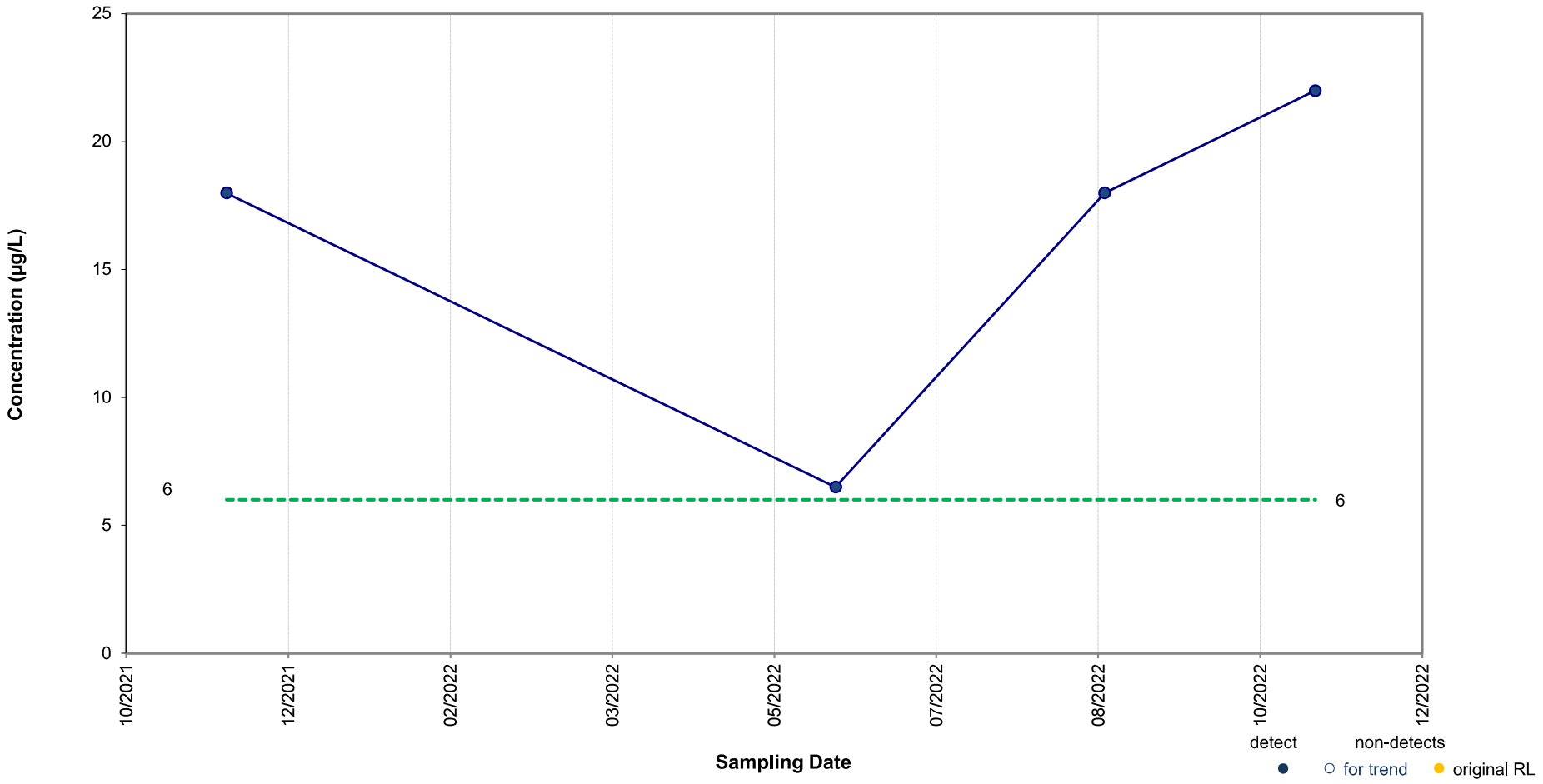
p value = 0.50 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-21-139, PFHxS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

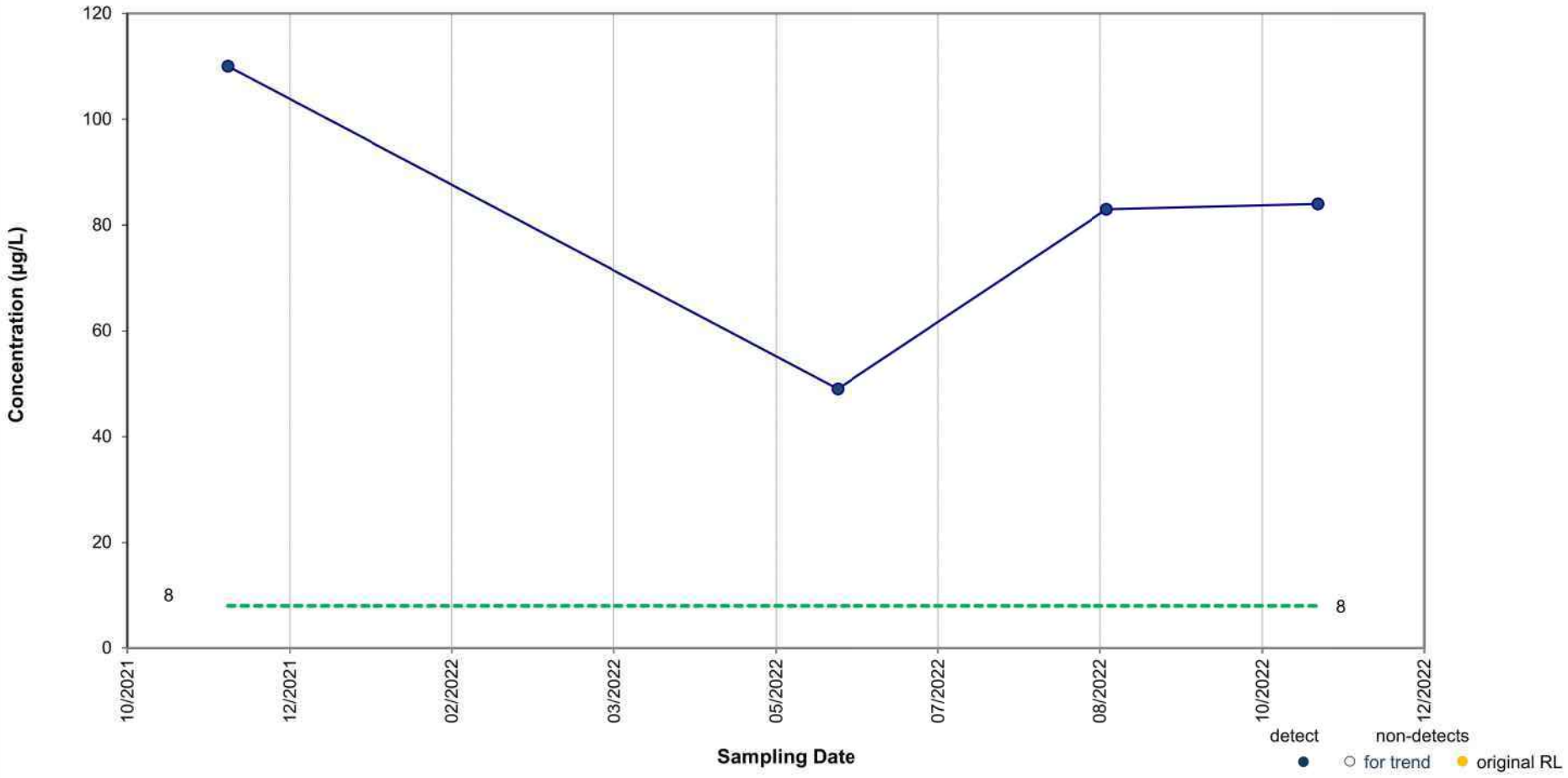
p value = 0.27 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-21-139, PFNA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

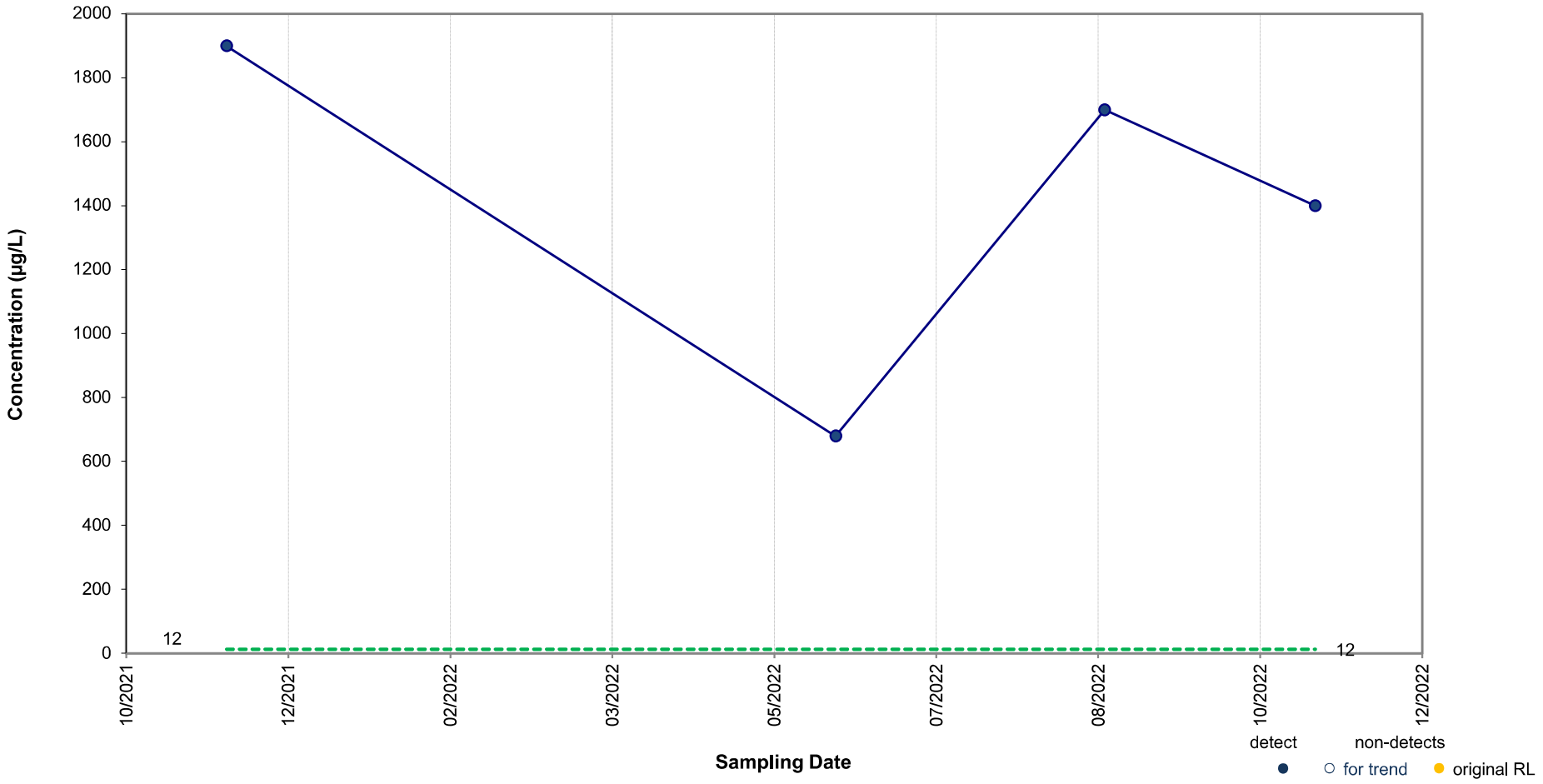
p value = 0.63 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-21-139, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

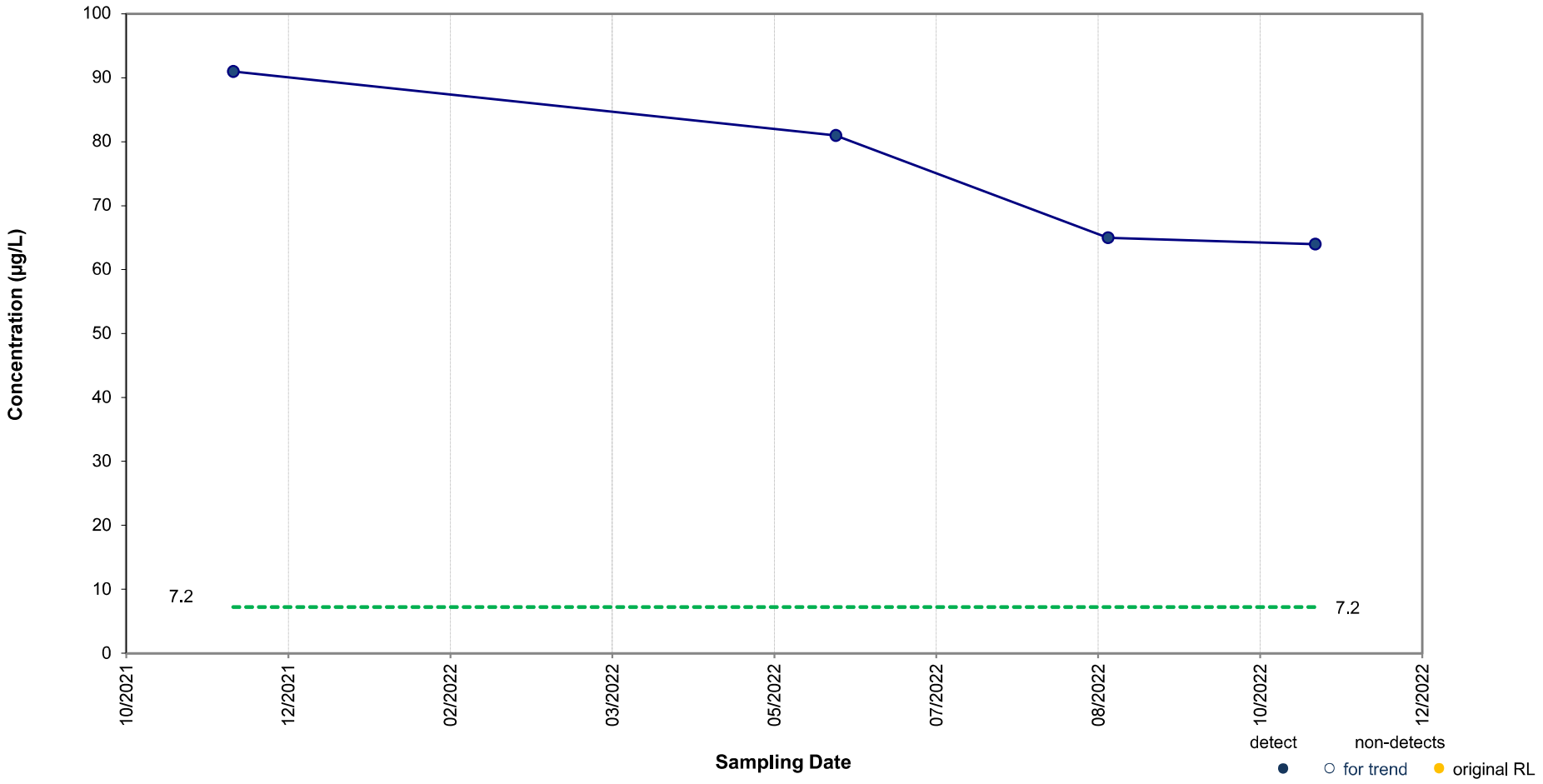
p value = 0.38 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-21-139, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

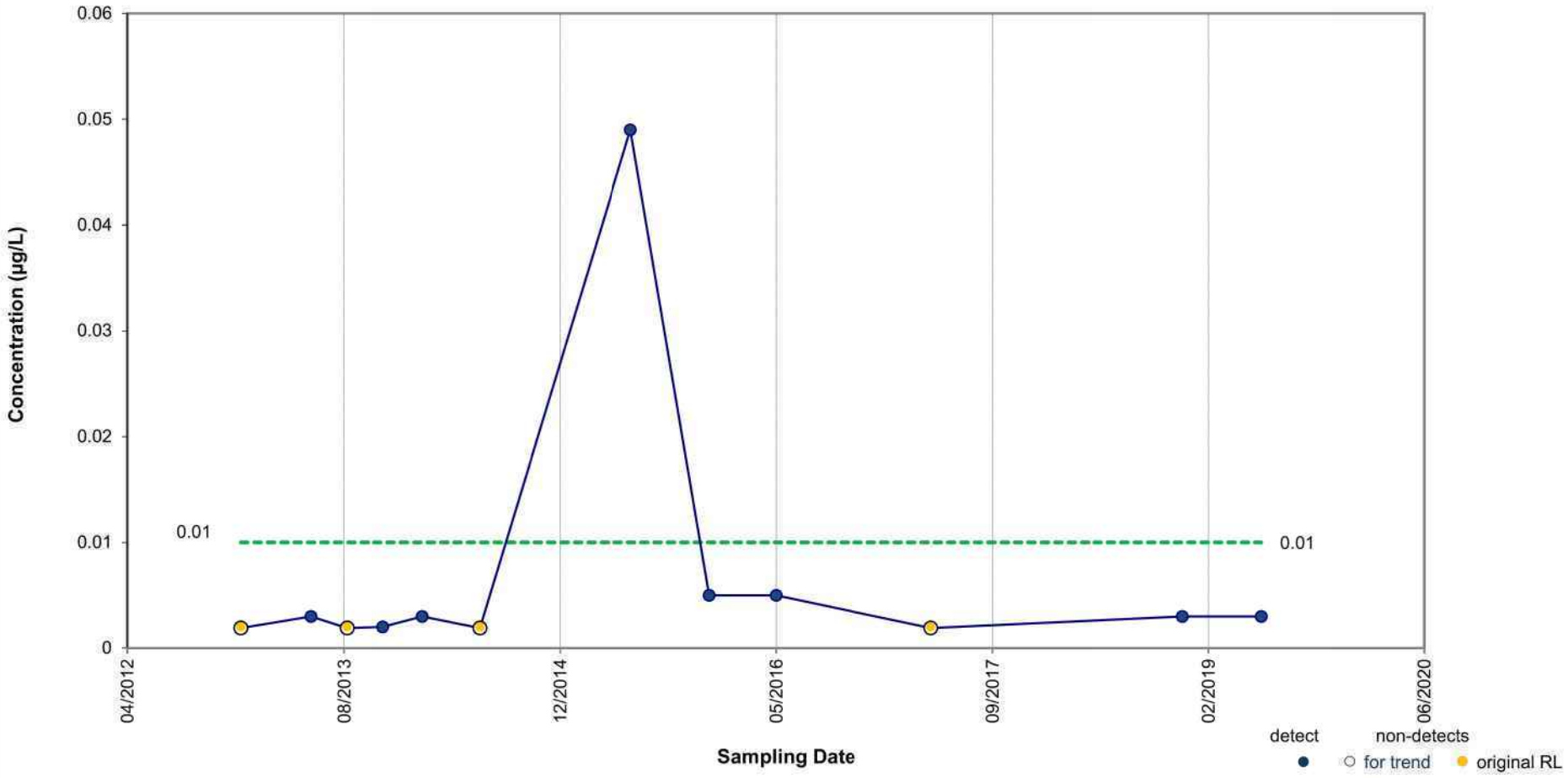
p value = 0.04 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-21-142, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

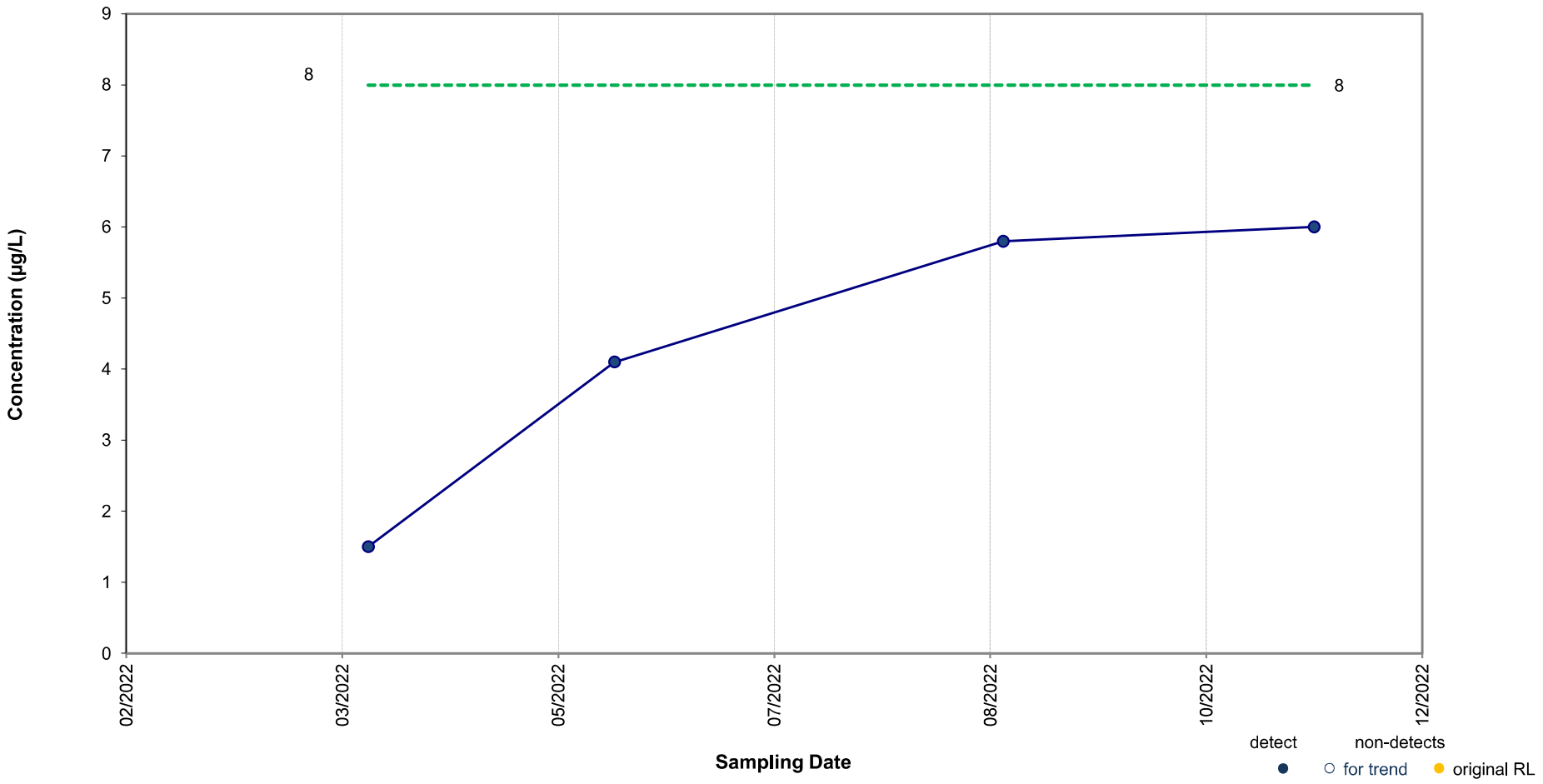
p value = 0.16 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-22, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

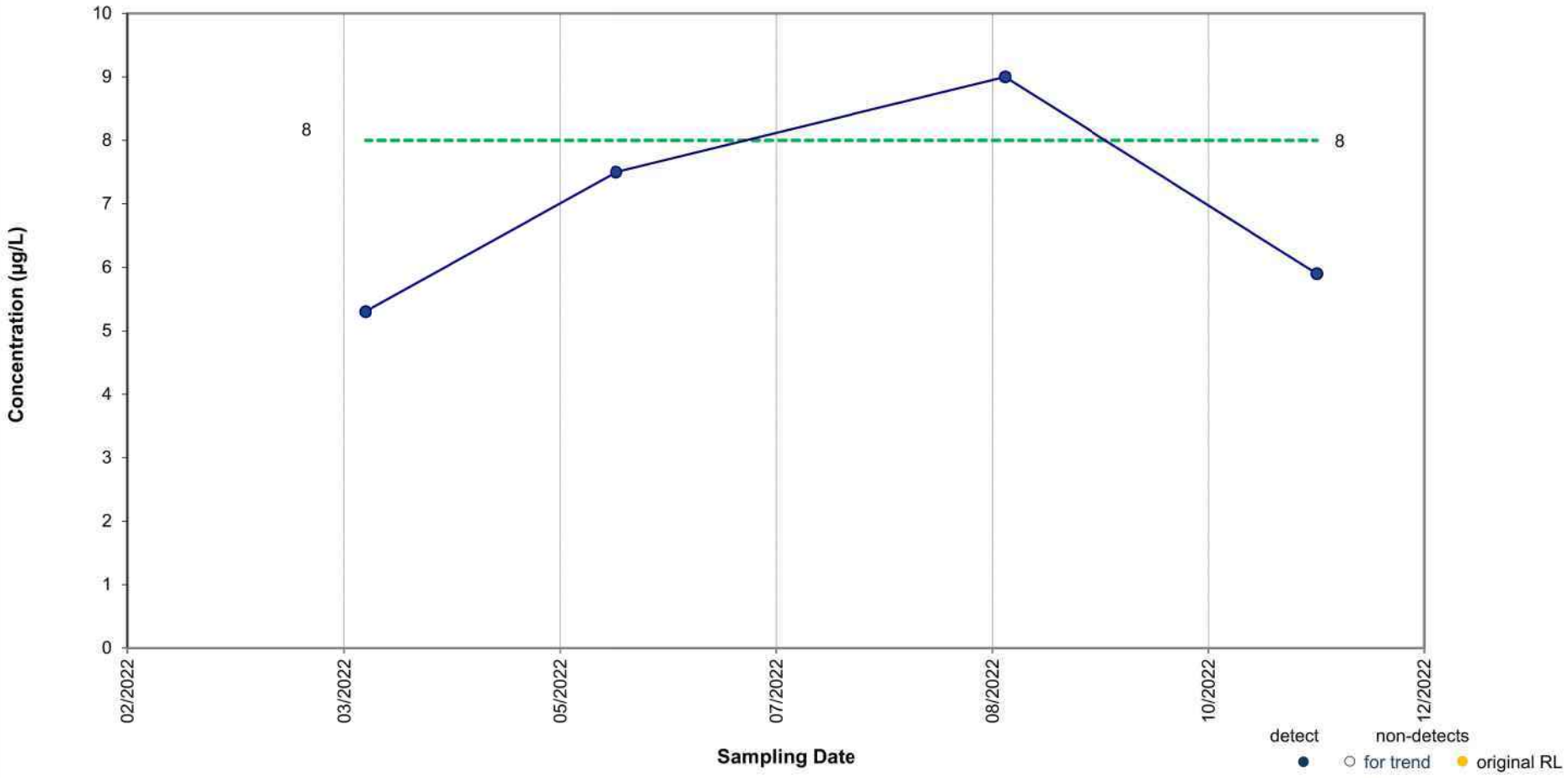
p value = 0.04 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-22-143, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

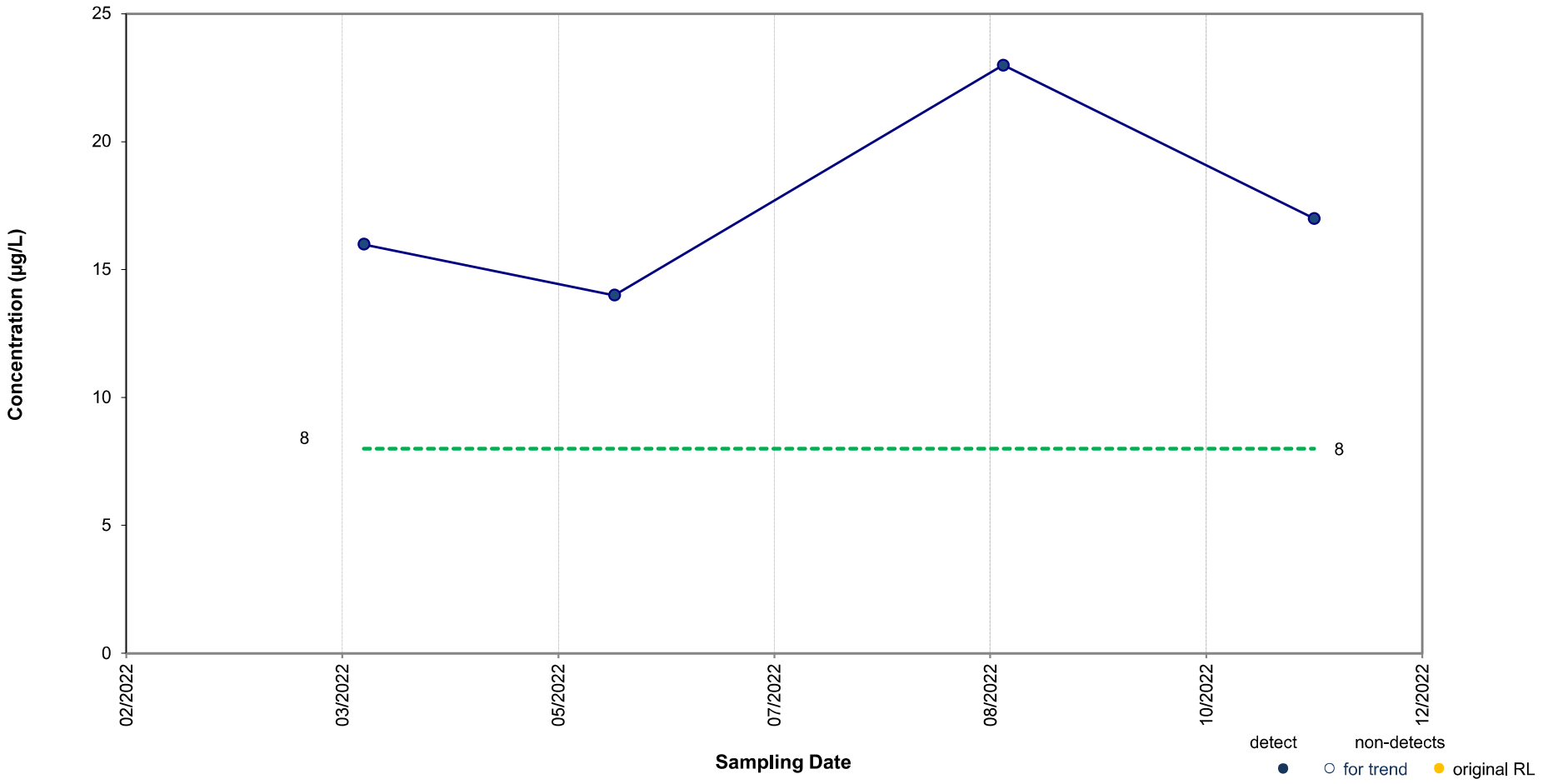
p value = 0.38 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-22-144, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

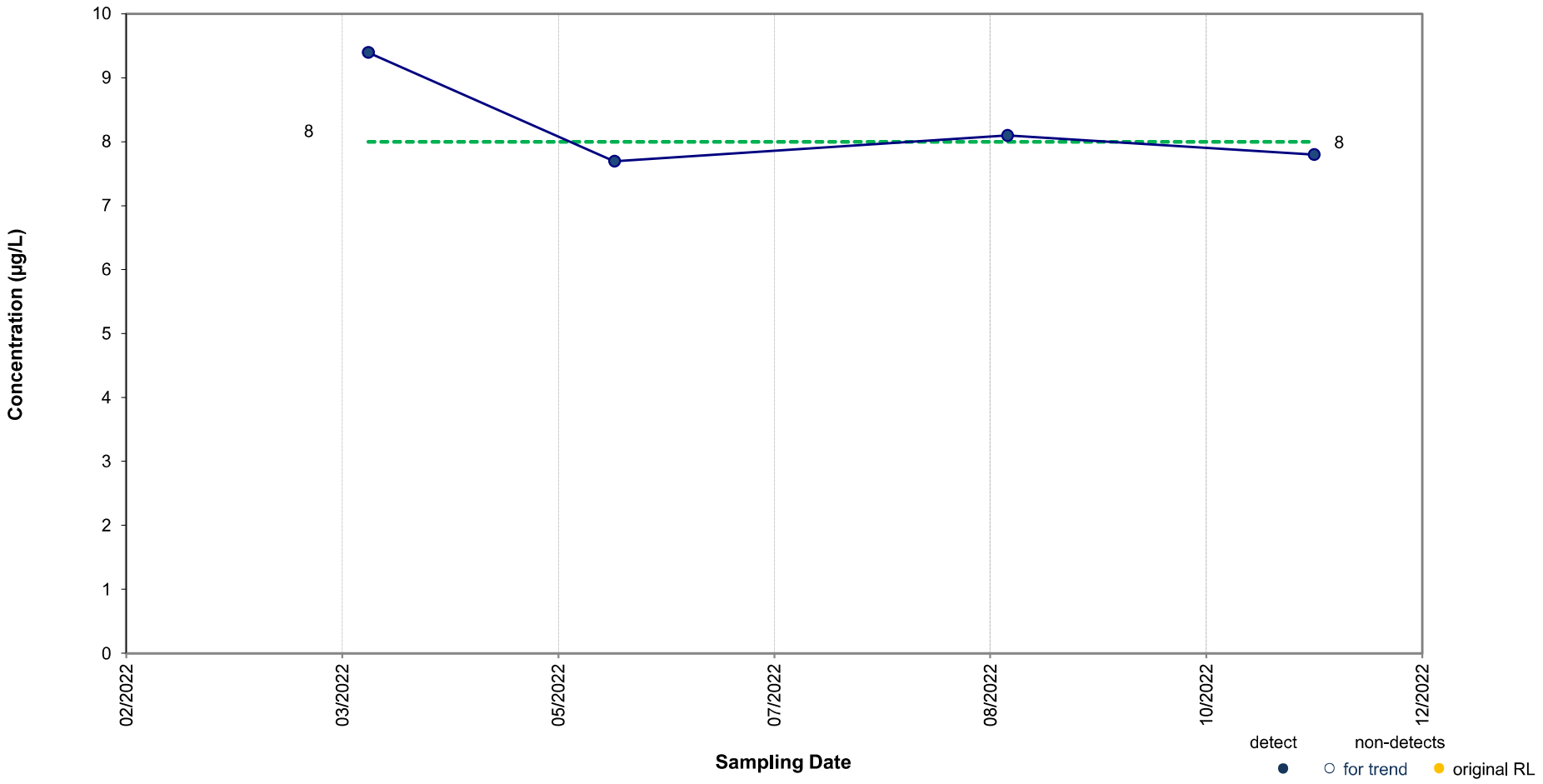
p value = 0.38 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-22-145, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

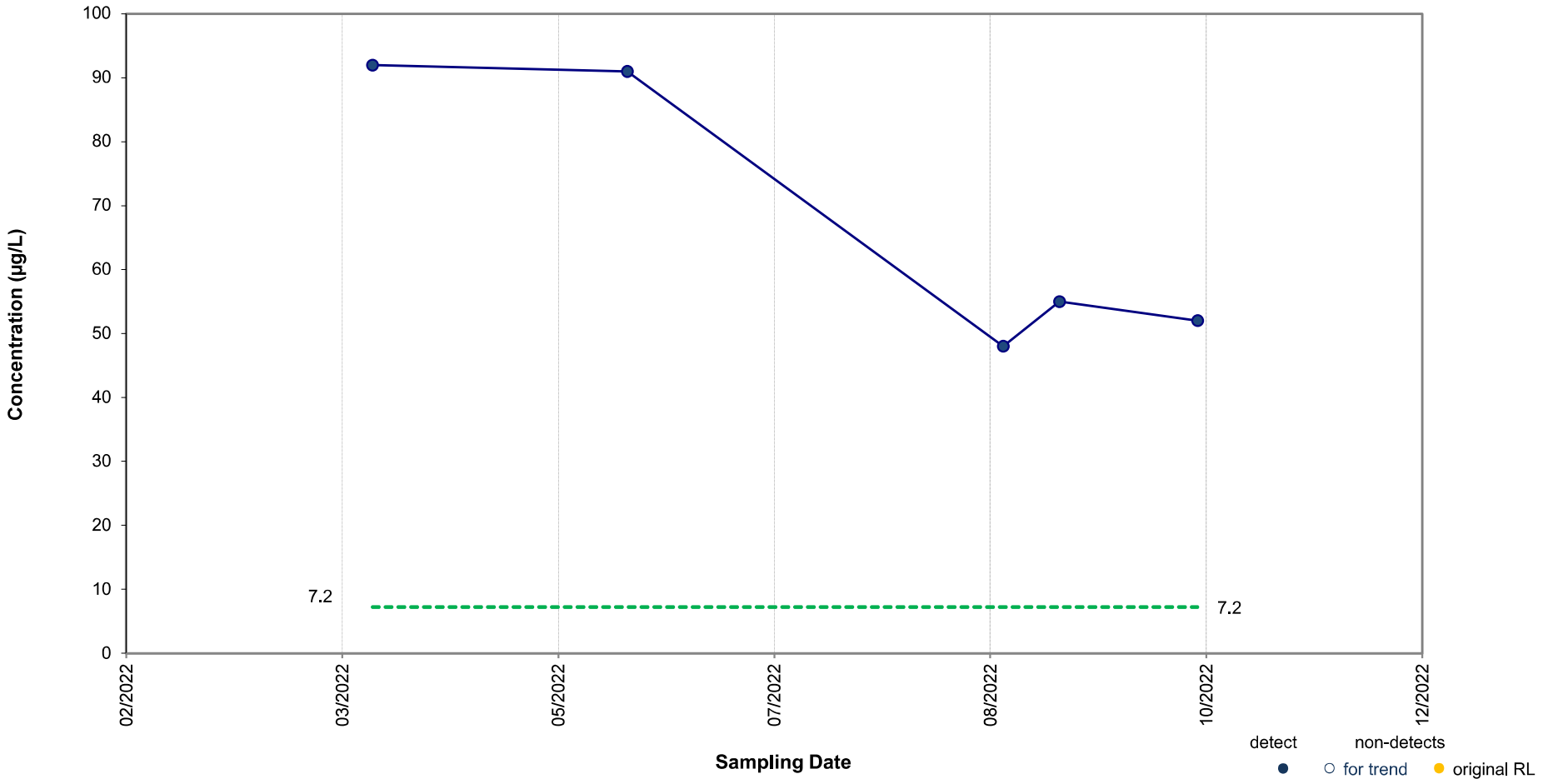
p value = 0.38 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-22-151, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

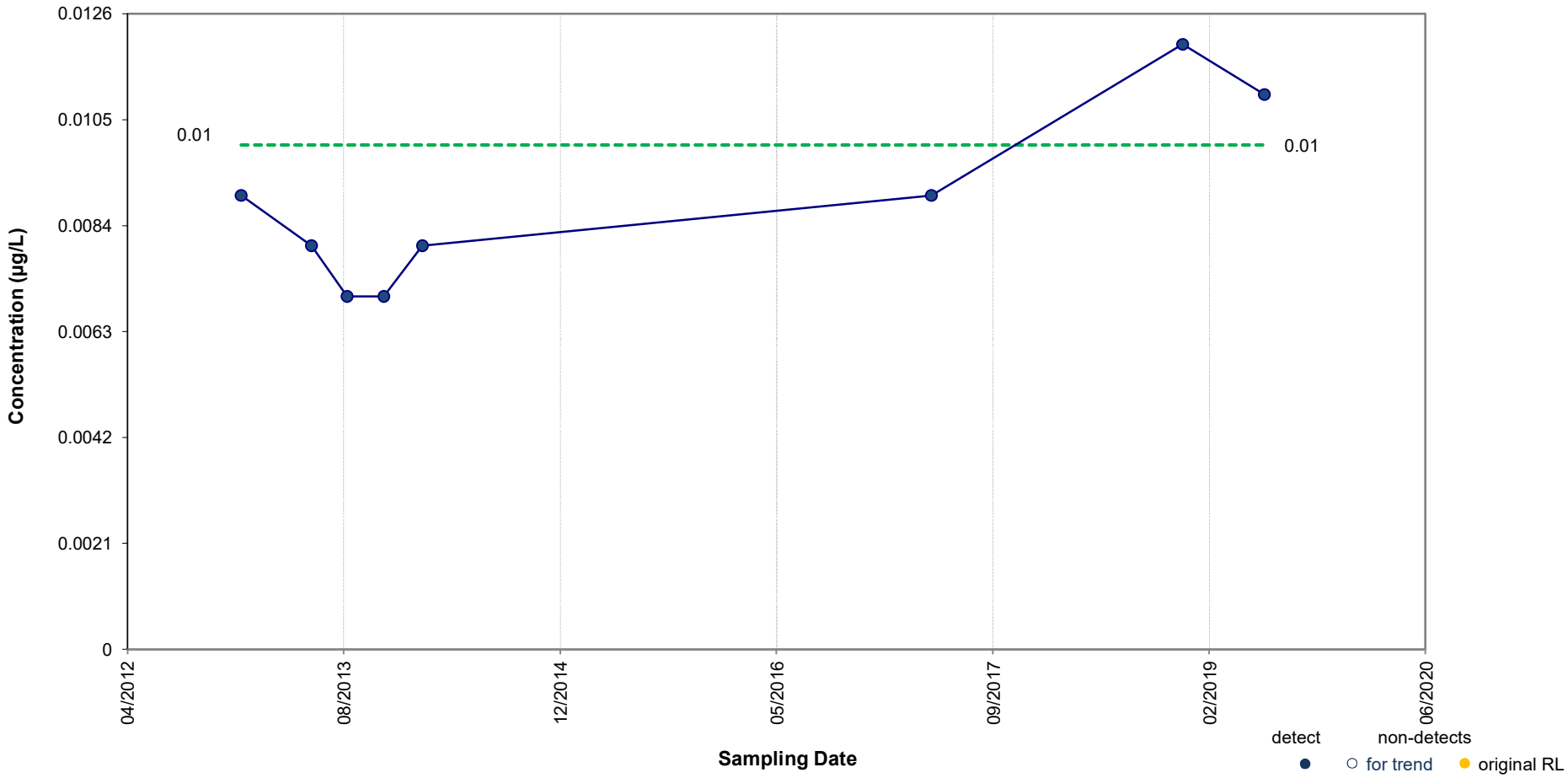
p value = 0.12 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-22-153, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

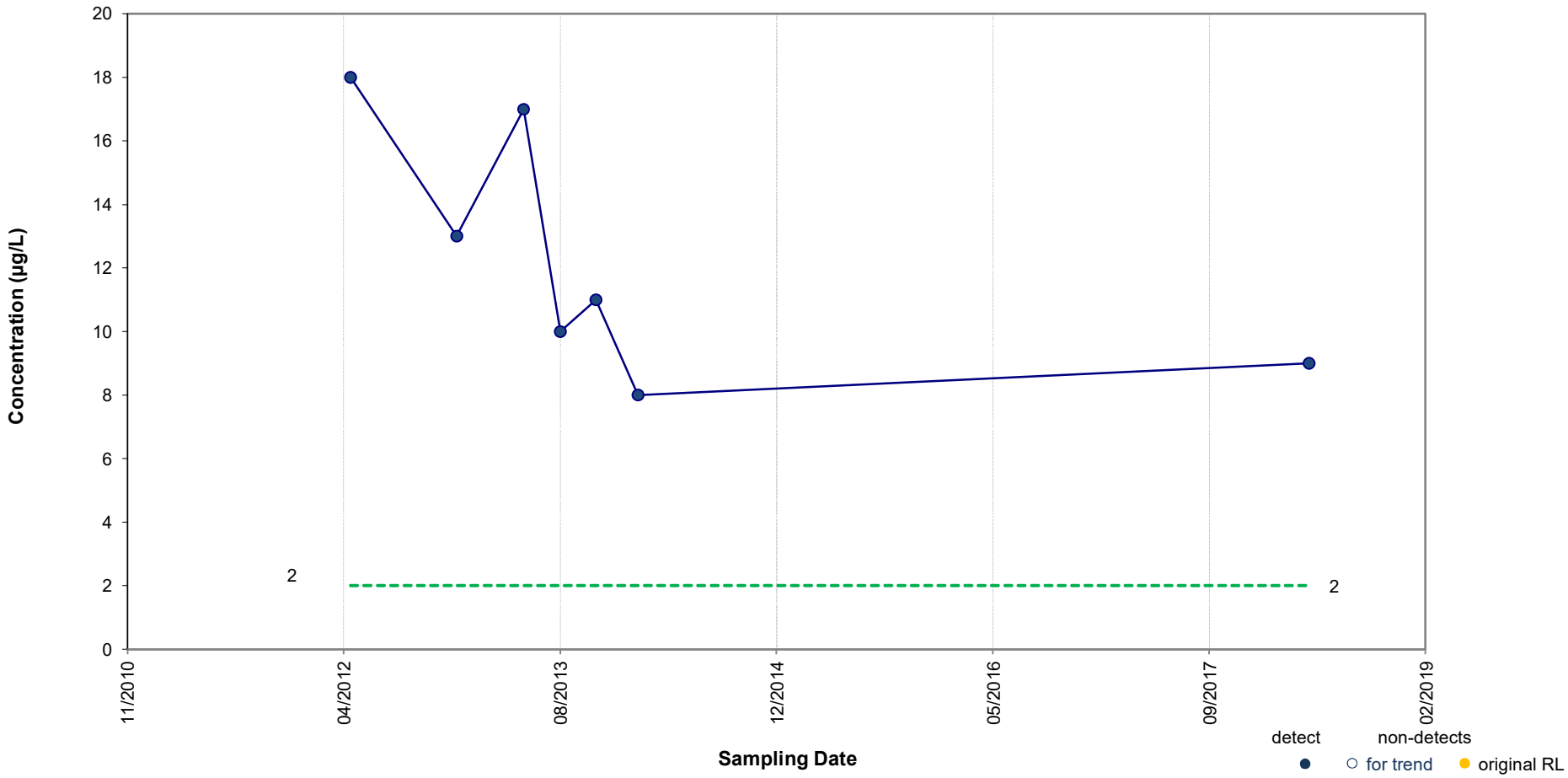
p value = 0.11 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-23, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

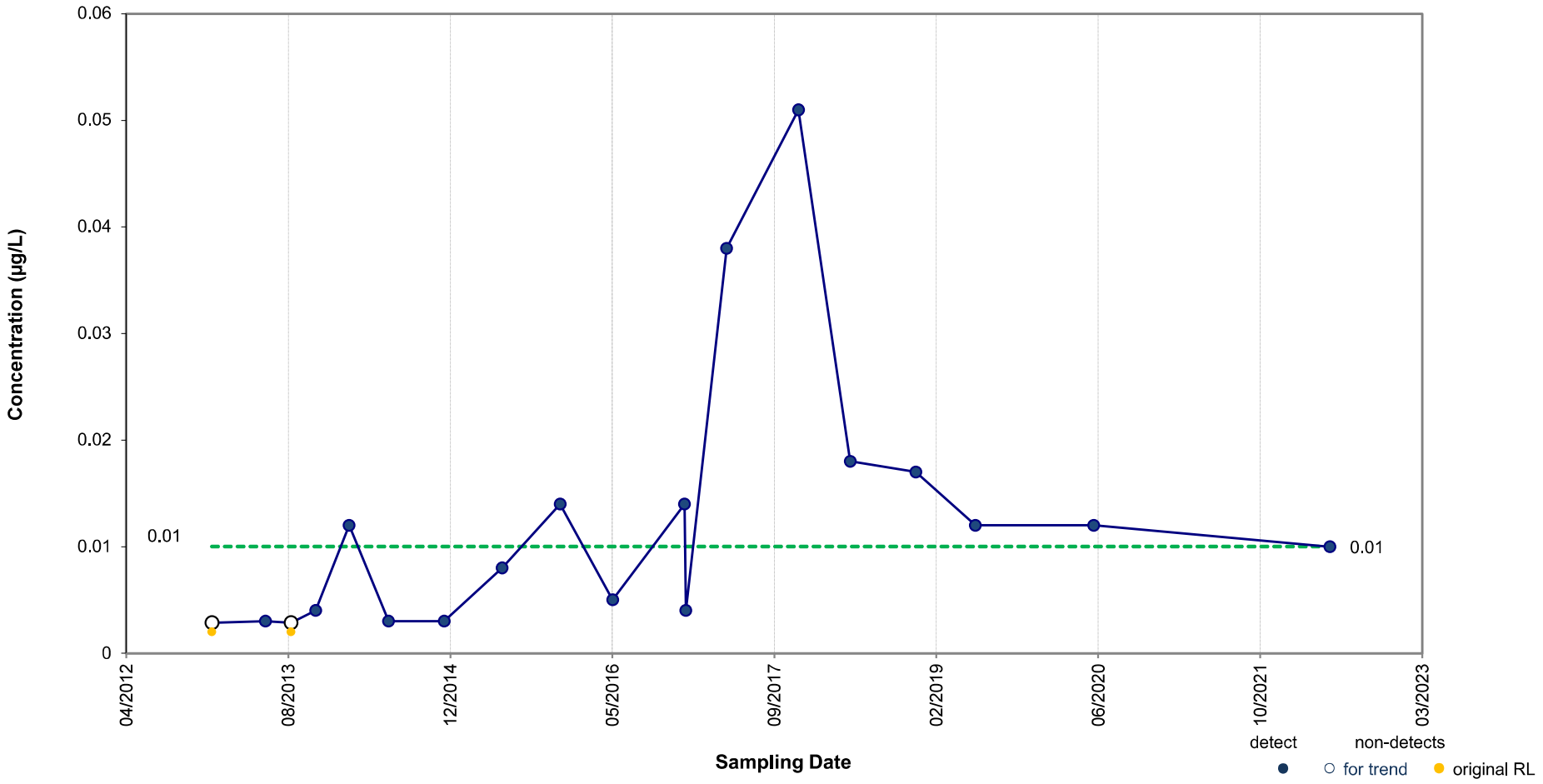
p value = 0.02 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MW-91-4, Vinyl chloride

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **INCREASING TREND**

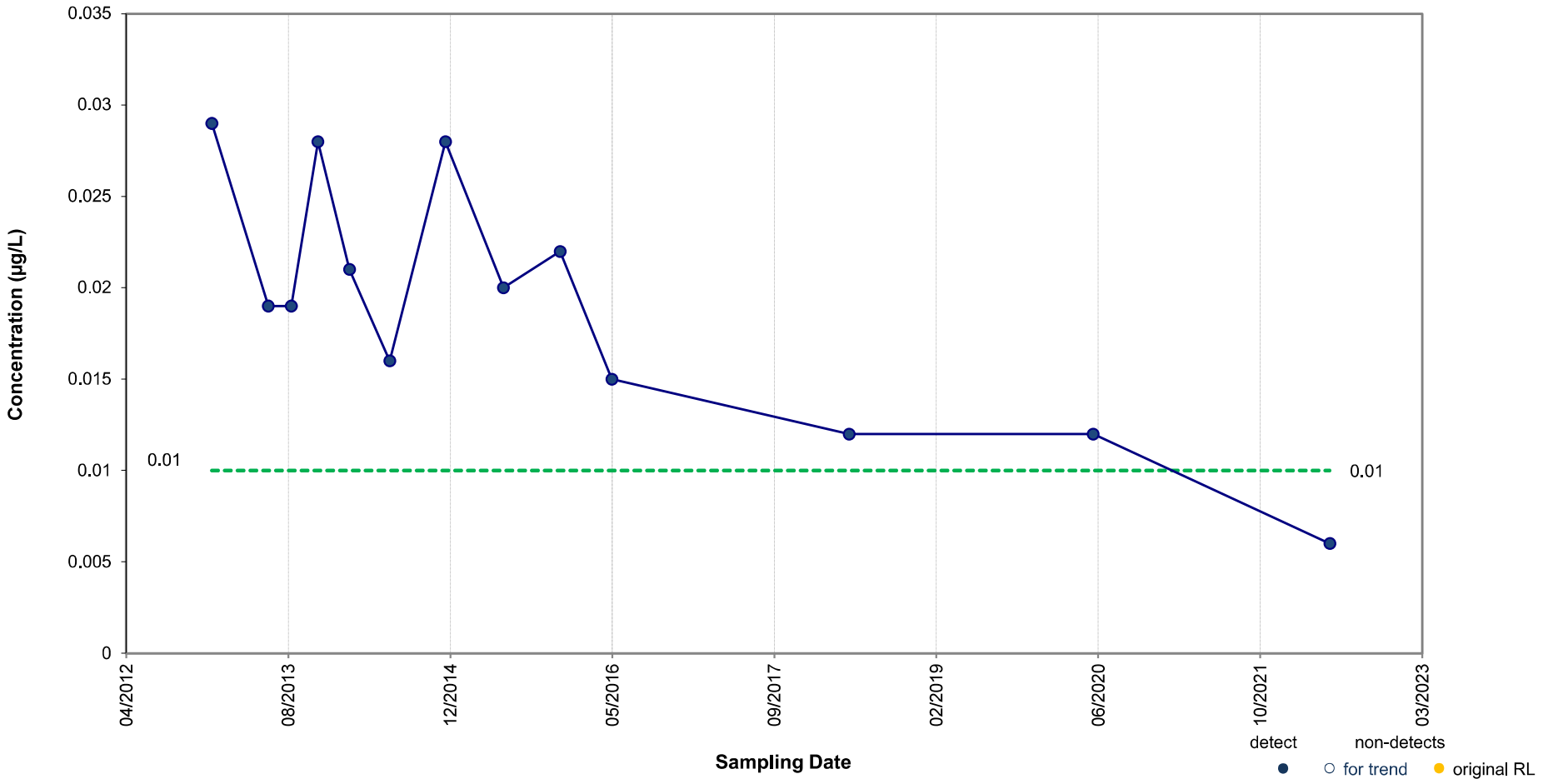
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MWBP-10-UST5-6, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

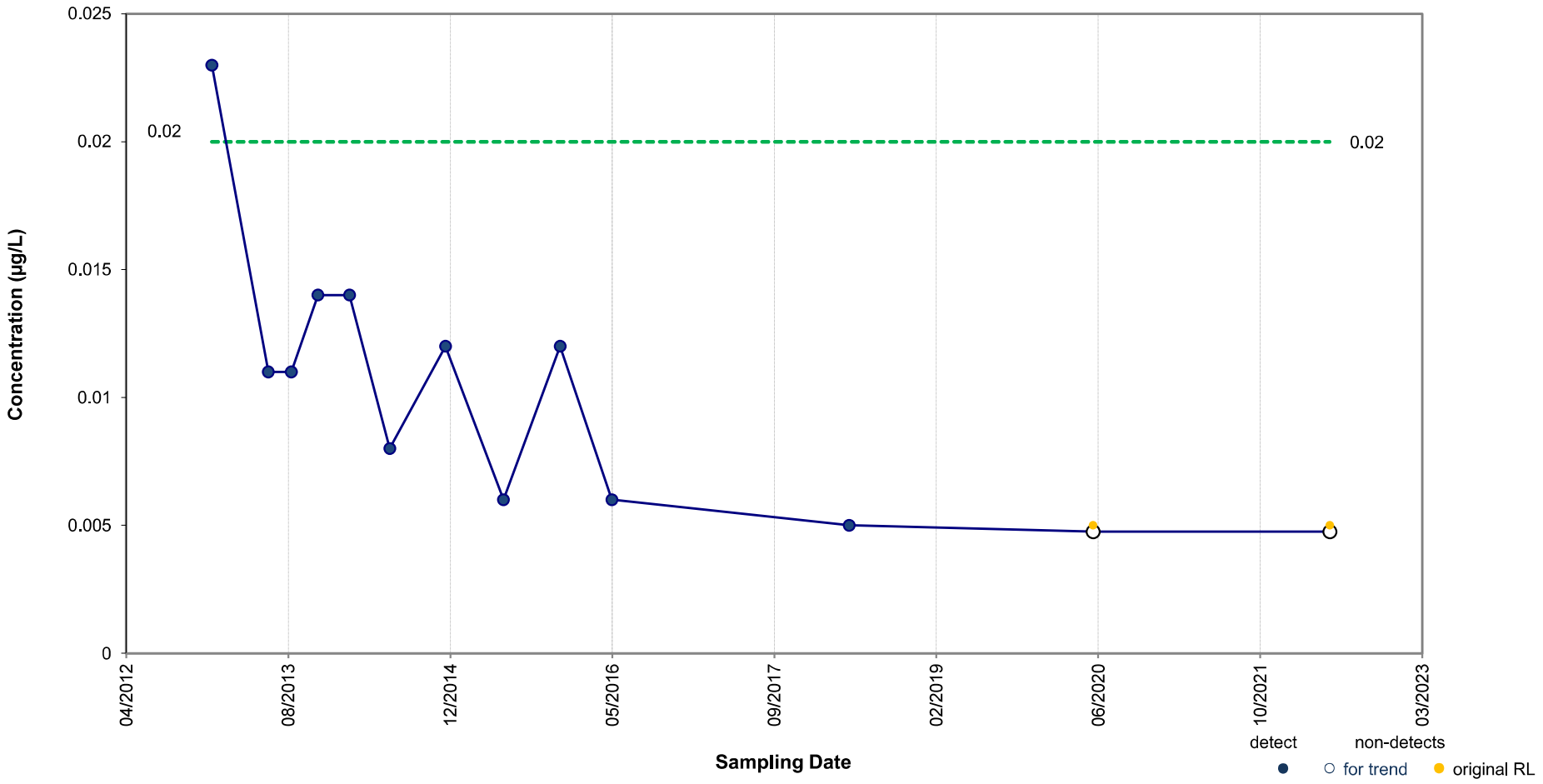
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MWBP-11-UST1-4, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

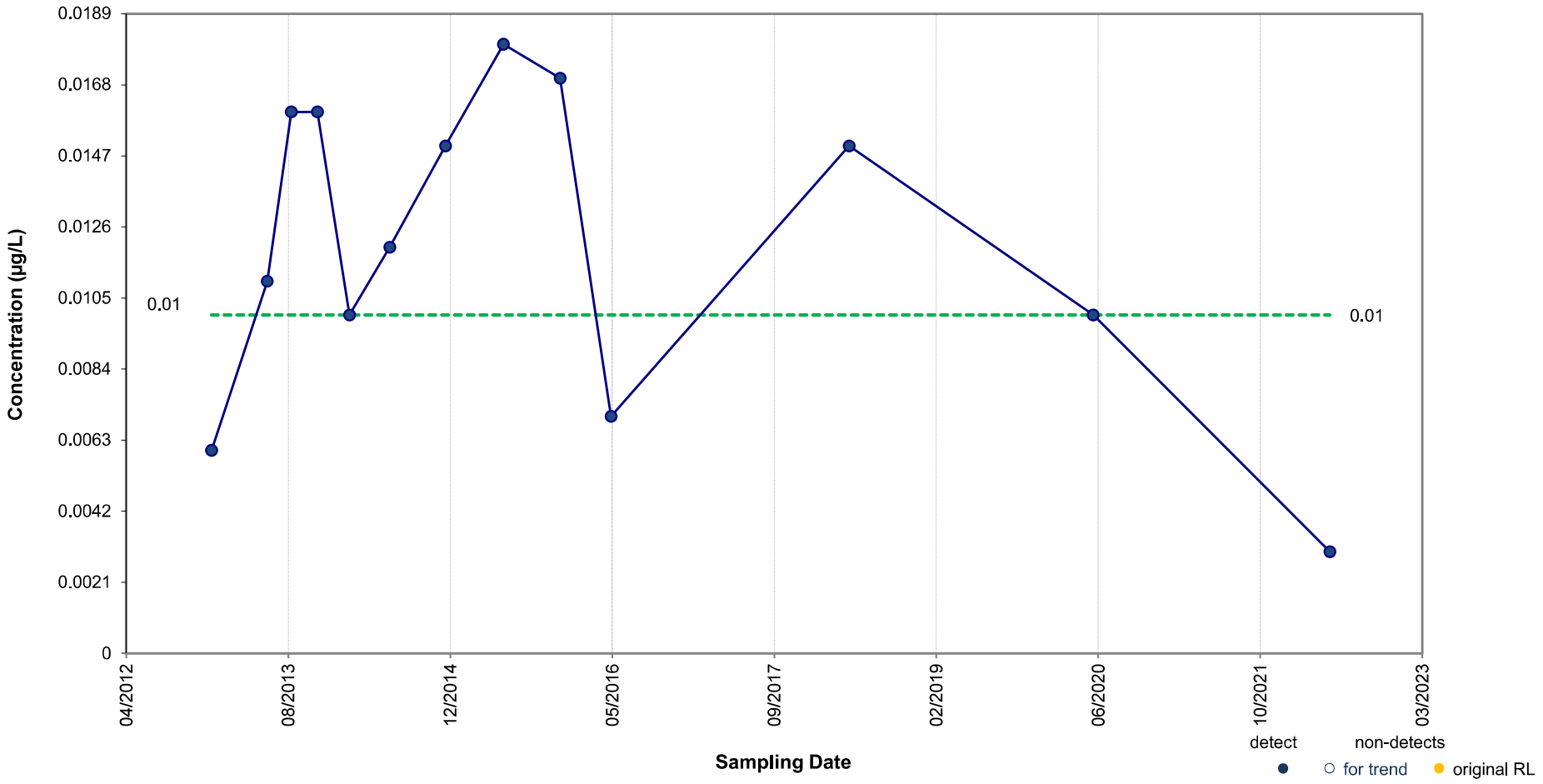
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MWBP-11-UST1-4, Copper

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

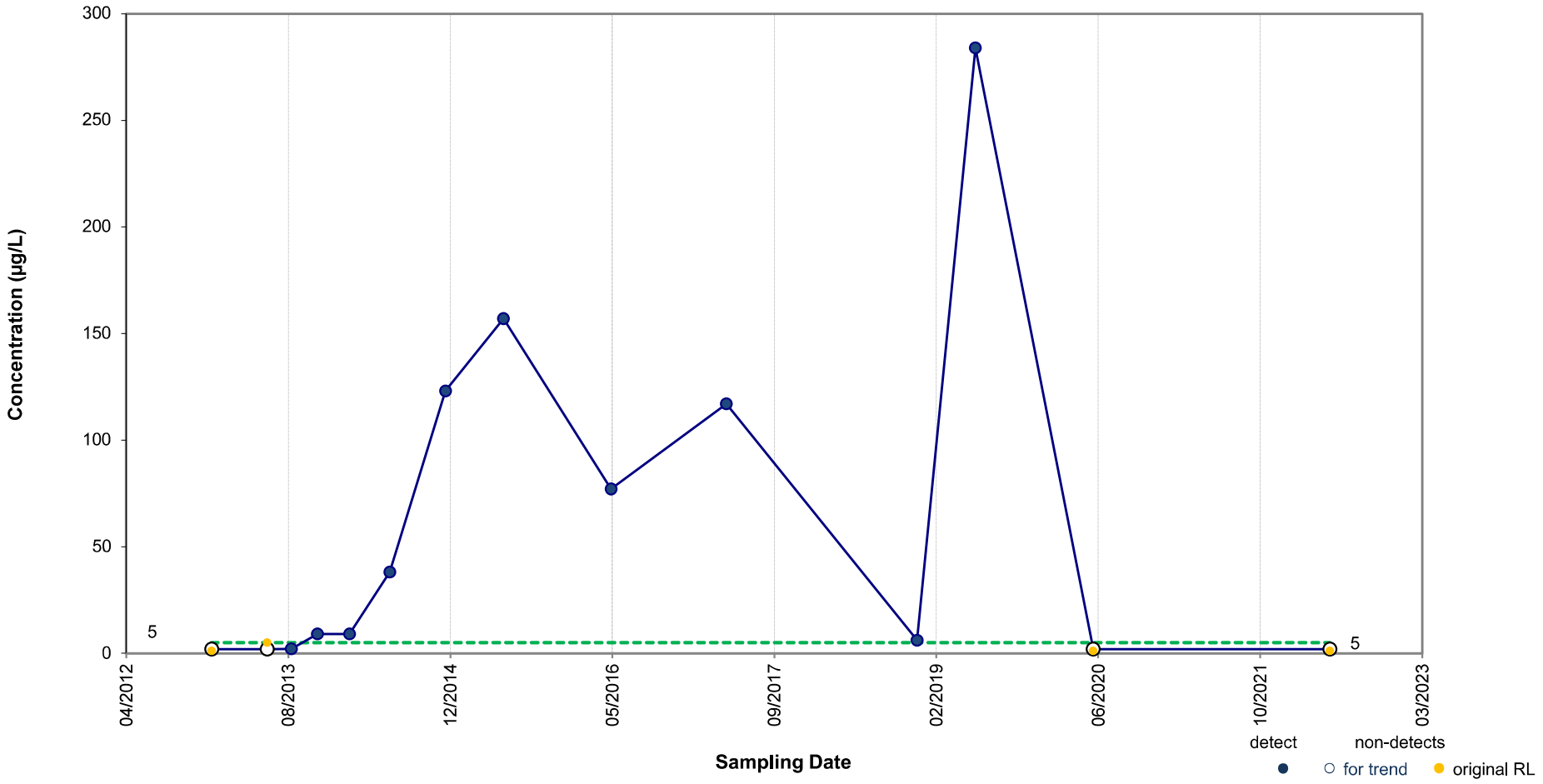
p value = 0.40 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MWBP-12-UST1-4, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

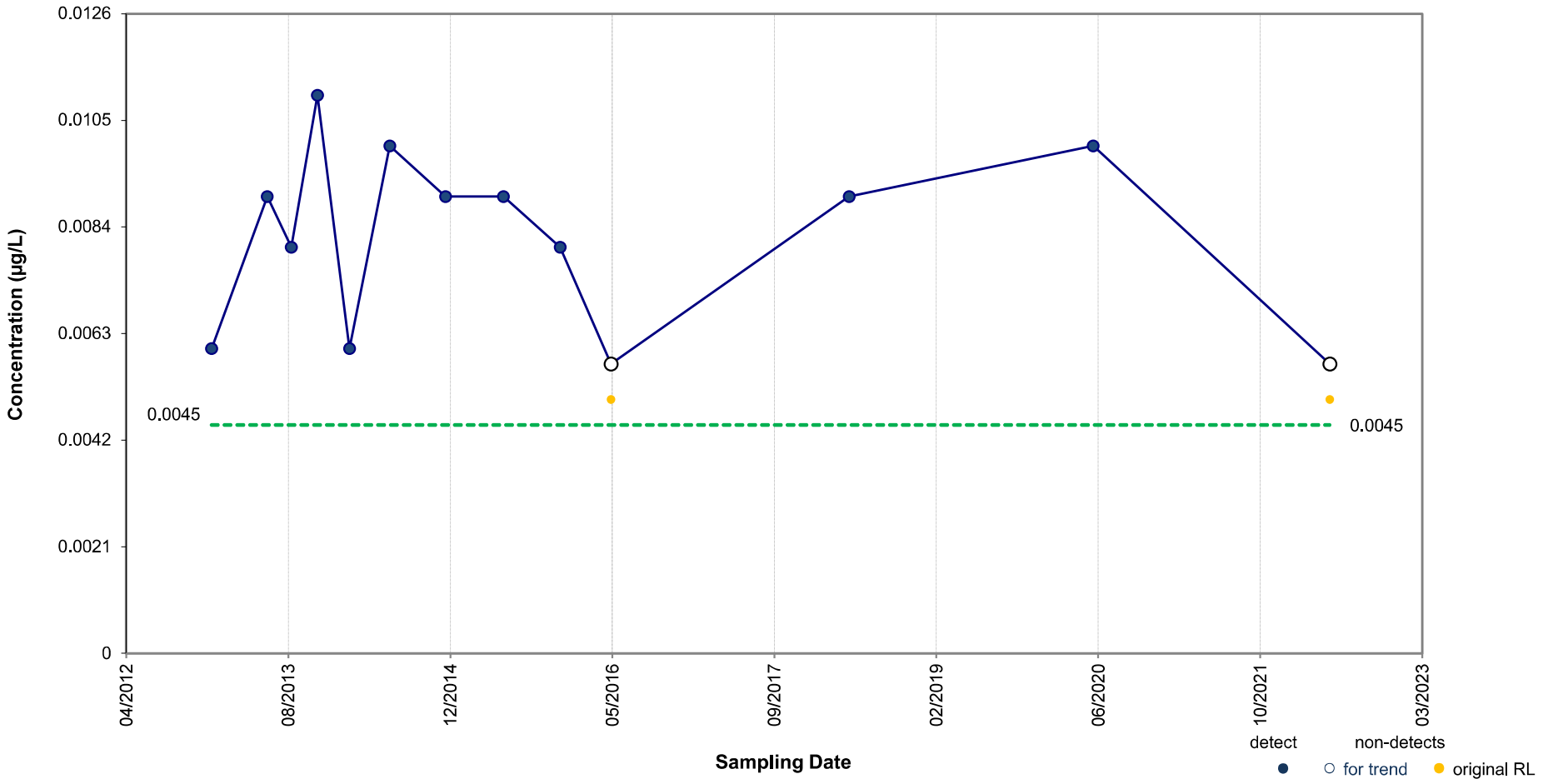
p value = 0.12 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MWBP-12-UST1-4, Benzene

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

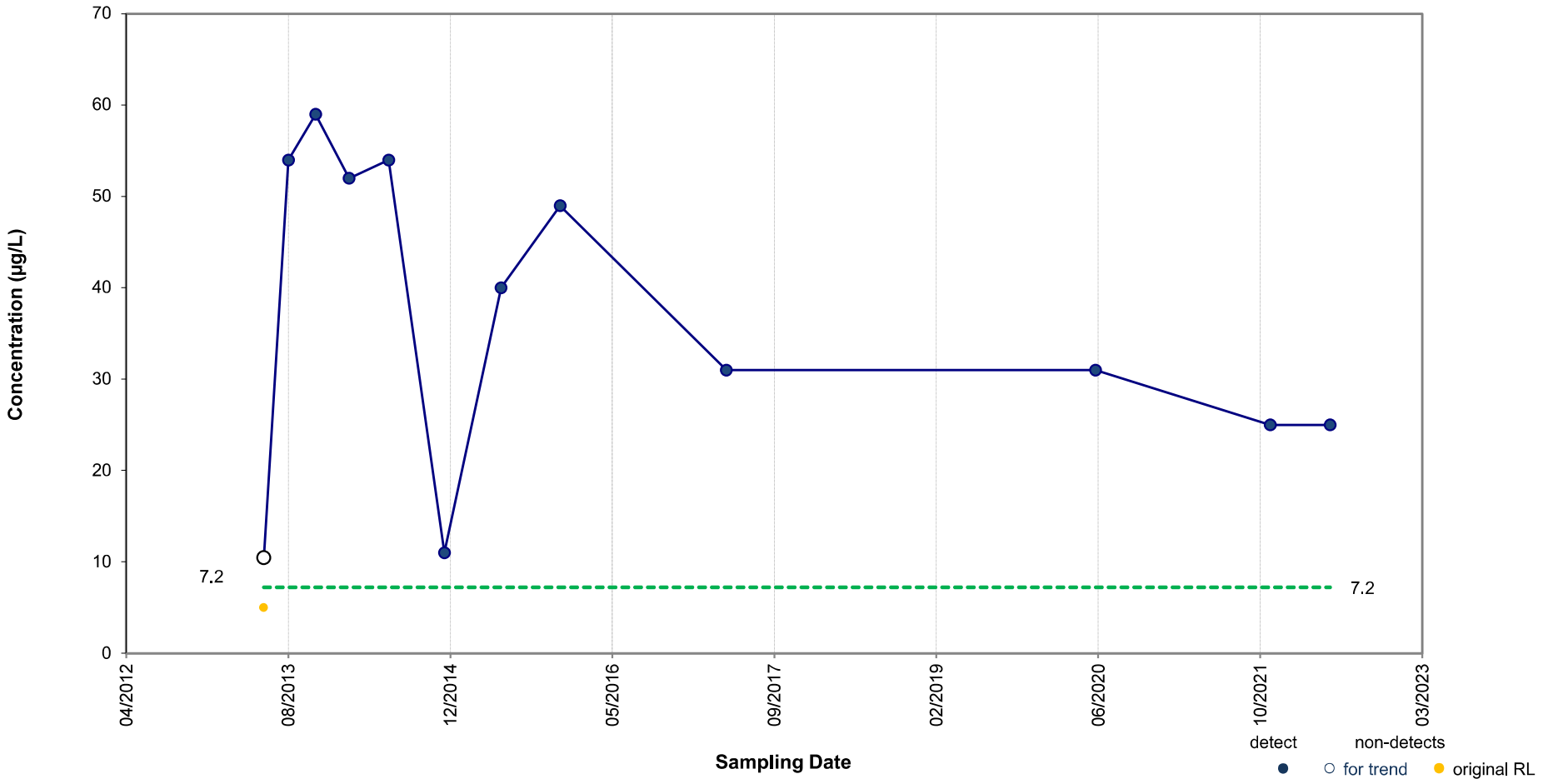
p value = 0.38 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: MWBP-12-UST1-4, Vanadium

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

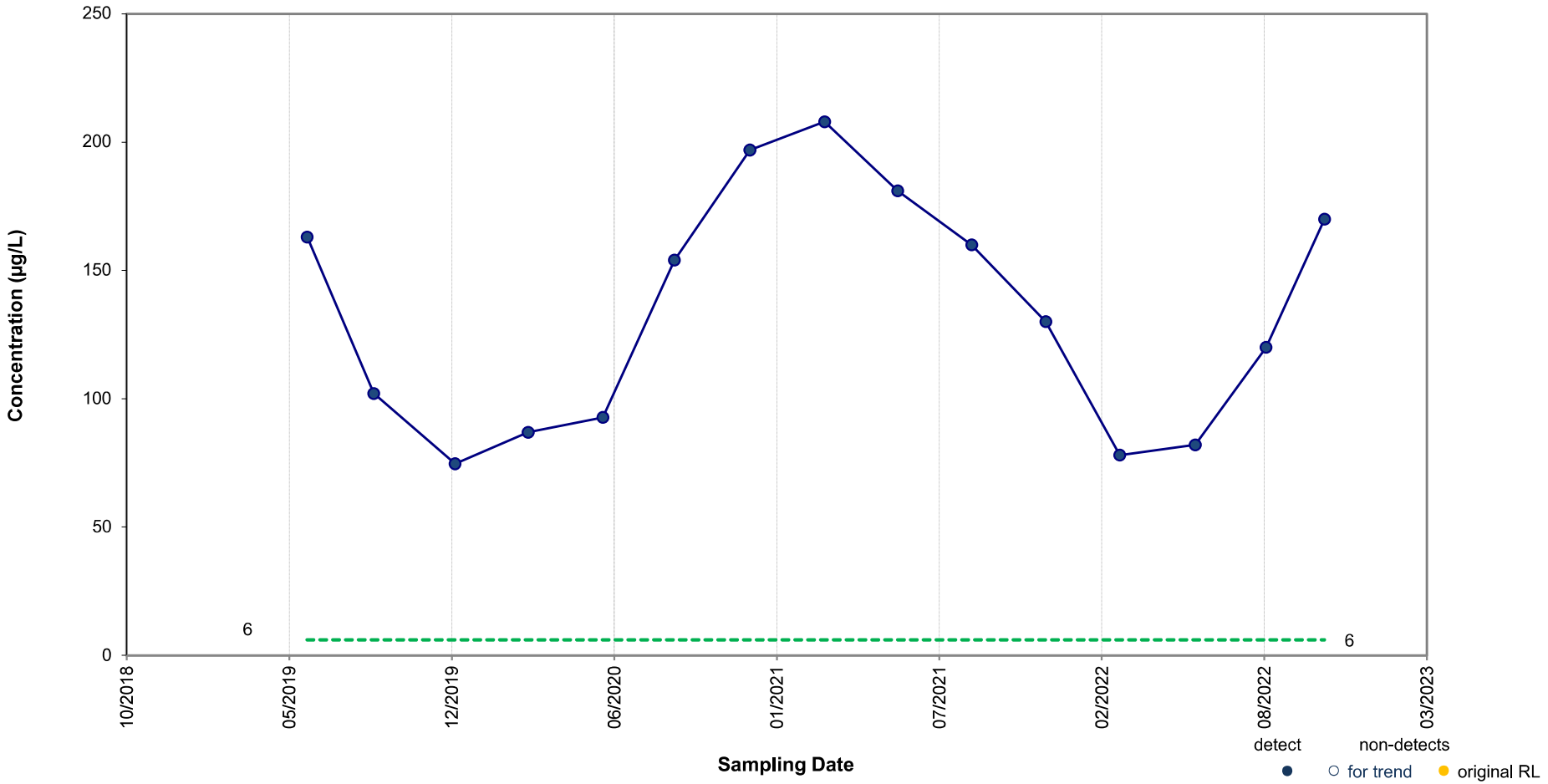
p value = 0.06 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: P2-MW-04, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

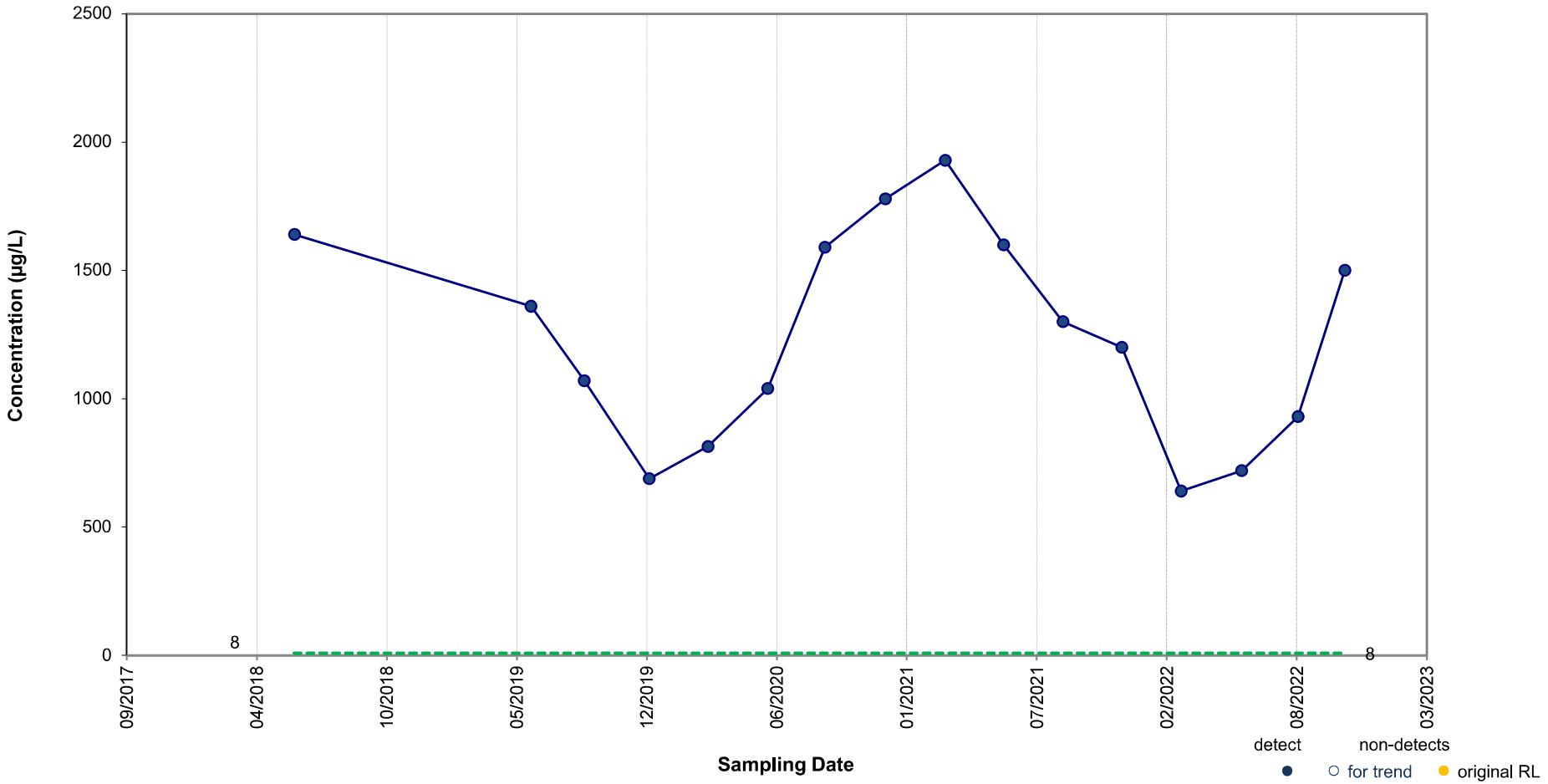
p value = 0.42 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: P6-SB-07, PFNA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

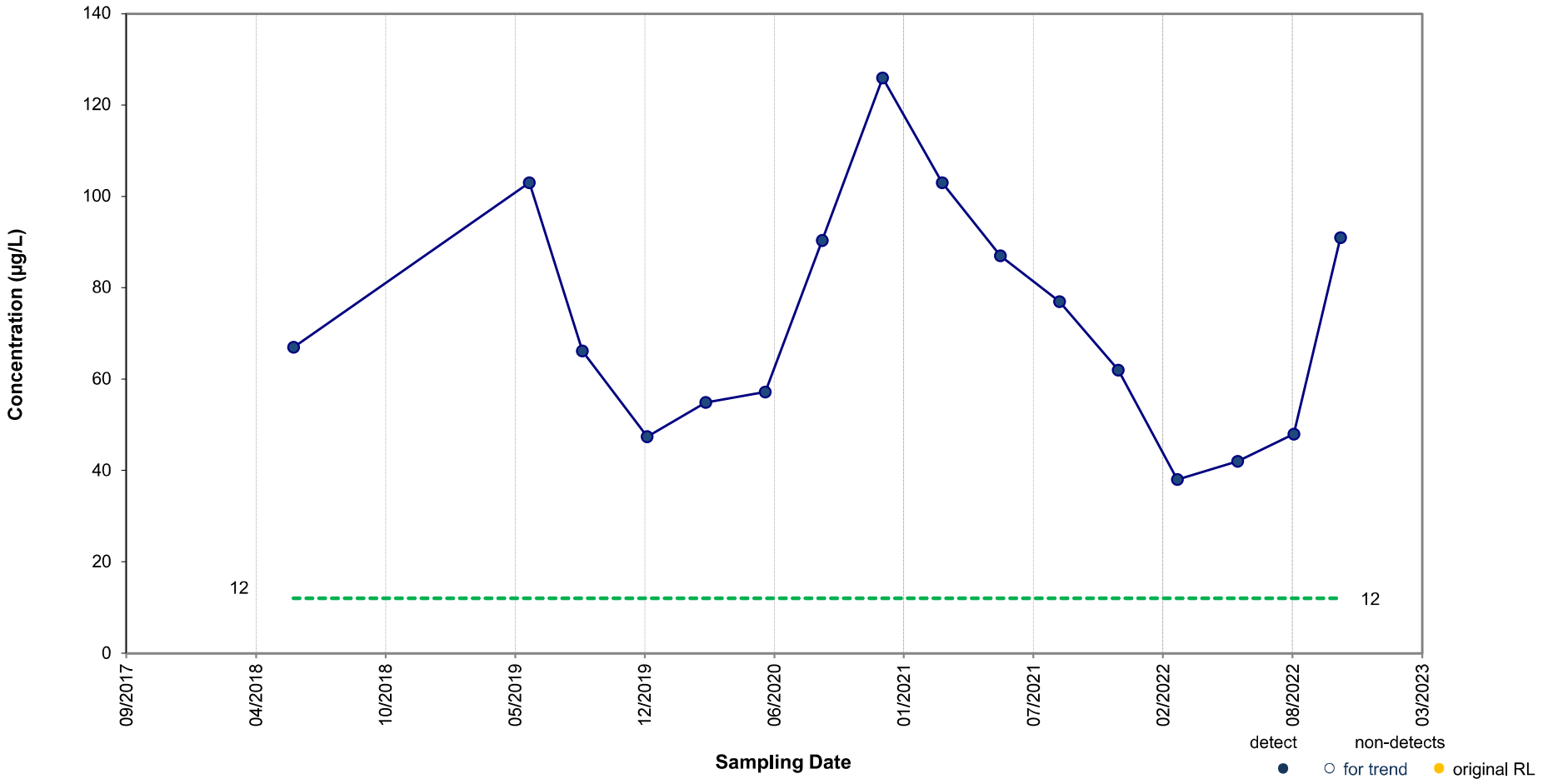
p value = 0.28 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: P6-SB-07, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

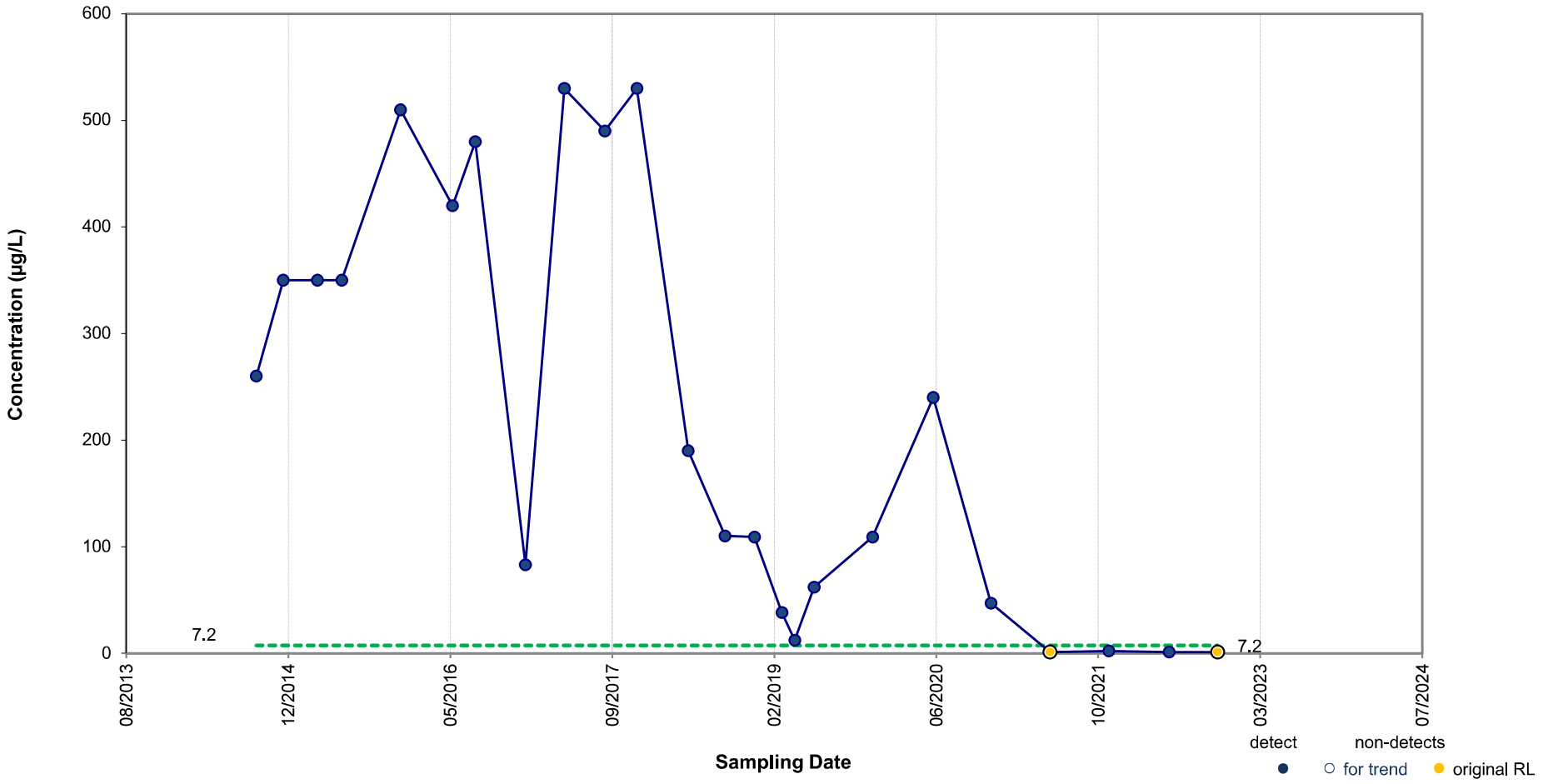
p value = 0.24 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: P6-SB-07, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

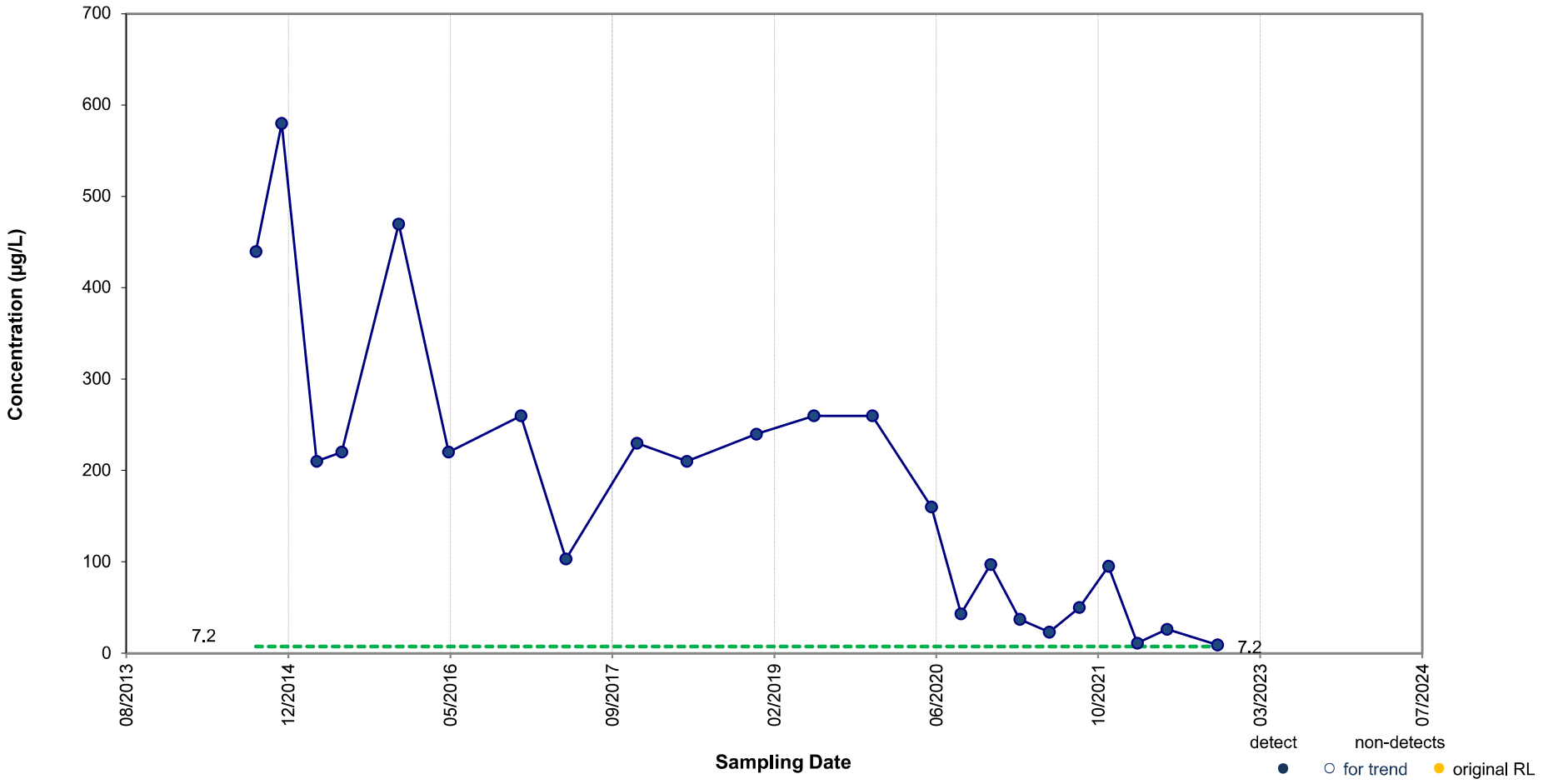
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: PW-14-01, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

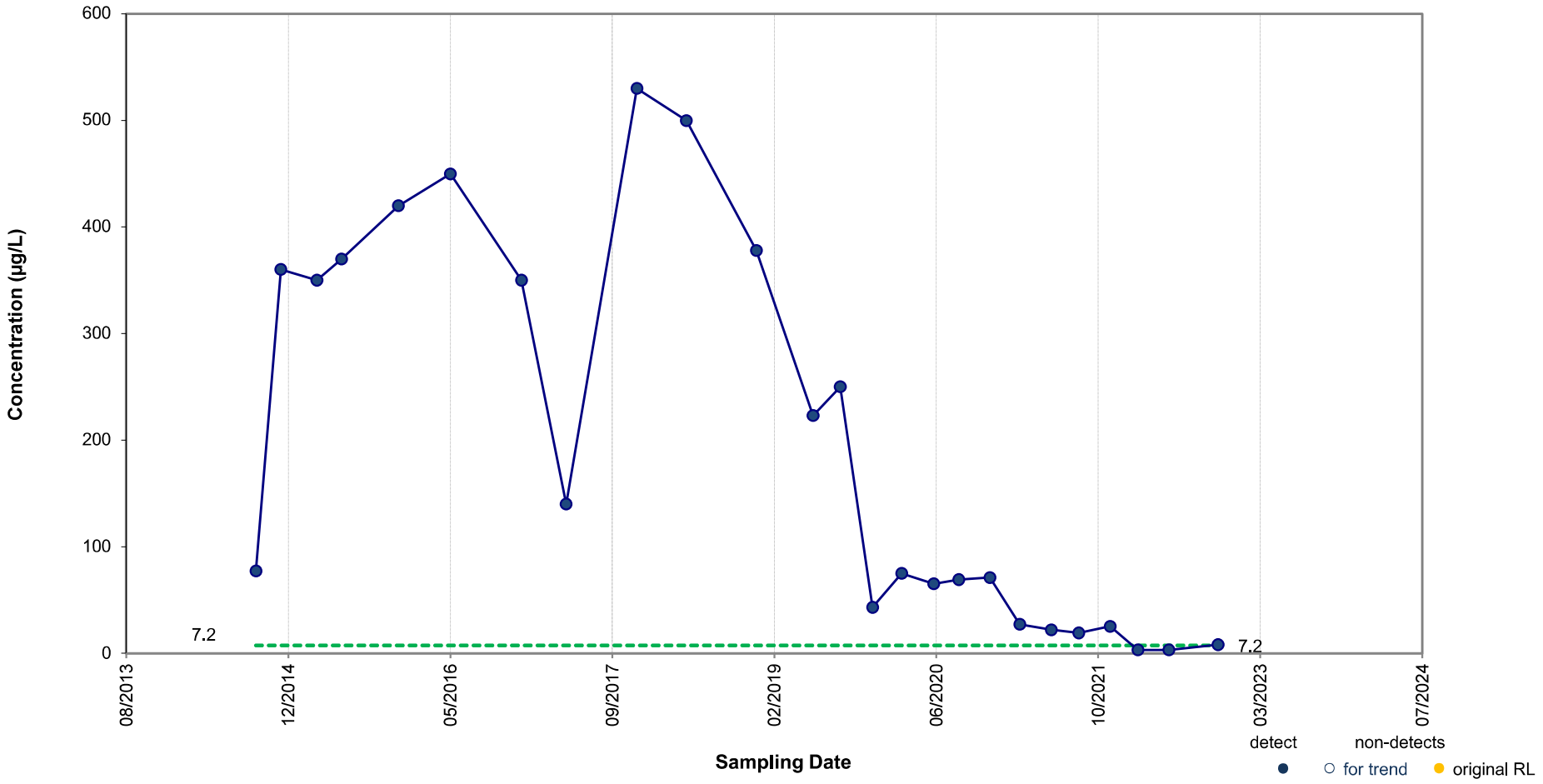
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: PW-14-02, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

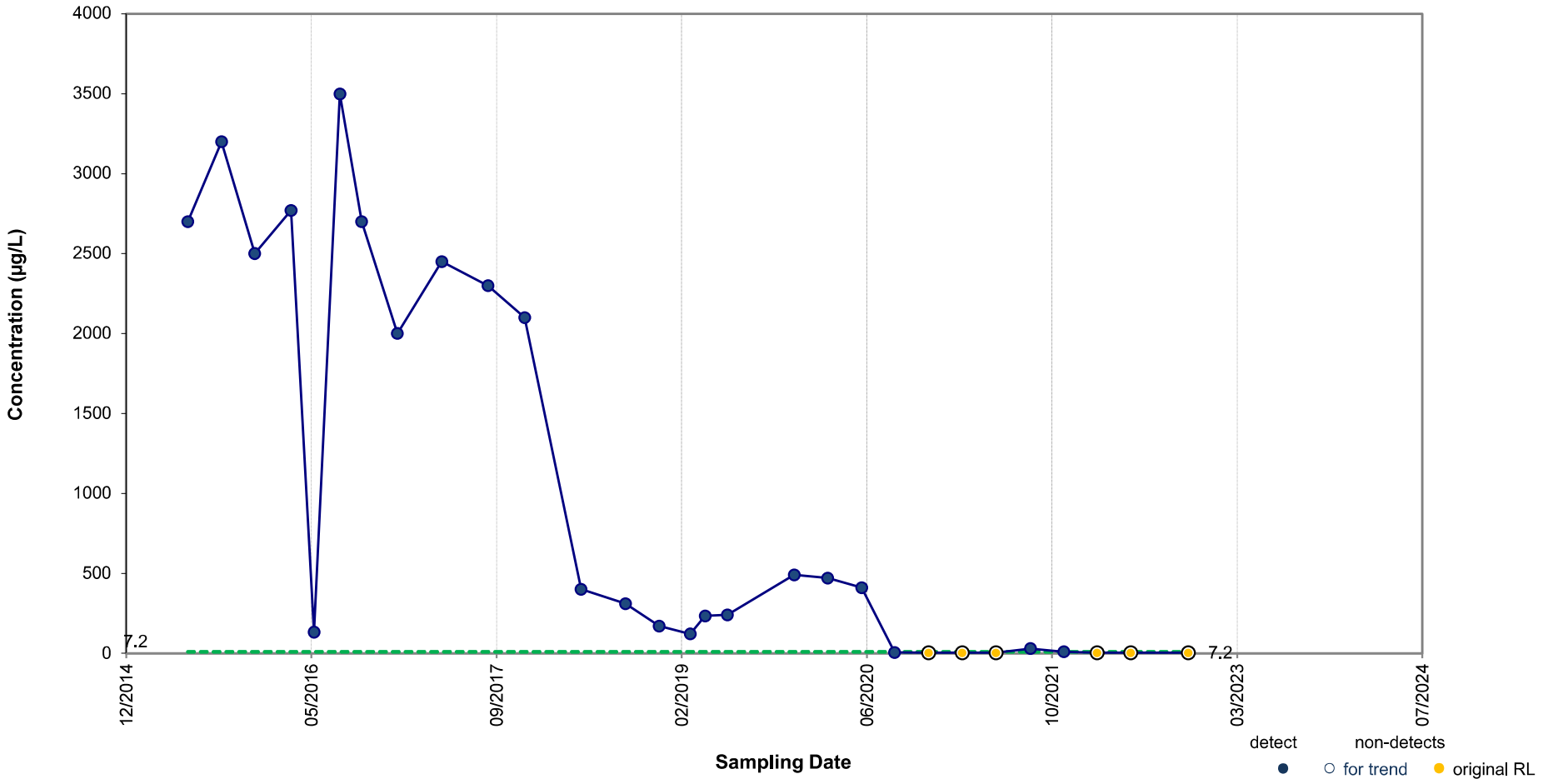
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: PW-14-03R, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

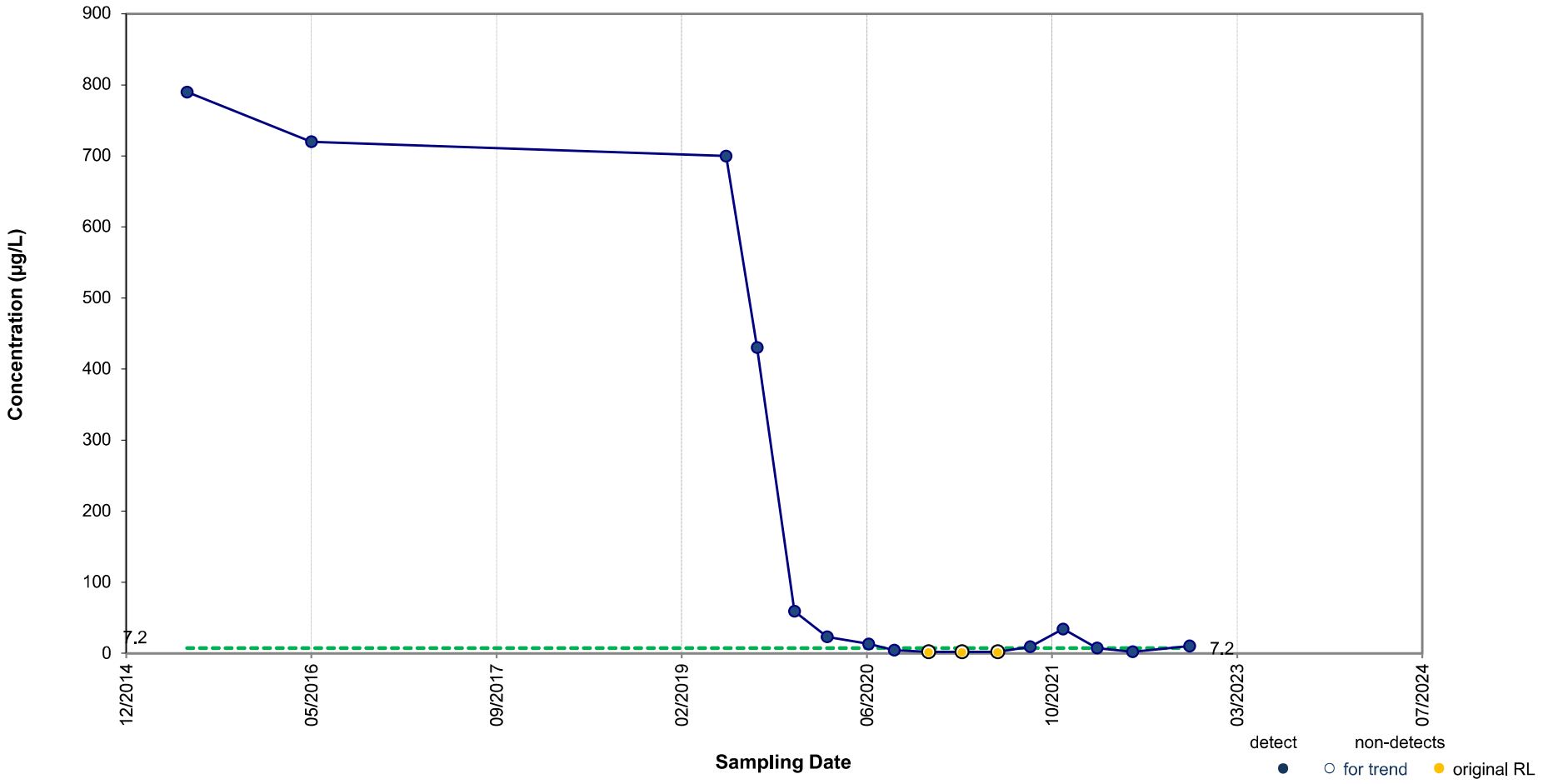
p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: TW-14-02, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

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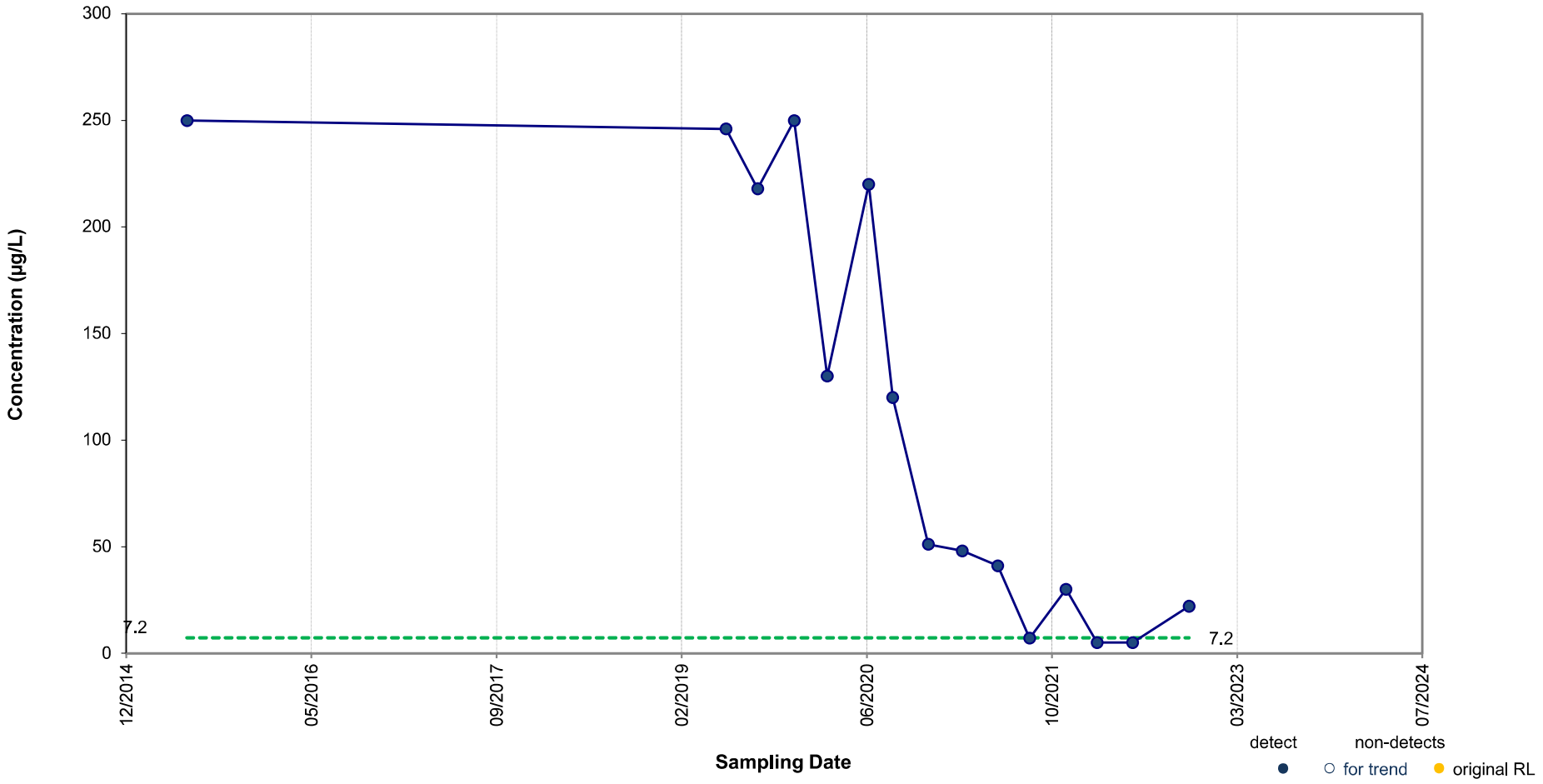
Concentration Plot: TW-14-06, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

p value = <0.001 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

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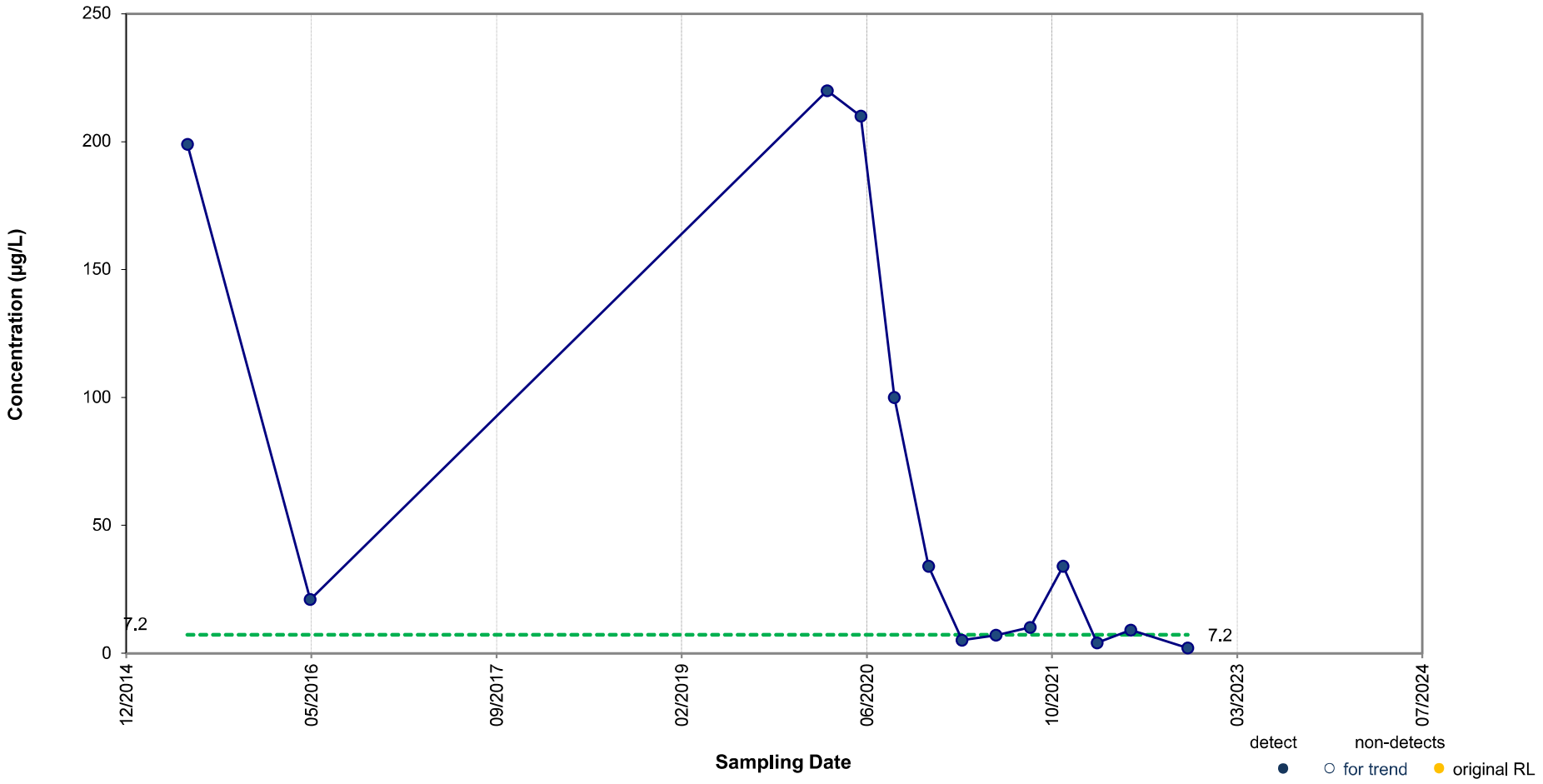
Concentration Plot: TW-15-11, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

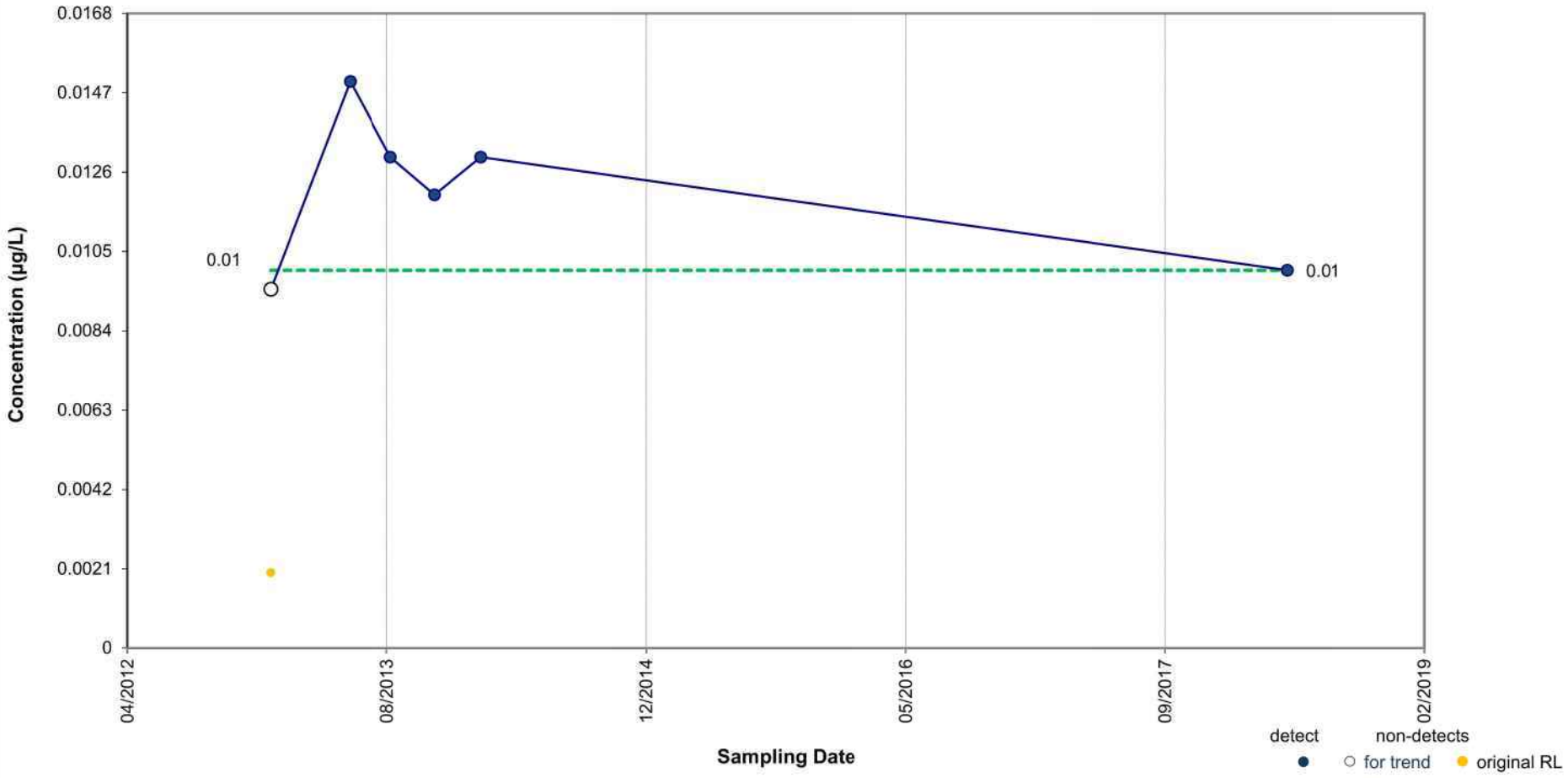
p value = 0.00 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: TW-15-12, 1,4-Dioxane

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

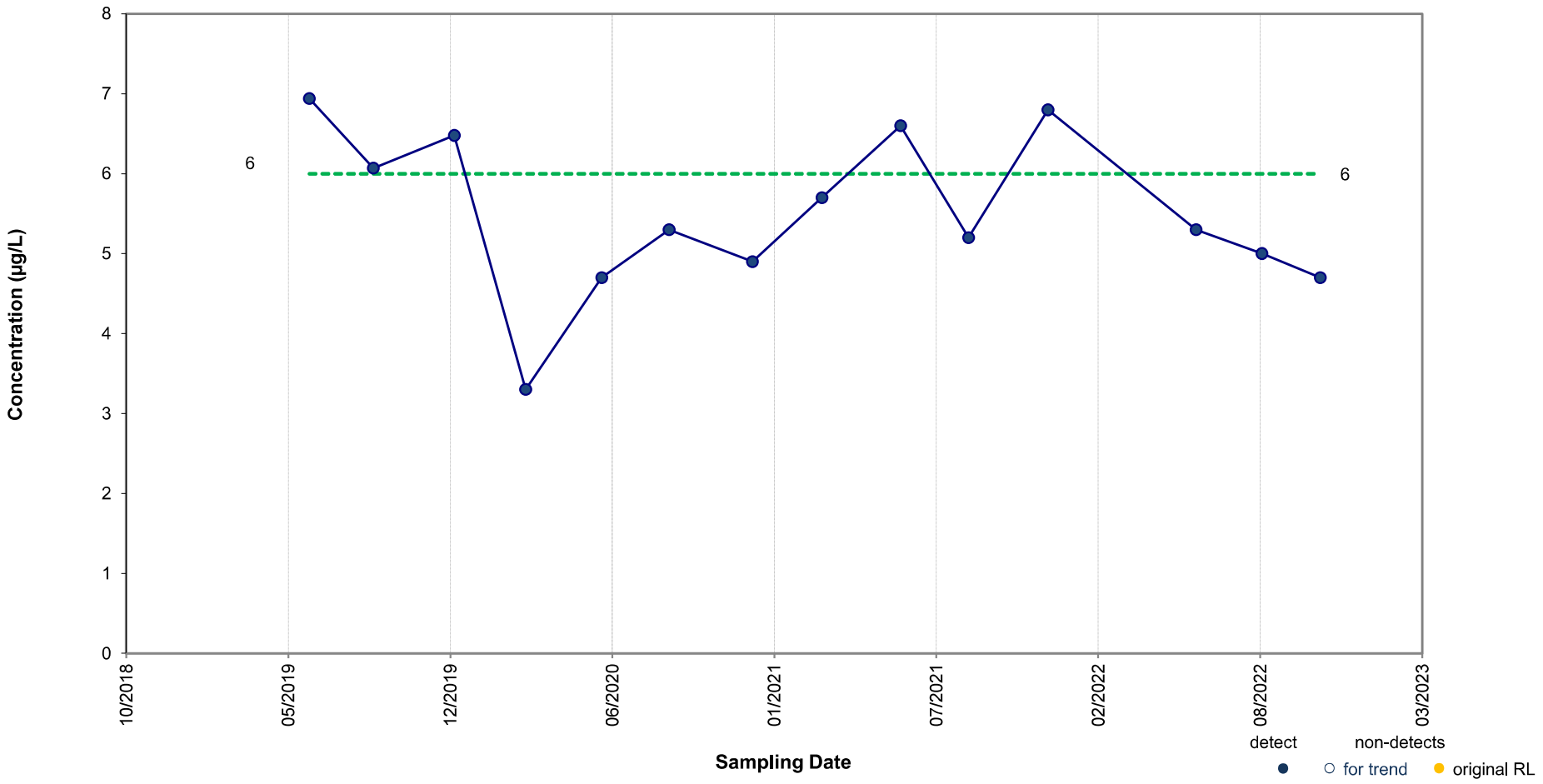
p value = 0.43 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: UNK-11, Arsenic

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.22 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

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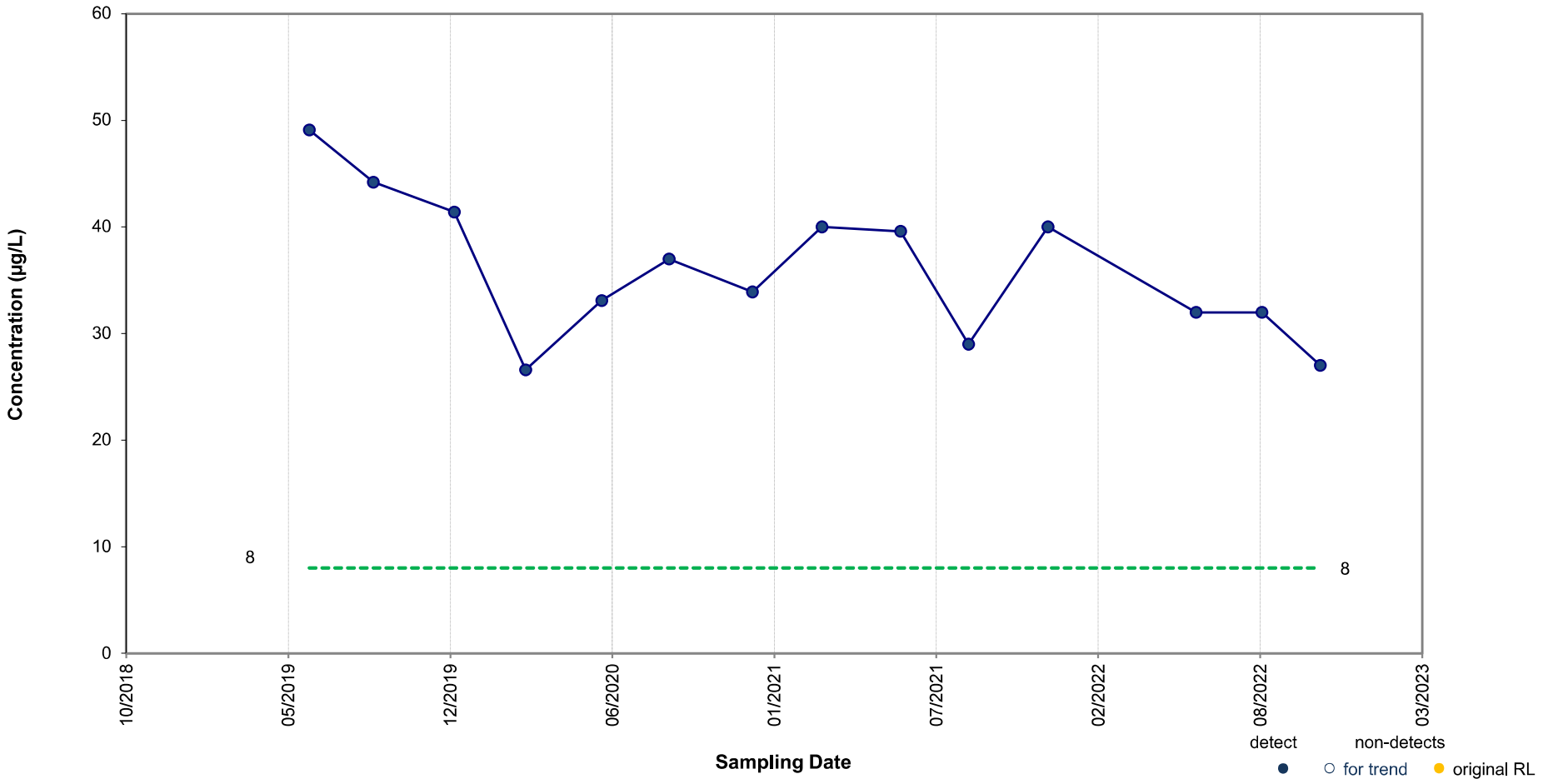
Concentration Plot: UNK-15, PFNA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **DECREASING TREND**

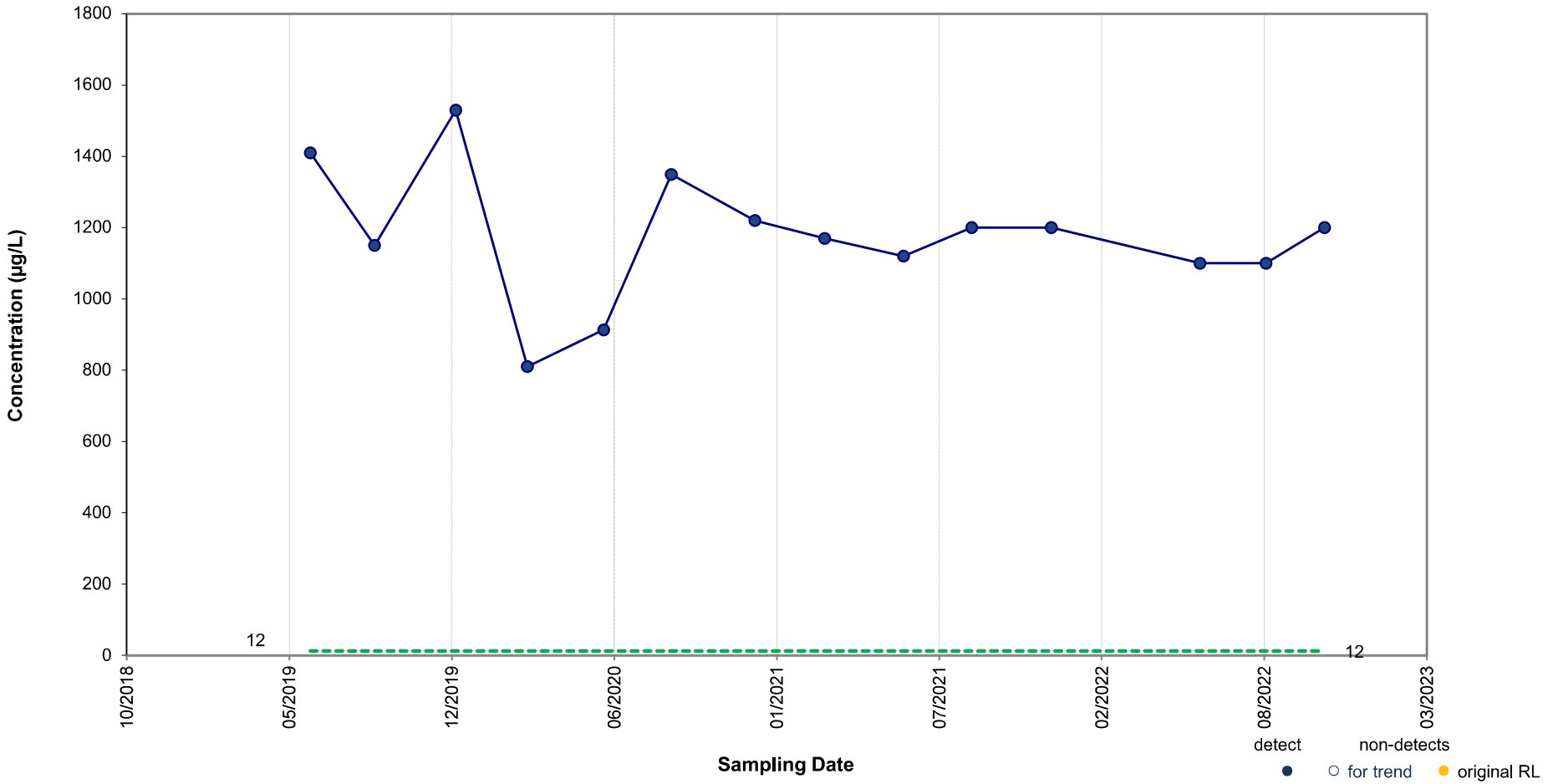
p value = 0.02 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

ARCADIS

Concentration Plot: UNK-15, PFOA

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F



Results of Mann-Kendall Test for Trend: **No Significant Trend**

p value = 0.19 Note: p value < 0.1 indicates a statistically significant trend (90% Confidence Interval).

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Concentration Plot: UNK-15, PFOS

RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Appendix F

Arcadis of Michigan, LLC
28550 Cabot Drive, Suite 500
Novi
Michigan 48377
Phone: 248 994 2240
www.arcadis.com