



SEMI-ANNUAL GROUNDWATER MONITORING DATA REPORT

TO: Brandon Pursel, USEPA
Dave Favero, RACER TRUST

CC: Shaun Shields, EGLE RRD

FROM: Rodney Abke & Mike Smith, Applied EcoSystems, Inc.

DATE: December 13, 2022

SUBJECT: RACER Flint West Industrial Land (#12990)
Semi-Annual Monitoring

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APPENDIX B ATTACHMENTS

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(All investigations conducted by RACER to-date)
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Applied *Eco*Systems, Inc.

Environmental Management, Consulting & Field Services

APPENDIX C TCE GRAPH

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1.0 INTRODUCTION

Since the previous Data Report (dated May 15, 2022), Applied EcoSystems, Inc. (Æ) conducted a routine groundwater monitoring event (gauging and sampling) on the Site and the adjoining Genesee County Parks (GCP) property to the north on September 13, 2022. This report provides a summary and the results of the groundwater monitoring event.

A Site Location Map is included as Figure 1 and for reference Site investigation locations are included in Figure 2. The Site consists of approximately five acres of land located west of Stevens Street and north of Glenwood Avenue in Flint, Genesee County, Michigan. Almost the entire Site consists of concrete pavement, remaining after the demolition of a former manufacturing building. The Site is secured with a locked chain-link fence.

The Site is developed with a Consumers Energy electrical substation with an equipment shelter in the central portion and a utility conduit shed on the southeast corner. Per John Ebenhoeh with Consumers Energy, the small building on the southeast corner is a shelter for conduits that run under the road to the GM tool and die facility. This building is accessed approximately once per year for approximately two hours. The building in the fenced area is a support equipment shelter for the substation. The fenced area is accessed approximately once per month for approximately two hours, and the building itself is accessed less frequently and for shorter durations.

2.0 MONITORING ACTIVITIES COMPLETED

Groundwater Monitoring¹

- o All monitoring wells were gauged for depth to water on September 13, 2022. A Groundwater Contour Map, prepared using the September 13, 2022, groundwater elevation data, is included as Figure 3 in Appendix A. For reference, previously submitted cross section diagrams, showing soil types, and groundwater elevations are included in Appendix B as Attachment 1.
- o A routine groundwater monitoring event was conducted on from September 13, 2022.
- o Groundwater samples were collected from monitoring wells MW-103S, MW-104S, MW-106SR, MW-108S, MW-110S, MW-112S, MW-114S and MW-117S¹ to be analyzed for Volatile Organic Compounds (VOCs), dissolved and total metals (arsenic, chromium [total], chromium VI, copper, lead, selenium and zinc), and PFAS.
- o

¹ A reduction in the number of wells sampled during the semi-annual sampling events was requested in the *November 2021 Subsurface Investigation* report dated January 27, 2022, submitted to USEPA. The request was approved by USEPA on March 4, 2022.



Analytical results are summarized in Appendix B as Attachment 2. Laboratory analytical reports for all monitoring activities are included in Appendix B as Attachment 3.

3.0 MONITORING RESULTS

Groundwater (Semiannual Sampling)

Comparison of groundwater data (September 2022) to current EGLE Generic Residential and Non-Residential Cleanup Criteria (GR/NCC) dated December 21, 2020 indicates the following:

Metals: Dissolved Arsenic was detected above drinking water and/or groundwater to surface water (GSI) criteria as shown in the table below. The concentrations are consistent with expected regional conditions, do not appear to represent a plume, and are believed generally to be naturally occurring. Although EGLE has published state-wide and regional “background” concentrations for soils, there are no such values published for groundwater. The concentrations are generally consistent with concentrations encountered by Æ at other uncontaminated sites in the Flint area. The dissolved metals concentrations are considered to be more representative of Site conditions for the purposes of this assessment.

Table 1.0 – Dissolved Metals Exceedances in Groundwater

Well ID	Metal	Drinking Water Criterion	GSI Criterion	Result
MW-103S	Dissolved Arsenic	10	10	20
MW-112S	Dissolved Arsenic	10	10	45
MW-114S	Dissolved Arsenic	10	10	45

- All results are expressed in µg/L.
- Criteria in **red** indicate an exceedance for that pathway.

VOCs: Exceedances were present as follows:

Table 2.0 – VOCs Exceedances in Groundwater

Well ID	VOC	Drinking Water Criterion	GSI Criterion	Result
MW-112S	Trichloroethene	5	200	7
MW-114S	cis-1,2-Dichloroethene	70	620	142
MW-114S	Trichloroethene	5	200	252
MW-114S	Vinyl Chloride	2	13	14

- All results are expressed in µg/L.
- Criteria in **red** indicate an exceedance for that pathway.

PFAS: Samples from monitoring wells MW-103S, MW-104S, MW-106RS, MW-108S, MW-110S, MW-112S, MW-114S and MW-117S were analyzed for PFAS during this sampling event. Several PFAS compounds were detected. The concentrations were compared to EGLE GR/NCC for Perfluorooctanoic acid (PFOA), Perfluorooctane sulfonic acid (PFOS), Perfluorononanoic acid

(PFNA), Perfluorohexanoic acid (PFHxA), Perfluorohexane sulfonic acid (PFHxS), Perfluorobutane sulfonic acid (PFBS), and (GenX). PFOA did not exceed the drinking water criterion in any sample, except MW-106SR. PFOS exceeded drinking water criterion (16 ng/L) and/or GSI criteria (12 ng/L) in MW-103S, MW-106SR, and MW-114S. These results are similar to the previous PFAS results for the groundwater samples collected in March 2022.

A table of all groundwater sample analytical results for all groundwater samples collected on behalf of RACER is included in Appendix B as Attachment 2. Sample analytical results for the March 2022 sampling events are included in Appendix B as Attachment 3. Figure 4 illustrates the GSI and drinking water exceedances in groundwater identified in groundwater samples collected from 2017 through 2022. This date range includes sampling events from approximately one year before the July 2018 pilot test HRC injections, and all sampling events after. For reference, Figure 5 includes data boxes and exceedances identified in soil samples. Figure 6 includes data boxes and exceedances for PFAS results. Low-flow sampling forms for the September 2022 sampling event are included in Appendix D. The Laboratory data validation report is included in Appendix E.

Note that elevated tetrachloroethene levels have been consistently detected in one up gradient well, MW-105S, since April 2012, and trichloroethene (TCE) has also consistently been detected in the same well, likely as a degradation product of the tetrachloroethene. This well is hydrogeologically downgradient from a former print shop located south of the Site.

The primary Site-specific constituents of concern are TCE and vinyl chloride, which appear to be exhibiting natural attenuation. PFOS concentrations have decreased or remained the stable.

While groundwater monitoring results have shown a general downward trend in concentrations of TCE Site-wide over time, TCE concentrations in MW-114S dropped substantially after HRC injection. This is likely due to the location of this well, which are expected to have been most affected by the HRC injection due to likely higher volumes of HRC reaching those wells in the short term, as well as generation of anerobic dechlorination conditions. The concentration of TCE in MW-114S has since rebounded. The limited variability of TCE concentrations in MW-111S is likely due to limited injection of HRC upgradient from this well relative to the other wells, as upgradient anerobic dechlorination conditions were not established (because areas upgradient were not subjected to HRC injection).

4.0 LABORATORY DATA VALIDATION SUMMARY

On September 13, 2022, Æ collected groundwater samples from eight monitoring wells at the RACER Flint West Industrial Land site using USEPA low-stress sampling protocols. One duplicate sample, one field blank, and one matrix spike and duplicate were collected. Samples were collected in appropriate laboratory-provided bottles with laboratory-provided preservatives and were maintained on ice until delivery under complete chain-of-custody protocols to Merit Laboratories within appropriate holding times. No sample conditions issues were identified in the field of upon



laboratory receipt. Samples were analyzed by specified standard methods for VOCs, EGLE 28 PFAS, six total and dissolved metals, and total and dissolved chromium VI. Filtration and preservation for dissolved metals and for total and dissolved chromium VI reportedly were performed immediately upon laboratory receipt instead of during field collection.

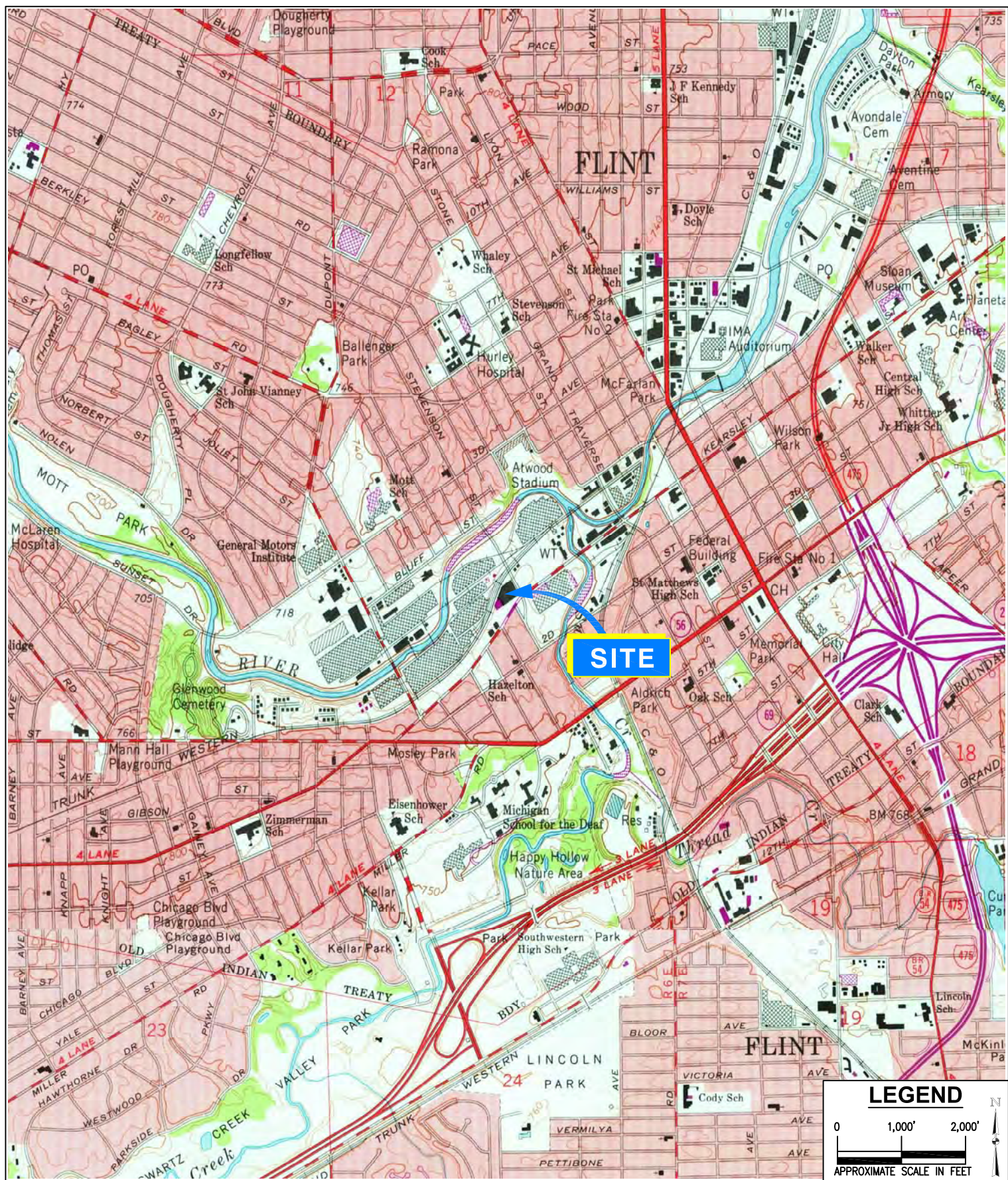
Laboratory deliverables include four laboratory reports, quality control reports, and chains-of-custody, two each for PFAS and for VOCs and metals. Each laboratory report contained a case narrative, laboratory accreditation/certification information, laboratory contact information, analytical methods, and analyte reporting relative to method detection limits (MDLs) and reporting limits (RLs). Data qualifiers were identified and evaluated in this Laboratory Data Validation report. No samples were analyzed beyond their holding times; however, PFAS extraction dates identified in the laboratory reports occurred beyond their approved timeframes.

All surrogate recoveries were within their allowable ranges for each surrogate compound, except PFBA, 4:2FTSA, PFDA, and PFOS, VOC 2-methylnaphthalene, and chromium VI, of which only PFOS was commonly present in groundwater at the site – indicating satisfactory laboratory performance overall. Analysis of blank samples identified no indications of significant cross-contamination. The equipment blank identified only a low concentration of dissolved copper exceeding its reporting limit. The field blank was determined to contain detectable concentrations exceeding RLs, and no detectable concentrations were identified in the trip blank. Accordingly, no significant indications of cross-contamination were identified. Laboratory Control Spike (LCS) and LCS Duplicate analyses indicated potential for PFAS analytes PFPrS, HFPFA, and FHpPA and for VOCs tetrahydrofuran and bromoform to be reported high. Similarly, matrix spikes and their duplicates indicate potential for PFBA, FTSA, PFDA, PFOS, and N-MeFOSAA and VOC 2-methylnaphthalene to be reported high. Of these potentially elevated analytes, only PFOS and 2-methylnaphthalene were detected in groundwater samples analyzed. No significant data qualifiers were identified in relation to the detected analyte concentrations.

Based on the assessment detailed in the foregoing QA/QC summary, the laboratory data summarized in Table 2 are considered acceptable with the specific qualifications noted herein.

6.0 SCHEDULE

The first 2023 semi-annual monitoring event will be scheduled in March 2023.



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Site Location Map

RACER Flint West #12990

Glenwood Avenue & Stevenson Street
Flint, Michigan

SOURCE: USGS FLINT SOUTH QUADRANGLE
(PROVISIONAL EDITION 1975)

DRAWING DATE:

04/06/2020

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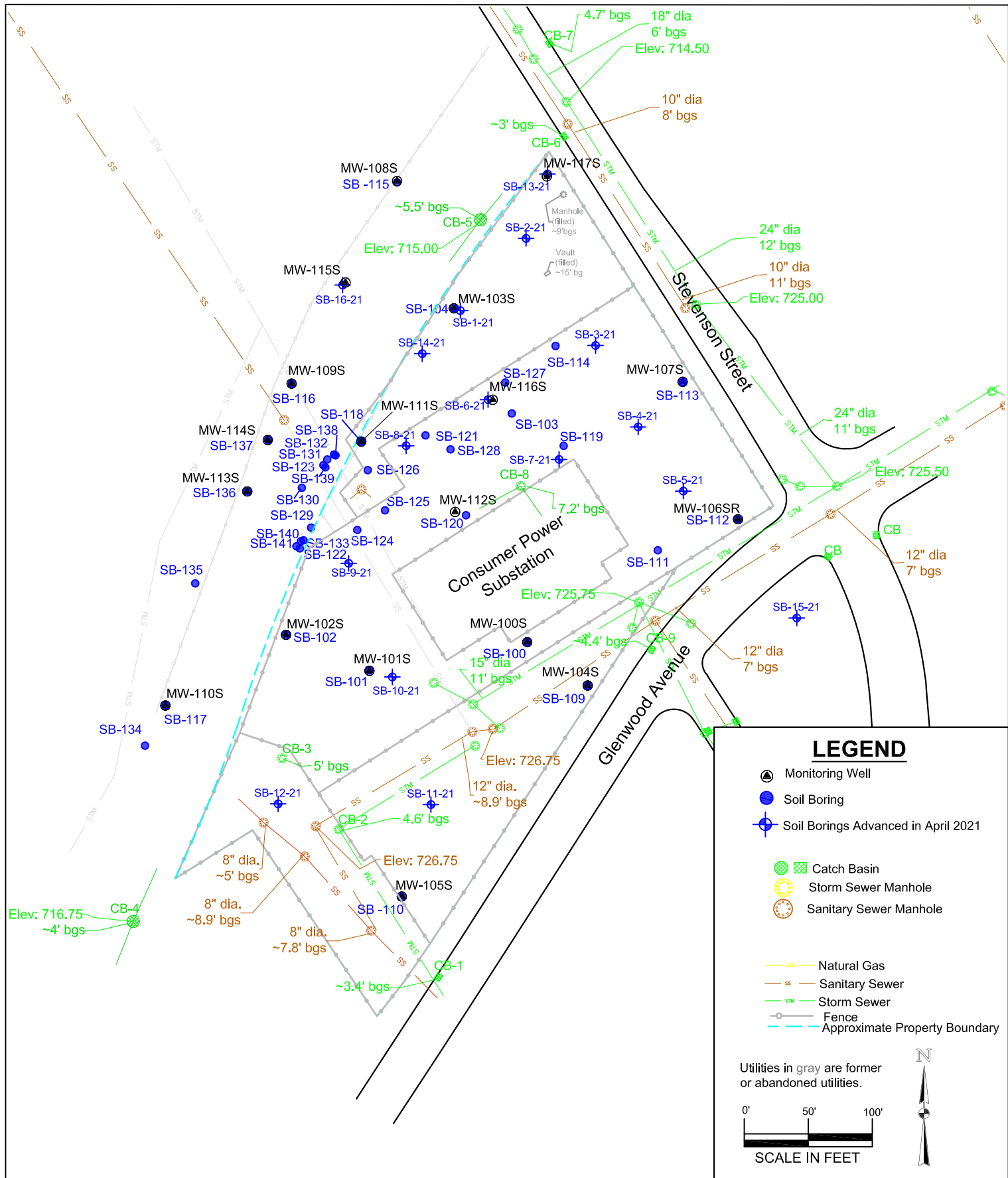
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PROJECT:

11-4317-102

FIGURE:

1



Applied EcoSystems, Inc.

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Site Map

Racer Flint West -12990
Flint West Industrial Land, Flint, Michigan

DATE:

01/20/2022

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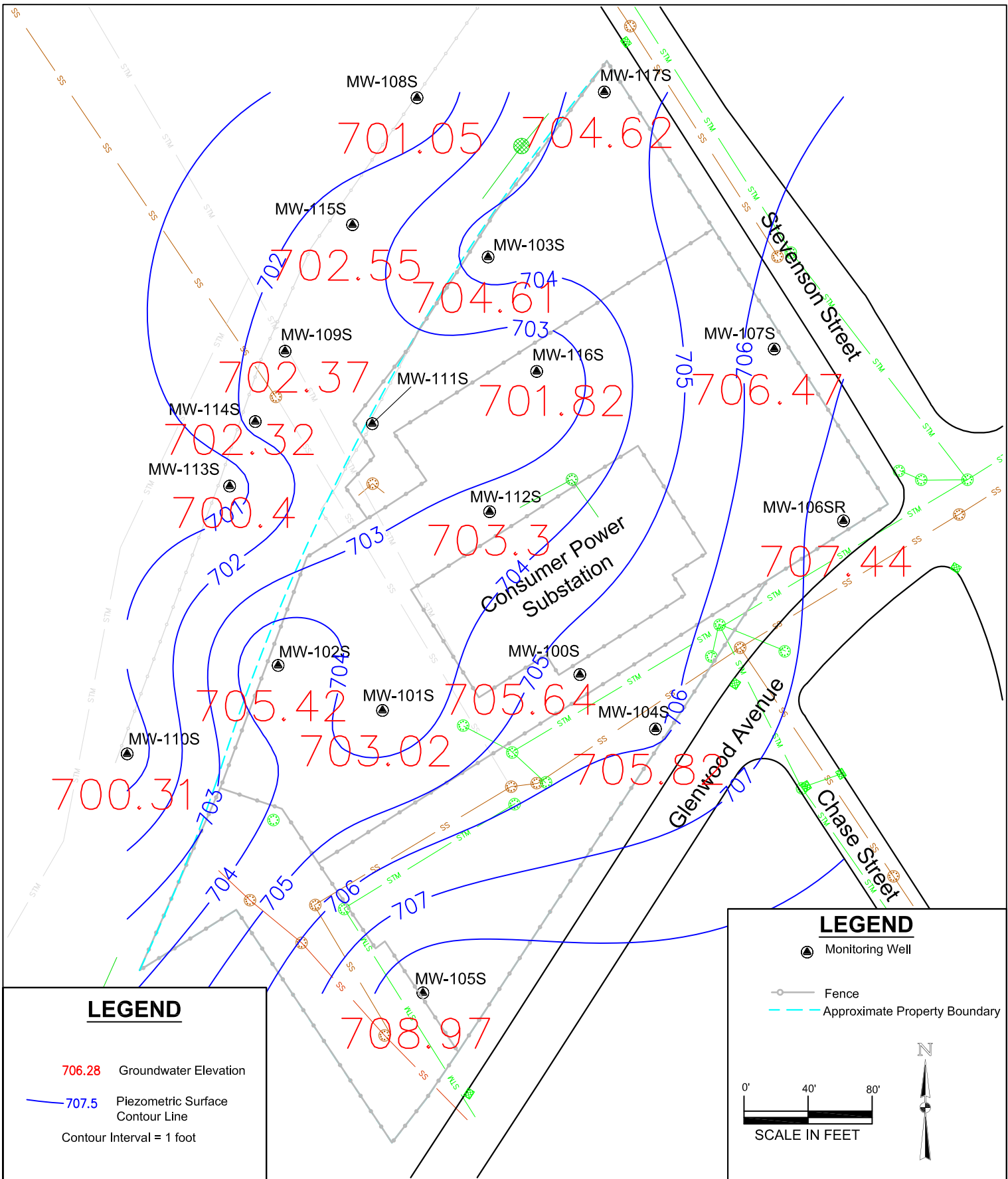
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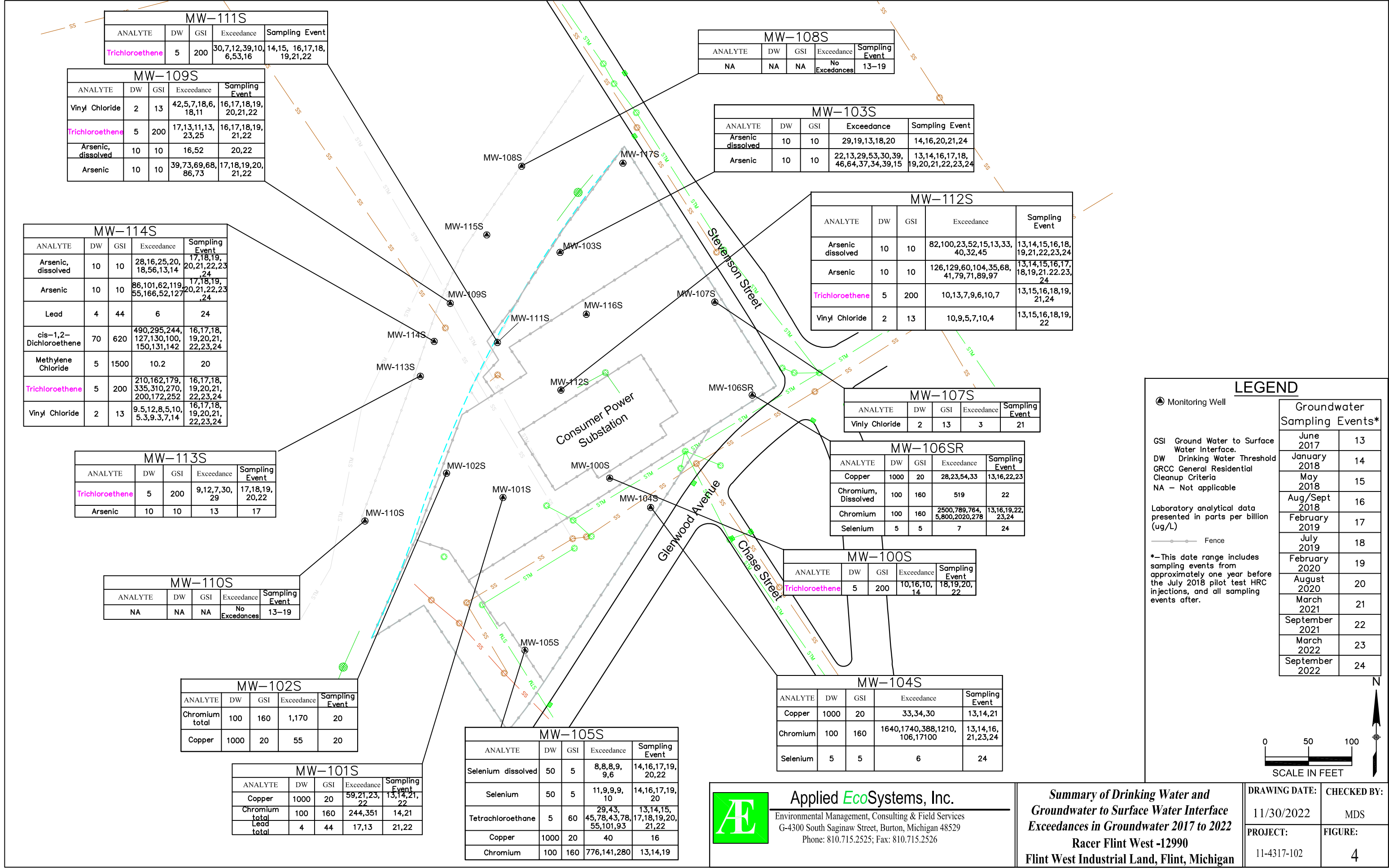
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FIGURE:

2





LEGEND

Monitoring Well

GSI Ground Water to Surface Water Interface.
DW Drinking Water Threshold
GRCC General Residential Cleanup Criteria
NA - Not applicable

Laboratory analytical data presented in parts per billion (ug/L)

Fence

*-This date range includes sampling events from approximately one year before the July 2018 pilot test HRC injections, and all sampling events after.

Groundwater Sampling Events*	
June 2017	13
January 2018	14
May 2018	15
Aug/Sept 2018	16
February 2019	17
July 2019	18
February 2020	19
August 2020	20
March 2021	21
September 2021	22
March 2022	23
September 2022	24

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SCALE IN FEET

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Summary of Drinking Water and Groundwater to Surface Water Interface Exceedances in Groundwater 2017 to 2022

Racer Flint West -12990

Flint West Industrial Land, Flint, Michigan

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01/16/19 SB-139				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	21,000 / 3,440	16' 18'
Methylene Chloride	5	1,500	230 / 32	16' 18'
Vinyl chloride	40	260	ND / 42	16' 18'
cis-1,2-Dichloroethene	1,400	12,000	1,800 / 3,440	16' 18'

04/22/14 SB-131				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	12,160	18'
Vinyl chloride	40	260	90	18'
cis-1,2-Dichloroethene	1,400	12,000	2,820	18'

12/11/2012 SB-116				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Vinyl Chloride	40	260	260	12-13'
cis-1,2-Dichloroethene	1,400	12,000	2,160	12-13'

7/10/2014 SB-132				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	29,500 / 13,700	11.5-12' 14.5-15'
Vinyl chloride	40	260	180 / 89	11.5-12' 14.5-15'
cis-1,2-Dichloroethene	1,400	12,000	2,200	11.5-12'

12/11/2012 SB-118				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Vinyl Chloride	40	260	250	16-17'
cis-1,2-Dichloroethene	1,400	12,000	11,960	16-17'

03/13/2012 SB-104				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Benzene	100	4,000	210	7-8'

12/10/2012 SB-114				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	1,220	20-21'
Phenanthrene	56,000	2,100	2,700	7-8'

4/30/2013 SB-121				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	400	23-24'
Vinyl Chloride	40	260	110	23-24'
cis-1,2-Dichloroethene	1,400	12,000	2,970	23-24'

12/06/2012 SB-112				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Naphthalene	35,000	730	840	3.5-4.5'
1,2,4-Trimethylbenzene	2,100	570	600	3.5-4.5'
Vinyl Chloride	40	260	80	3.5-4.5'

01/16/19 SB-140				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	13,100 / 2,870	16' 19'
Methylene Chloride	5	1,500	260 / 30	16' 19'
cis-1,2-Dichloroethene	1,400	12,000	3,500 / 2,870	16' 19'

12/22/14 SB-135				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	7890.0	19'
12/22/14 SB-135				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	6540.0	21'

12/11/2012 SB-117				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	5,980	18-19'

01/16/19 SB-141				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	180 / 6,150 / 3,370	16' 18' 19'
Methylene Chloride	5	1,500	27 / 25 / 26	16' 18' 19'
cis-1,2-Dichloroethene	1,400	12,000	15 / 2,900 / 860	16' 18' 19'

12/22/14 SB-134				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	2,040	20'

4/30/2013 SB-122				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	14,400	15-16'
cis-1,2-Dichloroethene	1,400	12,000	1,600	15-16'

7/10/2014 SB-133				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4000	11,680 / 10,860 / 7,520	16.5-17' 18-19' 19.5-20'
Vinyl Chloride	40	260	46	16.5-17'
cis-1,2-Dichloroethene	1,400	12,000	1,990	16.5-17'

3/08/2012 SB-102				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	330	6-7'

04/21/14 SB-125				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	3,650	19'

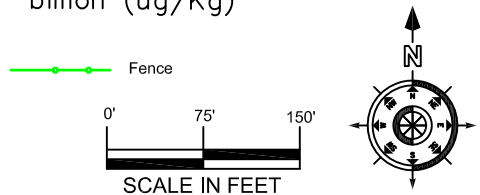
04/21/14 SB-124				
ANALYTE	DW	GSI	Exceedance	Sampling Depth
Trichloroethene	100	4,000	1,420	21'

LEGEND

- Monitoring Well
- Soil boring
- Multiple soil borings in one location.
- HRC Injection boring

- Analyte Exceeds GSI and DW criteria
- Analyte Exceeds DW criteria only
- Analyte Exceeds GSI criteria only

Laboratory analytical data presented in parts per billion (ug/Kg)



Summary of Drinking Water and GSI Exceedances in Soil 2012 - 2019

Racer Flint West-12990
Flint West Industrial Land, Flint, Michigan

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PROJECT:	11-4317-102
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MW-114S										
ANALYTE	DW	GSI	9/5/18	9/5/18	2/27/20	8/19/20	3/3/21	9/15/21	3/16/22	9/13/22
PFBS	420	NC	1.7	<9.5	<10	1.8	1.8	<2.0	1.5	1.7
PFHxS	51	NC	2.4	<9.5	<10	2.3	1.8	1.5	<2.0	<1.8
PFHxS-LN	NC	NC	<0.88	<9.5	<10	1.6	NA	1.8	<2.0	<1.8
PFHpS	NC	NC	<0.88	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8
PFOS	16	12	26	31	31	29	22	21	16	30
PFBA	NC	NC	2.7	<9.5	<20	<9.7	<10	<2.0	<9.8	<9.2
PFPaA	NC	NC	3.6	<9.5	<10	1.1	<4.1	<2.0	<3.9	<3.7
PFHxA	400,000	NC	3.3	<9.5	<10	<1.9	1.6	<2.0	1.7	<1.8
PFHpA	NC	NC	2.2	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8
PFOA	8	12,000	4.3	<9.5	<10	1.8	<2.0	1.7	2.4	2.2
PFNA	6	NC	1.3	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8
PFUnDA	NC	NC	<0.31	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8
PFDoDA	NC	NC	<0.46	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8
PFTDA	NC	NC	<0.75	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8
PFTeDA	NC	NC	1.9	<9.5	<10	<1.9	<2.0	<2.0	<2.0	<1.8

MW-109S										
ANALYTE	DW	GSI	9/5/18	7/17/19	2/27/20	8/19/20	3/3/21	9/15/21		
PFBS	420	NC	2.9	<9.7	<9.9	2.7	2.2	1.6		
PFHxS	51	NC	3.2	<9.7	<9.9	2.5	1.9	1.9		
PFHxS-LN	NC	NC	<1.2	<9.7	<9.9	1.8	NA	<2.0		
PFHpS	NC	NC	2.6	<9.7	<9.9	<2.0	<1.9	<2.0		
PFOS	16	12	27	28	31	29	21	23		
PFBA	NC	NC	2.9	<19	5.5	<10	<9.7	<9.8		
PFPaA	NC	NC	<1.1	<9.7	<9.9	3.6	14	2.1		
PFHxA	400,000	NC	1.7	<9.7	1.4	3.2	7.6	<2.0		
PFHpA	NC	NC	<1.2	<9.7	<9.9	1.5	2	<2.0		
PFOA	8	12,000	2.6	<9.7	2.3	3.1	3.6	1.9		
PFNA	6	NC	1.2	<9.7	<9.9	<2.0	<1.9	<2.0		
PFUnDA	NC	NC	<0.31	<9.7	<9.9	<2.0	<1.9	<2.0		
PFDoDA	NC	NC	<0.46	<9.7	<9.9	<2.0	<1.9	<2.0		
PFTDA	NC	NC	<0.75	<9.7	<9.9	<2.0	<1.9	<2.0		
PFTeDA	NC	NC	1.7	<9.7	<9.9	<2.0	<1.9	<2.0		

MW-115S		
ANALYTE	DW	GSI
PFHxA	400,000	NC
PFBS	420	NC
PFOA	8	12,000
PFHxS	51	NC
PFOS	16	12

MW-108S					
ANALYTE	DW	GSI	8/30/18	7/17/19	9/13/22
PFBS	420	NC	1.7	<9.7	1.5
PFHxS	51	NC	2.9	<9.7	2.3
PFHpS	NC	NC	<0.88	<9.7	<1.8
PFOS	16	12	6	11	8.8
PFBA	NC	NC	<2.7	<19	<9.1
PFPaA	NC	NC	<1.1	<9.7	<3.6
PFHxA	400,000	NC	<0.92	<9.7	<1.8
PFHpA	NC	NC	<1.2	<9.7	<1.8
PFOA	8	12,000	0.58	<9.7	<1.8
PFNA	6	NC	<0.94	<9.7	<1.8
PFUnDA	NC	NC	<0.31	<9.7	<1.8
PFDoDA	NC	NC	<0.46	<9.7	<1.8
PFTDA	NC	NC	<0.75	<9.7	<1.8
PFTeDA	NC	NC	<1.2	<9.7	<1.8

MW-117S				
ANALYTE	DW	GSI	11/18/21	9/13/22
PFHxA	400,000	NC	1.9	<2.0
PFBS	420	NC	1.4	<2.0
PFOA	8	12,000	2.8	<2.0
PFHxS	51	NC	<1.9	<2.0
PFOS	16	12	3.1	<2.0

MW-103S										
ANALYTE	DW	GSI	9/5/18	1/17/19	7/17/19	2/28/20	8/19/20	3/3/21	9/16/21	3/16/22
PFBS	420	NC	2.2	<10	<9.4	<9.5	<2.0	1.6	<2.0	1.6
PFHxS	51	NC	<0.94	<20	<9.4	2.7	2.2	5.9	5	2.1
PFHpS	NC	NC	<0.94	<20	<9.4	2.5	2.2	NA	3.1	2.1
PFHxS-LN	NC	NC	<0.88	<10	<9.4	<9.5	<2.0	<2.0	<2.0	<1.9
PFOS	16	12	91	90	93	84	120	91	46	74
PFBA	NC	NC	<2.7	<137	<19	<19	<10	<28	<16	<39
PFPaA	NC	NC	<1.1	<10	<9.4	<9.5	<4.0	<4.3	<3.9	<3.9
PFHxA	400,000	NC	<0.92	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<2.0
PFHpA	NC	NC	<1.2	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<1.9
PFOA	8	12,000	2.6	<10	<9.4	<9.5	<2.0	<2.2	2.7	2.5
PFNA	6	NC	1.1	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<1.9
PFUnDA	NC	NC	<0.31	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<1.9
PFDoDA	NC	NC	<0.46	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<1.9
PFTDA	NC	NC	<0.75	<10	<9.4	<9.5	<2.0	<2.2	<2.0	<1.9
PFTeDA	NC	NC	<1.2	<10	<9.4	<9.5	<2.0	<4.3	<3.9	<1.9
EI FOSSAA	NC	NC	0.90	<10	<9.4	<9.5	<2.0	<5.4	<3.9	5.1

MW-111S										
ANALYTE	DW	GSI	1/28/18	5/29/18	8/30/18	7/17/19	2/27/20	8/19/20	3/3/21	9/16/21
PFBS	420	NC	<1.9	<0.9	2.4	<9.6	<10	1.5	1.7	<2.0
PFHxS	51	NC	1.9	1.6	3.8	<9.6	<10	1.9	<2.1	<2.0
PFHpS	NC	NC	<1.9	<0.88	<0.88	<9.6	<10	<2.1	<2.1	<2.0
PFOS	16	12	44	47	59	36	32	33	25	11
PFBA	NC	NC	4.8	<2.7	<2.7	<9.6	<20	<10	<10	<2.0
PFPaA	NC	NC	<1.9	<1.1	1.3	<9.6	<10	2.4	4.1	2.9
PFHxA	400,000	NC	2.6	<0.92	<0.92	<9.6	<10	1.6	2.3	<2.0
PFHpA	NC	NC	<1.9	<1.2	<1.2	<9.6	<10	<2.1	<2.1	<2.0
PFOA	8	12,000	6.1	1.7	1.7	<9.6	<10	3	2.1	2
PFNA	6	NC	<1.9	<0.94	<0.94	<9.6	<10	<2.1	<2.1	<2.0
PFUnDA	NC	NC	<1.9	<0.31	<0.31	<9.6	<10	<2.1	<2.1	<2.0
PFDoDA	NC	NC	<1.9	<0.46	<0.46	<9.6	<10	<2.1	<2.1	<2.0
PFTDA	NC	NC	<1.9	0.78	<0.75	<9.6	<10	<2.1	<2.1	<2.0
PFTeDA	NC	NC	<1.9	<1.2	<1.2	<9.6	<10	<2.1	<2.1	<2.0

MW-113S										
ANALYTE	DW	GSI	8/30/18	7/17/19	2/27/20	8/19/20	3/3/21	9/15/21		
PFBS	420	NC	5	<9.5	<9.5	1.8	1.8	1.8		
PFHxS	51	NC	2.6	<9.5	<9.5	3.1	<2.0	1.8		
PFHxS-LN	NC	NC	<0.88	<9.5	<9.5	2.6	NA	<2.1		
PFHpS	NC	NC	<0.88	<9.5	<9.5	<1.9	<2.0	<2.1		
PFOS	16	12	13	20	6.2	26	12	23		
PFBA	NC	NC	7.1	<19	<19	<9.7	<10	<2.1		
PFPaA	NC	NC	<1.1	<9.5	<9.5	1	<4.0	<2.1		
PFHxA	400,000	NC	1	<9.5	<9.5	<1.9	<2.0	<2.1		
PFHpA	NC	NC	1.3	<9.5	<9.5	<1.9	<2.0	<2.1		
PFOA	8	12,000	2.6	<9.5	<9.5	<1.9	<2.0	1.7		
PFNA	6	NC	<0.94	<9.5	<9.5	<1.9	<2.0	<2.1		
PFUnDA	NC	NC	<0.31	<9.5	<9.5	<1.9	<2.0	<2.1		
PFDoDA	NC	NC	<0.46	<9.5	<9.5	<1.9	<2.0	<2.1		
PFTDA	NC	NC	<0.75	<9.5	<9.5	<1.9	<2.0	<2.1		
PFTeDA	NC	NC	<1.2	<9.5	<9.5	<1.9	<2.0	<2.1		

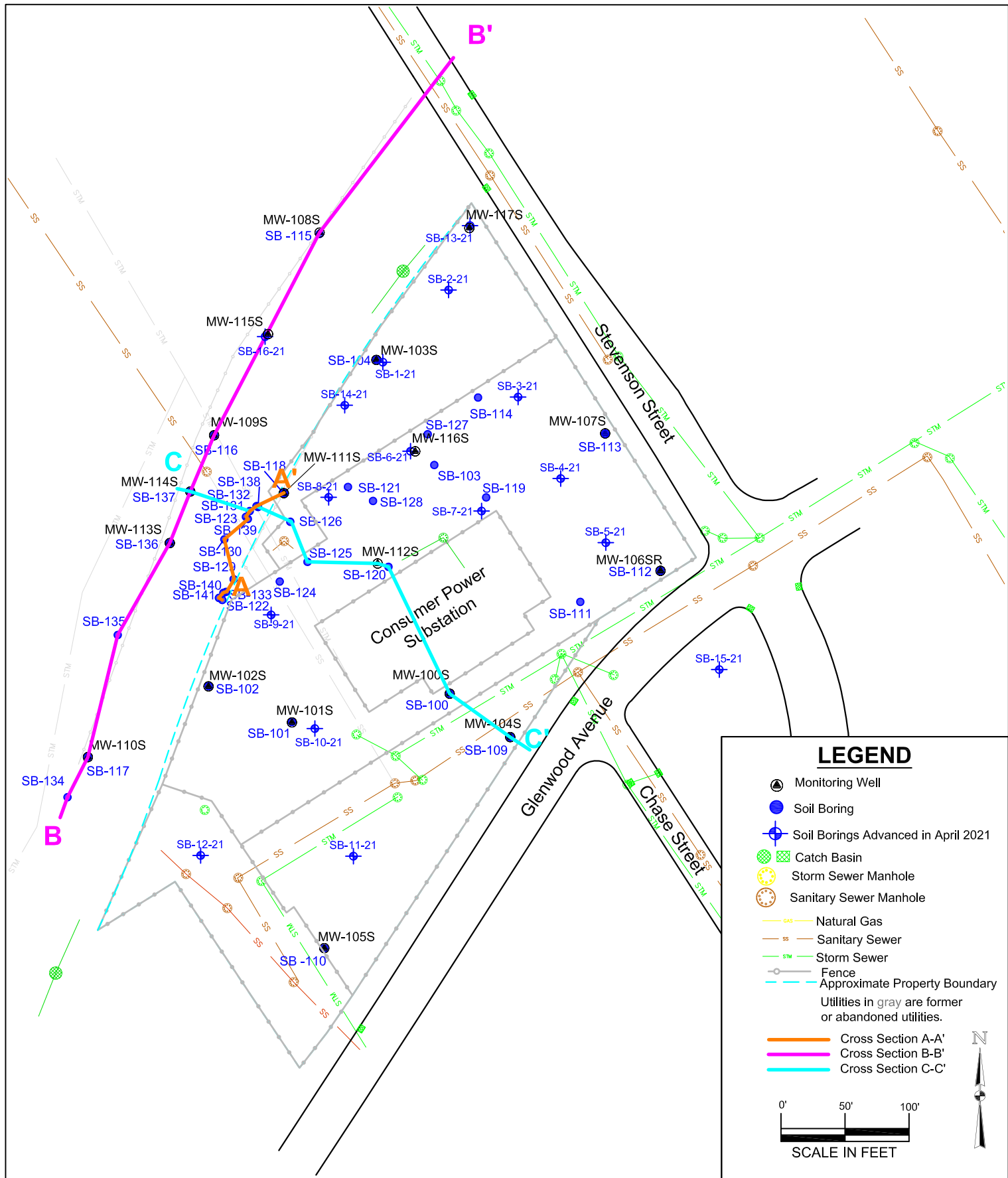
MW-102S									
ANALYTE	DW	GSI	1/28/18	5/29/18	8/30/18	07/17/19			
PFBS	420	NC	<2	1.3	2	<9.7			
PFHxS	51	NC	<2	2	6.1	<9.7			
PFHpS	NC	NC	<2	0.81	2.4	<9.7			
PFOS	16	12	7	12	11	11			
PFBA	NC	NC	4.8	<2.7	3.2	<19			
PFPaA	NC	NC	2.3	1.2	1.4	<9.7			
PFHxA	400,000	NC	2.5	1.8	4.1	<9.7			
PFHpA	NC	NC	<2	1.7	2	<9.7			
PFOA	8	12,000	4.1	4.2	6.1	<9.7			
PFNA	6	NC	<2	1	<0.94	<9.7			
PFUnDA	NC	NC	<2	<0.31	<0.31	<9.7			
PFDoDA	NC	NC	<2	<0.46	<0.46	<9.7			
PFTDA	NC	NC	<2	<0.75	<0.75	<9.7			
PFTeDA	NC	NC	<2	<1.2	<1.2	<9.7			

MW-110S										
ANALYTE	DW	GSI	8/30/18	7/17/19	2/27/20	8/19/20	3/3/21	9/15/21	3/16/22	9/13/22
PFBS	420	NC	3.6	<9.6	<9.5	1.9	3	1.7	2.3	1.7
PFHxS	51	NC	4.3	<9.6	<9.5	2	<2.0	<2.1	<2.0	<1.9
PFHpS	NC	NC	<0.88	<9.6	<9.5	<2.0	<2.0	<2.1	<2.0	<1.9
PFOS	16	12	8.5	<9.6	<9.5	5.9	<2.0	5.8	<2.0	5.6
PFBA	NC	NC	6.7	20	<19	<10	<10	<10	<9.8	<9.6
PFPaA	NC	NC	3	<9.6	<9.5	1.1	<4.0	1.5	<3.9	<3.8
PFHxA	400,000	NC	4.8	<9.6	<9.5	<2.0	<2.0	<2.1	<2.0	<1.9
PFHpA	NC	NC	3.7	<9.6	<9.5	<2.0	<2.0	<2.1	<2.0	<1.9
PFOA	8	12,000	11	<9.6	<9.5	2.8	<2.0	2.7	<2.0	2.5
PFNA	6	NC	<0.94	<9.6	<9.5	<2.0	<2.0	<2.1	<2.0	<1.9
PFUnDA	NC	NC	<0.31	<9.6	<9.5	<2.0	<2.0	<2.1	<2.0	<1.9
PfFDaA	NC	NC	<0.46	<9.6	<9.5	<2.0	<2.0	<2.1	<2.0	<1.9
PFTfDA	NC	NC	<0.75	<9.6	<9.5	<2.0	<2.0	<2.1	<2.0	<1.9
PFTeDA	NC	NC	<1.2	<9.6	<9.5	<2.0	<2.0	<2.1	<2.0	<1.9



Applied *Eco*Systems, Inc.

Environmental Management, Consulting & Field Services



Applied EcoSystems, Inc.

Environmental Management, Consulting & Field Services
G-4300 South Saginaw Street, Burton, Michigan 48529
Phone: 810.715.2525; Fax: 810.715.2526

Cross Section Locations Map

Racer Flint West -12990
Flint West Industrial Land, Flint, Michigan

DATE:

11/30/2022

CHECKED BY:

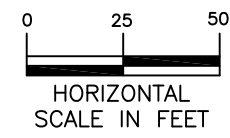
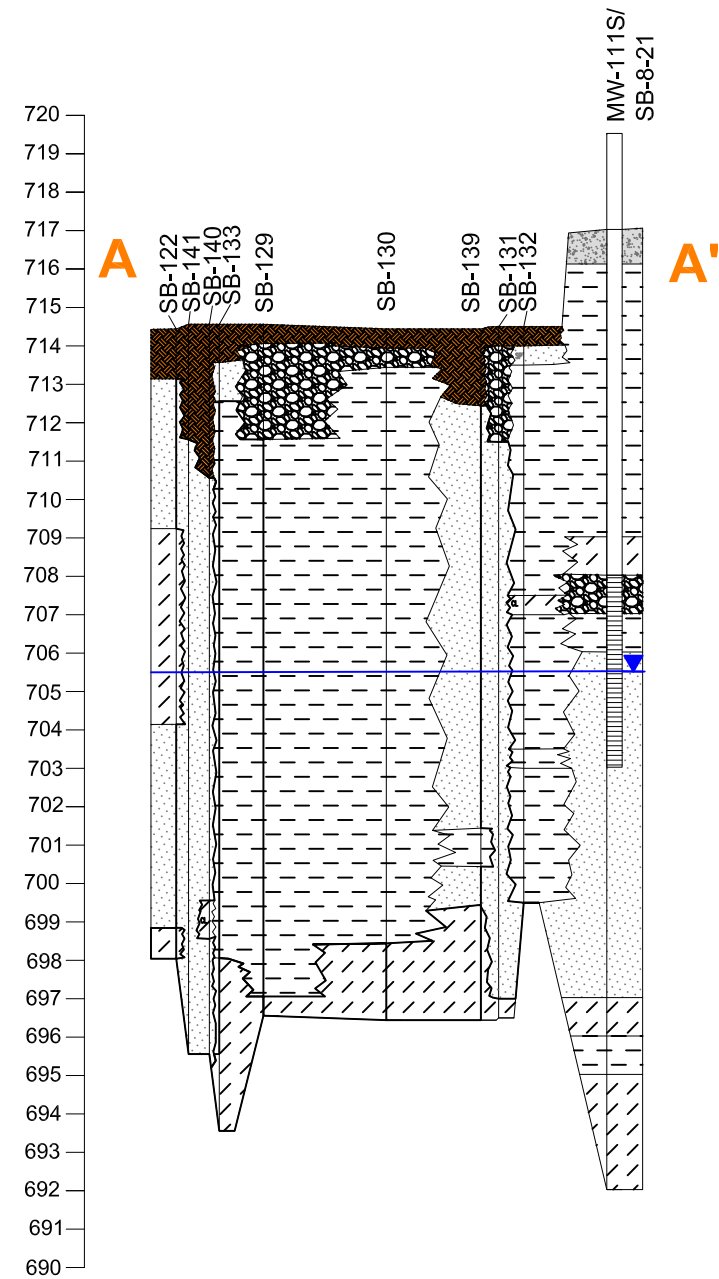
MDS

PROJECT:

11-4317-102

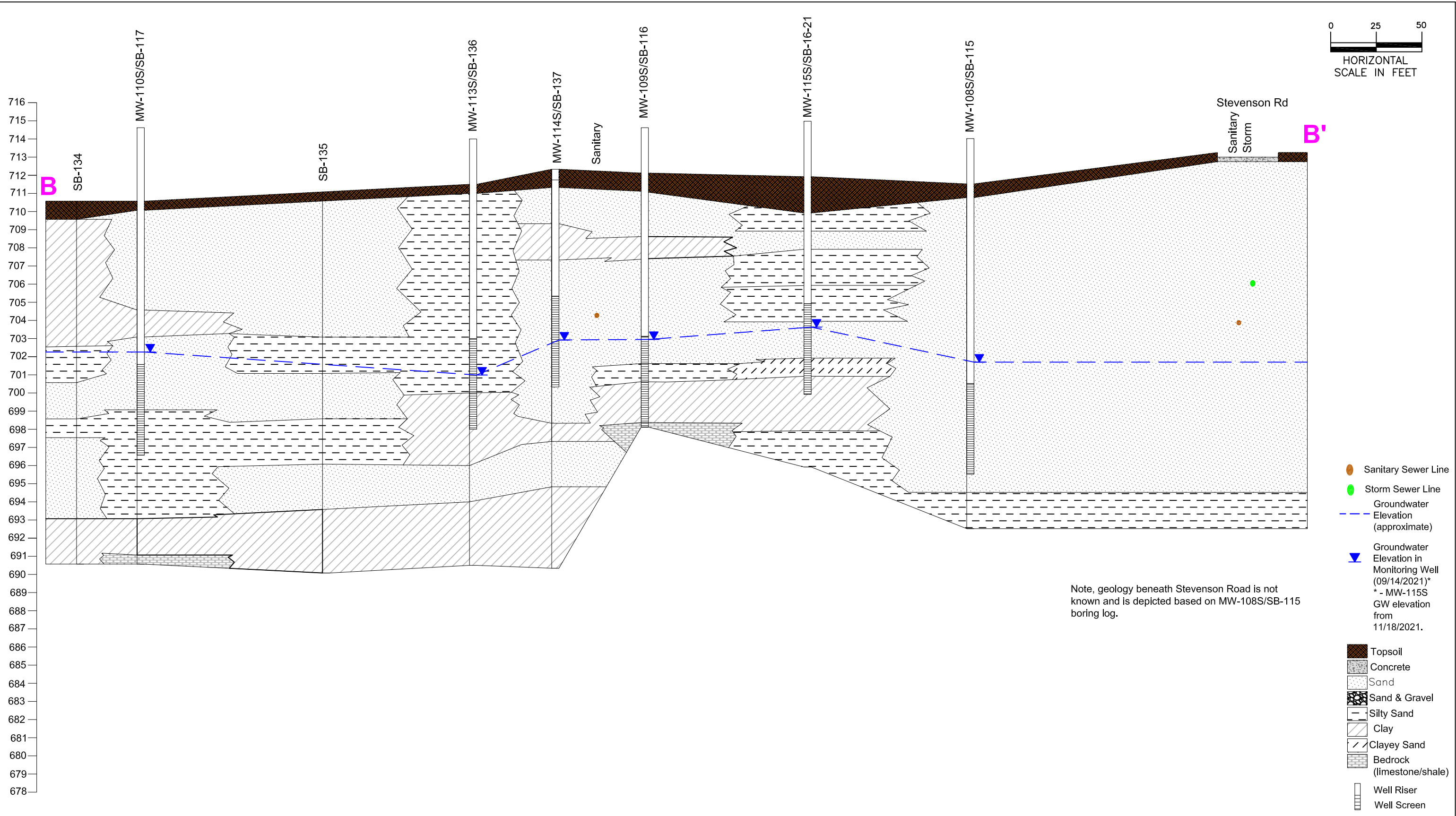
FIGURE:

1A0



- Sanitary Sewer Line
- Storm Sewer Line
- Groundwater Elevation (approximate)
- Groundwater Elevation in Monitoring Well (09/14/2021)*
* - MW-115S
GW elevation from 11/18/2021.
- Topsoil
- Concrete
- Sand
- Sand & Gravel
- Silty Sand
- Clay
- Clayey Sand
- Bedrock (limestone/shale)
- Well Riser
- Well Screen

 Applied EcoSystems, Inc. Environmental Management, Consulting & Field Services G-4300 South Saginaw Street, Burton, Michigan 48529 Phone: 810.715.2525; Fax: 810.715.2526	Cross Section A-A'		DRAWING DATE:	CHECKED BY:
	Racer Flint West -12990		11/30/2022	MDS
	Flint West Industrial Land, Flint, Michigan		PROJECT: 11-4317-102	FIGURE: 1A1



 Applied <i>Eco</i>Systems, Inc. Environmental Management, Consulting & Field Services G-4300 South Saginaw Street, Burton, Michigan 48529 Phone: 810.715.2525; Fax: 810.715.2526	Cross Section B-B'	DRAWING DATE:	CHECKED BY:
	Racer Flint West -12990	11/30/2022	MDS
	Flint West Industrial Land, Flint, Michigan	PROJECT:	FIGURE:
		11-4317-102	1A2

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected			09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022
METALS ANALYTE (ug/L)	DW	GSI									MW-114S						
Arsenic, Dissolved	10	10		20	1.779	1.625	0.565	0.968	45	45	0.716	48	0.282	<2	NA	285	290
Arsenic	10	10		57	4	2	0.332	2	97	127	2	176	<2	<2	NA	321	316
Chromium VI, Dissolved	100	11		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	22	31
Chromium VI	100	11		<250	<50	<50	<10	<10	<10	<10	<10	<50	<10	<10	NA	200	196
Chromium, Dissolved	100	160	G	0.2	10	1.056	0.428	1.952	0.728	0.437	0.285	0.254	0.255	<5	NA	255	259
Chromium	100	160	G	0.969	17100	278	1.308	1.516	8	1.219	45	3.597	0.405	<5	NA	252	251
Copper, Dissolved	1000	20	G	<5	1.252	2	0.853	0.626	<5	0.459	3.762	0.529	<5	0.591	NA	251	253
Copper	1000	20	G	<5	129	7	0.747	0.914	<5	8	3.6	22	0.392	<5	NA	245	248
Iron, Dissolved	300	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Dissolved	4	44	G	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	NA	252	248
Lead	4	44	G	<3	0.297	0.271	<3	<3	<3	6	0.407	17	<3	<3	NA	241	252
Manganese, Dissolved	50	4500		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	50	4500		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, Dissolved	50	5		<5	3.904	4.346	2.48	<5	<5	<5	<5	<5	<5	<5	NA	249	267
Selenium	50	5		<5	6	7	3.116	<5	<5	<5	<5	<5	<5	<5	NA	243	251
Zinc, Dissolved	2400	260	G	0.823	<5	2.639	2.316	1.812	<5	3.777	2.006	3.372	<5	<5	NA	263	262
Zinc	2400	260	G	<5	7	6	2.116	1.038	<5	32	1.893	100	<5	<5	NA	263	259
VOC ANALYTE (ug/L)	DW	GSI															
Acetone	730	1700		<50	<50	<50	<50	<50	6.5	<50	<50	4.7	<50	<50	<50	52	48.7
Acrylonitrile	2.6	2.0 (M); 1.2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	55	53
2-Butanone (MEK)	13000	2,200		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	52	49
Benzene	5	200		1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	53	53
n-Butylbenzene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54
Bromobenzene	18	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55
Bromochloromethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51
Bromodichloromethane	80	NC		<1	0.28	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	53	53
Bromoform	80 (A,W)	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	59	58
Bromomethane	10	4.2; [5(M)]		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	51	51
sec-Butylbenzene	230	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	54	53
tert-Butylbenzene	80	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	53
Carbon disulfide	800	NC		<5	0.13	0.15	<5	<5	0.15	<5	<5	<5	<5	0.24	<5	50	50
Carbon tetrachloride	5	38	X	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	52	51
Chlorobenzene	100	25		2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	56
Chloroethane	430	1,100		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	49	49
Chloroform	80	350		<1	0.47	<1	2	<1	<1	<1	0.26	<1	2	1	<1	51	51
Chloromethane	260	NC		<5	<5	<5	<5	<5	<5	<5	0.12	<5	<5	0.32	<5	52	52
1,1-Dichloroethane	880	740		<1	<1	<1	<1	<1	0.69	2	<1	2	<1	<1	<1	51	50
1,1-Dichloroethene	7	130		<1	<1	<1	<1	<1	0.39	2	<1	2	<1	<1	<1	49	48
1,2-Dibromo-3-chloropropane	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	64	62
1,2-Dibromoethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	57	55
1,2-Dichlorobenzene	600	13		0.17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55
1,2-Dichloroethane	5.0 (A)	360 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	51
1,2-Dichloropropane	5.0 (A)	230 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51
1,3-Dichlorobenzene	6.6	28		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	55
1,4-Dichlorobenzene	75	17		0.13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	55

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID				MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected				09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	
VOC ANALYTE (ug/L)	DW	GSI																
cis-1,2-Dichloroethene	70	620		0.16	<1	<1	<1	<1	3	142	<1	136	<1	<1	<1	51	50	
cis-1,3-Dichloropropene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54	
Dibromochloromethane	80 (A,W)	ID		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	58	56	
Dibromomethane	230	NA		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	54	54	
Dichlorodifluoromethane	1700	ID		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	52	51	
Diethyl ether	10 (E)	ID		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	51	50	
trans-1,2-Dichloroethene	100	1500		<1	<1	<1	<1	<1	0.17	0.95	<1	0.82	<1	<1	<1	50	49	
trans-1,3-Dichloropropene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	55	
trans-1,4-Dichloro-2-butene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	65	62	
Ethylbenzene	74	18		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	53	
2-Hexanone	1000	ID		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	61	57	
Hexachloroethane	21	6.7		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	60	58	
p-Isopropyltoluene	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	54	54	
Isopropylbenzene	800	28		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	55	53	
VOC ANALYTE (ug/L) {cont}	DW	GSI																
2-Methylnaphthalene	260	19		0.24	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.16	<5	77	84
4-Methyl-2-pentanone (MIBK)	1800	ID		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	59	56	
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	53	53	
Methyl iodide	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51	
Methylene chloride	5	1500		<5	<5	<5	<5	<5	<5	<5	<5	<5	0.64	0.61	<5	52	52	
Naphthalene	520	11		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	63	64	
n-Propylbenzene	80	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54	
Styrene	100	80		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54	
1,1,1,2-Tetrachloroethane	77	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55	
1,1,1-Trichloroethane	200	89		<1	<1	<1	<1	<1	<1	1	<1	1	<1	<1	<1	50	49	
1,1,2,2-Tetrachloroethane	8.5	78 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	57	56	
1,1,2-Trichloroethane	5.0 (A)	330 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	53	
1,2,3-Trichlorobenzene	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	58	62	
1,2,3-Trichloropropane	42	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	56	
1,2,3-Trimethylbenzene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55	
1,2,4-Trichlorobenzene	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	57	59	
1,2,4-Trimethylbenzene	63 (E)	17		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	54	
1,3,5-Trimethylbenzene	72 (E)	45		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	53	
Tetrachloroethene	5	60		<1	<1	<1	<1	<1	<1	<1	0.21	<1	<1	<1	<1	52	51	
Tetrahydrofuran	95	11000		<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	0.33	<90	49.11	47.82	
Toluene	790	270		0.16	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51	
Trichloroethene	5	200		<1	<1	<1	<1	<1	7	252	1	219	<1	<1	<1	53	53	
Trichlorofluoromethane	2600	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	53	52	
Vinyl chloride	2	13		0.74	<1	<1	<1	<1	2	14	<1	13	<1	<1	<1	53	54	
o-Xylene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54	
p,m-Xylene	NC	NC		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	109	107	
Xylenes, Total	280	49		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	164	161	

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected			09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022
PFA ANALYTE (ng/L)	DW	GSI														
Perfluorobutanoic acid (PFBA)	NC	NC	<190	<9.5	<9.5	<9.1	<9.6	<28	<9.2	<10	<9.5	<9.7	<9.8	<10	330	300
Perfluoropentanoic acid (PFPeA)	NC	NC	<3.8	<3.8	1.8	<3.6	<3.8	<3.7	<3.7	<4.0	<3.8	<3.9	<3.9	<4.1	110	110
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	120	120
Perfluorohexanoic acid (PFHxA)	400,000	NC	<5.7	<1.9	2.5	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	90
Perfluorobutane sulfonic acid (PFBS)	420	NC	<1.9	1.6	4.3	1.5	1.7	1.4	1.7	1.5	1.5	<1.9	<2.0	<2.0	110	100
Perfluoroheptanoic acid (PFHpA)	NC	NC	<1.9	<1.9	2.1	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	94	110
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	100	99
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	92	100
Perfluorooctanoic acid (PFOA)	8	12,000	2.5	<1.9	13	<1.8	2.5	<1.8	2.2	<2.0	<1.9	<1.9	<2.0	<2.0	92	100
Perfluorohexane sulfonic acid (PFHxS)	51	NC	<1.9	1.7	1.9	2.3	2.5	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	120	110
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	<1.9	<1.9	1.6	1.5	1.6	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	97	94
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	17	15
Perfluorononanoic acid (PFNA)	6	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	99	100
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	110
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	120	99
Perfluorodecanoic acid (PFDA)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	130	99
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	100	96
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	5.1	<3.8	<3.8	<3.6	<3.8	<3.7	<3.7	<4.0	<3.8	<3.9	<3.9	<4.1	110	110
Perfluorooctane sulfonic acid (PFOS)	16	12	73	<1.9	16	8.8	5.6	5.8	30	<2.0	23	<1.9	<2.0	<2.0	200	190
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	49	<1.9	4.3	2.5	<1.9	2.8	18	<2.0	14	<1.9	<2.0	<2.0	140	130
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	20	<1.9	11	6.3	4.6	3	12	<2.0	9	<1.9	<2.0	<2.0	62	58

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID				MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected				09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022
PFA ANALYTE (ng/L)	DW	GSI															
Perfluoroundecanoic acid (PFUnDA)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	95	88
Perfluorononane sulfonic acid (PFNS)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	100
Perfluorododecanoic acid (PFDoDA)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	99	93
Perfluorodecane sulfonic acid (PFDS)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	91
Perfluorotridecanoic acid (PFTrDA)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	84	86
Perfluorooctane sulfonamide (FOSA)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	99	88
Perfluorotetradecanoic acid (PFTeDA)	NC	NC		<3.8	<3.8	<3.8	<3.6	<3.8	<3.7	<3.7	<4.0	<3.8	<3.9	<3.9	<4.1	96	110
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	90	81
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	96	91
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	110
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC		<9.6	<9.5	<9.5	<9.1	<9.6	<9.2	<9.2	<10	<9.5	<9.7	<9.8	<10	110	88

1.59

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.
GSI - Groundwater Surface Water Interface Generic Criteria per
MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	SB124-TWT	SB125-TWT	SB127-TWT	SB129-TWT	SB130-TWT	SB131-TWT	SB124-TWB	SB125-TWB	SB127-TWB	SB129-TWB	SB130-TWB	SB131-TWB	Dup1	Dup2	Dup3		
	Date Collected			4/3/14	4/3/14	3/29/14	4/3/14	4/3/14	4/3/14	4/3/14	3/29/14	3/29/14	3/29/14	3/29/14	4/3/14	3/29/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	3/29/14				
ANALYTE (ug/L)	DW	GSI																															
Arsenic (dissolved)	10	10				11			4				21		19			17	57	4	3	2	3	30	38								
Chromium (dissolved)	100	160	G		35		22	18					7	12		128	13			147	64	25	16		17	89	19	33	14				
Copper (dissolved)	1,000	20	G										28				21		5	22	140	28	42		12	24	94	144					
Lead (dissolved)	4	44	G										24				29		5	23	208	16	47	1	19	11	31	14					
Selenium (dissolved)	50	5						6	5		5						12				4		12				5	3					
Zinc (dissolved)	2,400	260	G		97		23	5		62	5	16	18	81	21	9	24	311	167	82	323	326	103	241	400	166	68	241	191	12			

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	SB124-TWT	SB125-TWT	SB127-TWT	SB129-TWT	SB130-TWT	SB131-TWT	SB124-TWB	SB125-TWB	SB127-TWB	SB129-TWB	SB130-TWB	SB131-TWB	Dup1	Dup2	Dup3
	Date Collected																														
ANALYTE (ug/L)	DW	GSI																													
Acetone	730	1,700		1.13	2.36		0.88	1.82	3.58	3.82		1.22	2.11	0.72	5.17	0.93	5.7			9.1	5.7		10.3	66	25.8	5.9		5.8	1.06		
Methyl iodide	NC	NC																													
Carbon disulfide	800	NC																						0.86	0.4						
2 Butanone (MEK)	13,000	2,200		0.73	0.86		0.41	0.83	0.78	0.94					2.98									11.6	8.6						
Chloromethane	260	NC																					0.33		0.61						
Vinyl Chloride	2.0	13								0.64		18		4	6	0.45			5			2			2			2	4		
Chloroethane	430	1,100													0.6	1.13				1.07					0.77						
trichlorofluoromethane	2,600	NA																													
1,1-Dichloroethene	7.0	130										4		1	0.40				1						0.81				1		
Methylene Chloride	5.0	1,500																													
trans-1,2-Dichloroethene	100	1,500										0.92		0.24	0.23													0.28	0.26		
1,1-Dichloroethane	880	740								0.21		3.00		2	0.69	2.00						3.00						2.00	2.00		
cis-1,2-Dichloroethene	70	620								3		59		46	2	26				0.042	0.69	2	21		0.36	0.93	3.00	21.00	43.00		
Tetrahydrofuran	95	11,000													2																
Chloroform	80	350					3.00				0.35	0.35		0.29								0.042						0.41	0.29		
1,1,1-Trichloroethane	200	89										0.48		0.75								0.72						0.71	0.73		
4-Methyl-2-pentanone (M	1800	1000000000													0.67					0.390				0.590	2.190						
2-Hexanone	1000	1000000000																													
Carbontetrachloride	5.0	45									2												0.210	2.170	4.570						
Benzene	5.0	200								0.25													0.17	0.21	0.81	0.21	0.16	0.23			
Bromodichloromethane	80.0	NC					0.89																								
Trichloroethene	5.0	200		3	2					4		102		92	3	23					8	3	81	0.55			8	5	78	86	
Toluene	790	270							0.35	0.63							0.23			0.39	0.20			0.38	0.30	1.00	0.35	0.24	0.44		
Tetrachloroethene	5.0	60						47																							
Chlorobenzene	100	25																					0.180						0.17		
Styrene	100	80																													
Ethylbenzene	74	18																											0.11		
Total Xylenes	280	41																					0.12	0.11	0.31						
1,2 -Dichlorobenzene	600	13																													
1,2,4-Trimethylbenzene	63	17																							0.22	0.31					
1,2,3-Trimethylbenzene	NC	NC																							0.20	0.18					
Naphthalene	520	11							0.07	0.07																					
2-Methylnaphthalene	260	19															0.34		0.31					0.75	1.68	0.55					
																	0.51		0.40					0.47	0.88	0.47					

NOTES:	
	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2	Dup3
	Date Collected		6/25/14	6/25/14	6/25/14	6/26/14	6/25/14	6/26/14	6/25/14	6/25/14	6/26/14	6/26/14	6/26/14	6/26/14	6/25/14	6/26/14			
ANALYTE (ug/L)	DW	GSI																	
Arsenic (dissolved)	10	10													19				
Chromium (dissolved)	100	160	G		51											152			
Copper (dissolved)	1,000	20	G													4			
Lead (dissolved)	4	44	G				25	22	23				15			5			
Selenium (dissolved)	50	5			66			8			6								
Zinc (dissolved)	2,400	260	G	5	11		10			5	7				8	13			

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2	Dup3
	Date Collected		6/25/14	6/25/14	6/25/14	6/26/14	6/25/14	6/26/14	6/25/14	6/25/14	6/26/14	6/26/14	6/26/14	6/26/14	6/25/14	6/26/14			
ANALYTE (ug/L)	DW	GSI																	
Acetone	730	1,700		1.74	1.45	2.04	2.67	1.55	1.86	1.59	2.82	1.32	1.47	1.29	1.48	4.93	1.32		
Methyl iodide	NC	NC																	
Carbon disulfide	800	NC													0.42	0.36			
2 Butanone (MEK)	13,000	2,200								0.4	0.65	0.29		0.29	1.99				
Chloromethane	260	NC		0.32			0.34									0.29			
Vinyl Chloride	2.0	13										10			21	2			
Chloroethane	430	1,100													2.9				
trichlorofluoromethane	2,600	NA																	
1,1-Dichloroethene	7.0	130										4			2.00	0.39			
Methylene Chloride	5.0	1,500																	
trans-1,2-Dichloroethene	100	1,500										0.7			0.64	0.24			
1,1-Dichloroethane	880	740													1.00	3.00			
cis-1,2-Dichloroethene	70	620		0.62								3			7	59			
Tetrahydrofuran	95	11,000										70.0							
Chloroform	80	350					5.00		0.22		0.5	0.37				0.320			
1,1,1-Trichloroethane	200	89										0.50				1.00			
4-Methyl-2-pentanone (M	1800	1000000000													0.83				
2-Hexanone	1000	1000000000													1.46				
Carbontetrachloride	5.0	45									2								
Benzene	5.0	200																	
Bromodichloromethane	80.0	NC					0.82												
Trichloroethene	5.0	200		5	1	3		26		2		104		2	24	69			
Toluene	790	270																	
Tetrachloroethene	5.0	60																	
Chlorobenzene	100	25																	
Styrene	100	80																	
Ethylbenzene	74	18																	
Total Xylenes	280	41																	
1,2 -Dichlorobenzene	600	13																	
1,2,4-Trimethylbenzene	63	17																	
1,2,3-Trimethylbenzene	NC	NC																	
Naphthalene	520	11																	
2-Methylnaphthalene	260	19																	

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected		12/22/14	12/22/14	11/18/14	12/22/14	11/18/14	11/18/14	11/18/14	11/18/14	11/20/14	11/20/14	11/18/14	11/20/14	11/18/14	11/20/14	11/18/14	11/20/14
ANALYTE (ug/L)	DW	GSI																
Arsenic (dissolved)	10	10	na										17		20			
Arsenic	10	10	29	4	12	na	12	42	13	2	5	16	55	9	400	40	11.00	5.00
Cadmium (dissolved)	5	5	GX	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Cadmium	5	5	GX	6.90	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chromium (dissolved)	100	160	G	na	na	7	na	9	6	15			7	7			10	
Chromium	100	160	GX	na	na	62	na	17,800	42,600	68,000	14	19	16	69	237	140	822	14,000
Copper (dissolved)	1,000	20	G	na			na											
Copper	1,000	20	GX	230	32	22	na	716	802	402	29	31	26	736	22	502	300	583
Lead (dissolved)	4	44	G	na			na											
Lead	4	44	GX	70	21	14	na	6	29	44	6	15	32	249	20	354	289	5
Selenium (dissolved)	50	5		na			na		14	5								
Selenium	50	5					na		16	5							6	
Zinc (dissolved)	2,400	260	G	na	66		na	28		15	9	13	11	25	34	9	23	36
Zinc	2,400	260	GX	493	74	33	na	29	52	210	27	222	47	556	36	920	504	23

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected		12/22/14	12/22/14	11/18/14	12/22/14	11/18/14	11/18/14	11/18/14	11/18/14	11/20/14	11/20/14	11/18/14	11/20/14	11/18/14	11/20/14		
ANALYTE (ug/L)	DW	GSI																
Acetone	730	1,700		1.83	2.77	na									42			
Methyl iodide	NC	NC				na												
Carbon disulfide	800	NC		0.29		na	0.70											
2 Butanone (MEK)	13,000	2,200		0.55		na									24			
Chloromethane	260	NC				na	0.27	0.35		0.33		0.53	0.58	0.88		0.48	0.58	
Vinyl Chloride	2.0	13				na				0.58		12			3			
Chloroethane	430	1,100				na									0.88			
trichlorofluoromethane	2,600	NA				na												
1,1-Dichloroethene	7.0	130				na						5						
Methylene Chloride	5.0	1,500				na												
trans-1,2-Dichloroethene	100	1,500				na						0.9						
1,1-Dichloroethane	880	740				na			0.71			1			0.76	0.47		
cis-1,2-Dichloroethene	70	620		1		na			2	0.57	45			1	3	9		0.56
Tetrahydrofuran	95	11,000				na												
Chloroform	80	350				na	3				2	0.18					3	2
1,1,1-Trichloroethane	200	89				na						0.37				0.29		
4-Methyl-2-pentanone (MIBK)	1800	1000000000				na									3.88			
2-Hexanone	1000	1000000000				na									12			
Carbontetrachloride	5.0	45				na					2							2
Benzene	5.0	200				na						0.12			0.29			
Bromodichloromethane	80.0	NC				na	0.54										0.46	
Trichloroethene	5.0	200		2	4	0.36	na			5		160		7		61	0.3	
Toluene	790	270				na							0.22		0.51			
Tetrachloroethene	5.0	60			0.23	na		73				0.2				0.20		
Chlorobenzene	100	25				na												
Styrene	100	80				na												
Ethylbenzene	74	18				na									0.17			
Total Xylenes	280	41				na												
1,2 -Dichlorobenzene	600	13				na												
1,2,4-Trimethylbenzene	63	17				na												
1,2,3-Trimethylbenzene	NC	NC				na												
Naphthalene	520	11				na												
2-Methylnaphthalene	260	19				na												

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River
na	Sample not analyzed for this constituent

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected		DRY	4/28/15	4/28/15	4/30/15	4/28/15	4/28/15	4/28/15	4/28/15	4/30/15	4/30/15	4/30/15	4/30/15	4/28/15	4/30/15	4/28/15	4/30/15
ANALYTE (ug/L)	DW	GSI																
Arsenic (dissolved)	10	10				6									16			6
Arsenic	10	10		4		23			5				2	6	277	6		20
Chromium (dissolved)	100	160	G		22		5	8									10	
Chromium	100	160	G	17	24		1590	829	58300					29	9	73	16	
Copper (dissolved)	1000	20	G															
Copper	1000	20	G	31	9		40	13	306						14	12		
Lead (dissolved)	4	44	G															
Lead	4	44	G	24					26						9	11		
Selenium (dissolved)	50	5						9										
Selenium	50	5						9										
Zinc (dissolved)	2400	260	G	9			8		120		6			9	39	22	11	
Zinc	2400	260	G	9			8		133		6			9	39	22	11	
Final Field Turbidity Reading, before filtering stated in ug/L				785E+3	432E+3	595E+3	1010E+3	1105E+3	1694E+3	479E+3	453E+3	505E+3	585E+3	617E+3	829E+3	729E+3		
	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected		DRY	4/28/15	4/28/15	4/30/15	4/28/15	4/28/15	4/28/15	4/28/15	4/30/15	4/30/15	4/30/15	4/30/15	4/28/15	4/30/15	4/28/15	4/30/15
ANALYTE (ug/L)	DW	GSI																
PNAs	varies	varies																

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105SR	MW-106S	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Dup1	Dup2
	Date Collected		DRY	4/28/15	4/28/15	4/30/15	4/28/15	4/28/15	4/28/15	4/28/15	4/30/15	4/30/15	4/30/15	4/30/15	4/28/15	4/30/15	4/28/15	4/30/15
ANALYTE (ug/L)	DW	GSI																
Acetone	730	1,700													10			
Methyl iodide	NC	NC																
Carbon disulfide	800	NC							0.17						0.16			
2 Butanone (MEK)	13,000	2,200													6.6			
Chloromethane	260	NC		4	6	2	6	5	5	4	4	4	5	5	4	2		3
Vinyl Chloride	2.0	13								0.6		21		4	4	2		
Chloroethane	430	1,100				0.7									5			0.77
trichlorofluoromethane	2,600	NA																
1,1-Dichloroethene	7.0	130										4		0.88				
Methylene Chloride	5.0	1,500																
trans-1,2-Dichloroethene	100	1,500										1		0.99		0.26		
1,1-Dichloroethane	880	740								0.56		2		2	0.52	3		
cis-1,2-Dichloroethene	70	620								2		51		48	0.66	19		
Tetrahydrofuran	95	11,000																
Chloroform	80	350					1		0.7		1	0.28		0.29	0.21	0.19		
1,1,1-Trichloroethane	200	89										0.51		0.36				
4-Methyl-2-pentanone (MIBK)	1800	1E+09													1			
2-Hexanone	1000	1E+09													3			
Carbontetrachloride	5.0	45									2							
Benzene	5.0	200		0.26		0.23												0.25
Bromodichloromethane	80.0	NC																
Trichloroethene	5.0	200		2	0.51					2		138		78	0.62	36		
Toluene	790	270		0.71					0.18									
Tetrachloroethene	5.0	60						69										
Chlorobenzene	100	25																0.17
Styrene	100	80				0.15												0.21
Ethylbenzene	?	?																
Total Xylenes	280	41																
1,2 -Dichlorobenzene	?	?																
1,2,4-Trimethylbenzene	63	17																
1,2,3-Trimethylbenzene	NC	NC																
Naphthalene	520	11																
2-Methylnaphthalene	260	19																

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank
	Date Collected			DRY	10/26/15	10/26/15	10/27/15	10/26/15	10/26/15	10/26/15	10/26/15	10/27/15	10/27/15	10/27/15	10/27/15	10/26/15	10/27/15	10/26/15	10/26/15
ANALYTE (ug/L)	DW	GSI																	
Arsenic (dissolved)	10	10		DRY			4							3.31	0.51	4	1.09		
Arsenic	10	10		DRY	4.3	20	140	13.6	70	53	68	18.4	40	30	60	235	30		
Chromium (dissolved)	100	160	G	DRY	2.39	7.1	0.51		23	128		0.67	0.5	0.66	4.35	0.57	0.76		
Chromium	100	160	G	DRY	49.1	90	120	10,000	16.2	446,000	29.5	70	70	16.4	1,140	150	220		
Copper (dissolved)	1000	20	G	DRY				1.04	1.89	1.5	4.88	2.28	7.11	12	2.85	115	3.13		
Copper	1000	20	G	DRY	14.42	37.44	160	210	820	2,760	70	90	90	90	70	200	80		
Lead (dissolved)	4	44	G	DRY				1.57		1.11						1.27			
Lead	4	44	G	DRY	7.61	20.45	80	29.78	180	300	16.86	90	70	20.3	40	100	50		
Selenium (dissolved)	50	5		DRY		1.3		1.9	9.9	4.6	2.2	1.4	2	1.2		102			
Selenium	50	5		DRY	12	16		15	17						16				
Zinc (dissolved)	2400	260	G	DRY	35	111	12	42	24	22	17	16	15	19	34	101	84		
Zinc	2400	260	G	DRY	40.3	100	410	160	800	1,600	110	350	230	70	140	450	170		
	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank
	Date Collected			DRY	10/26/15	10/26/15	10/27/15	10/26/15	10/26/15	10/26/15	10/26/15	10/27/15	10/27/15	10/27/15	10/27/15	10/26/15	10/27/15	10/26/15	10/26/15
ANALYTE (ug/L)	DW	GSI																	
Acetone	730	1,700		DRY															
Methyl iodide	NC	NC		DRY															
Carbon disulfide	800	NC		DRY															
2 Butanone (MEK)	13,000	2,200		DRY			1.74											0.82	0.79
Chloromethane	260	NC		DRY															
Vinyl Chloride	2.0	13		DRY									20		97				
Chloroethane	430	1,100		DRY															
trichlorofluoromethane	2,600	NA		DRY															
1,1-Dichloroethene	7.0	130		DRY									5.3		4	0.76			
Methylene Chloride	5.0	1,500		DRY															
trans-1,2-Dichloroethene	100	1,500		DRY											1		0.27		
1,1-Dichloroethane	880	740		DRY									3.3		2		1		
cis-1,2-Dichloroethene	70	620		DRY							0.42	0.66	80		42	1	23		
Tetrahydrofuran	95	11,000		DRY															
Chloroform	80	350		DRY				2				3							
1,1,1-Trichloroethane	200	89		DRY											0.33		0.45		
4-Methyl-2-pentanone (MIBK)	1800	1000000000		DRY												1.09			
2-Hexanone	1000	1000000000		DRY												1.64			
Carbontetrachloride	5.0	45		DRY									3						
Benzene	5.0	200		DRY			0.21		0.26	0.22						0.2			
Bromodichloromethane	80.0	NC		DRY				0.65											
Trichloroethene	5.0	200		DRY	3	0.68		0.68			2	0.33	200		92		67		
Toluene	790	270		DRY					0.58	0.4	0.31					0.37			
Tetrachloroethene	5.0	60		DRY					58										
Chlorobenzene	100	25		DRY															
Styrene	100	80		DRY															
Ethylbenzene	74	18		DRY															
Total Xylenes	280	41		DRY															
1,2 -Dichlorobenzene	600	13		DRY															
1,2,4-Trimethylbenzene	63	17		DRY															
1,2,3-Trimethylbenzene	NC	NC		DRY															
Naphthalene	520	11		DRY															
2-Methylnaphthalene	260	19		DRY															

NOTES:

	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

As Erroneously Labeled in May 23, 2016 Laboratory Report

As Erroneously Labeled in May 23, 2016 Laboratory Report			MW-112					MW-113		MW-120																			
	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank	Trip Blank	Field Blank	Dup1	Trip Blank	Field Blank	Dup2	Dup3				
	Date Collected		5/11/16	5/11/16	NS	6/8/16	6/1/16	NS	5/11/16	5/11/16	6/1/16	6/1/16	6/1/16	6/8/16	5/11/16	6/1/16	5/11/16	5/11/16	6/1/16	6/1/16	6/1/16	6/8/16	6/8/16	6/8/16	6/8/16	6/8/16			
ANALYTE (ug/L)	DW	GSI																											
Arsenic (dissolved)	10	10			NS	6	1.65	NS				0.65	1.21	0.55	18	2.08													
Arsenic	10	10		3	NS	22	1.62	NS	3		0.96	5	3	1	79	9													
Chromium (dissolved)	100	160	G		NS	1.16	1.19	NS			1.42	1.17	1.77	3.33		1.73													
Chromium (total)	100	160	G	5	13	NS	1	465	NS	77	3	1.91	3.38	1.3	4	4.86													
Chromium VI (dissolved)	100	160			NS			NS																					
Chromium VI (total)	100	160		NA	NA	NS	NA	NS	NA				NA		NA	NA													
Copper (dissolved)	1000	20	G		NS	2.02	0.51	NS			2.32	6	1.49	1.25		0.73													
Copper	1000	20	G	4	7	NS	0.77	16	NS	7	3	1.95	8	0.74	1.38														
Lead (dissolved)	4	44	G		NS	0.278	0.764	NS			0.187	0.325	0.32	0.094	1	0.155													
Lead	4	44	G	2	3	NS	0.105	0.554	NS	2		0.785	2.6	0.5															
Selenium (dissolved)	50	5			NS			NS			6																		
Selenium	50	5			NS		6	NS			6																		
Zinc (dissolved)	2400	260	G	21	NS	1870	18	NS			1220	730	373	49	5	317													
Zinc	2400	260	G	11	22	NS	2.46	1.48	NS	12	7	6	10	2.95	7														
	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank	Trip Blank	Field Blank	Dup2	Trip Blank	Field Blank	Dup3	Dup3				
	Date Collected		5/11/16	5/11/16	NS	6/8/16	6/1/16	NS	5/11/16	5/11/16	6/1/16	6/1/16	6/1/16	6/8/16	5/11/16	6/1/16	5/11/16	5/11/16	6/1/16	6/1/16	6/1/16	6/8/16	6/8/16	6/8/16	6/8/16				
ANALYTE (ug/L)	DW	GSI																											
Acetone	730	1,700		2.72	1.62	NS		NS	2.72	2.1		0.6	0.67		4.21			1.98		0.69									
Methyl iodide	NC	NC			NS			NS																					
Carbon disulfide	800	NC			NS			NS																					
2 Butanone (MEK)	13,000	2,200			NS			NS							1.36			0.37											
Chloromethane	260	NC			NS			NS																					
Vinyl Chloride	2.0	13			NS			NS				15			17														
Chloroethane	430	1,100			NS			NS							2.59														
trichlorofluoromethane	2,600	NA			NS			NS																					
1,1-Dichloroethene	7.0	130			NS			NS				3																	
Methylene Chloride	5.0	1,500			NS			NS																					
trans-1,2-Dichloroethene	100	1,500			NS			NS				0.59			0.36														
1,1-Dichloroethane	880	740			NS			NS				1			1	3													
cis-1,2-Dichloroethene	70	620		0.34	NS			NS							3	30													
Tetrahydrofuran	95	11,000			NS			NS																					
Chloroform	80	350			NS		3	NS			1								0.490		3.000								
1,1,1-Trichloroethane	200	89			NS			NS				0.31				0.3													
4-Methyl-2-pentanone (MIBK)	1800	ID			NS			NS							0.3														
2-Hexanone	1000	ID			NS			NS							0.47														
Carbontetrachloride	5.0	45			NS			NS			2																		
Benzene	5.0	200			NS			NS													0.710								
Bromodichloromethane	80.0	NC			NS		0.74	NS																					
Trichloroethene	5.0	200		4	2	NS		NS	4	0.26		93		11	12	50													
Toluene	790	270			NS			NS																					
Tetrachloroethene	5.0	60			NS			NS																					
Chlorobenzene	100	25			NS			NS																					
Styrene	100	80			NS			NS																					
Ethylbenzene	74	18			NS			NS																					
Total Xylenes	280	41			NS			NS																					
1,2 -Dichlorobenzene	600	13			NS			NS																					
1,2,4-Trimethylbenzene	63	17			NS			NS																					
1,2,3-Trimethylbenzene	NC	NC			NS			NS																					
Naphthalene	520	11			NS			NS																					
2-Methylnaphthalene	260	19			NS			NS																					
Diethyl ether	10 (E)	ID			NS			NS																					
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)			NS			NS																					
Acrylonitrile	2.6	2.0 (M); 1.2			NS			NS																					
Dichlorodifluoromethane	1,700	ID			NS			NS																					
Bromomethane	10	35			NS			NS																					
1,2-Dichloroethane	5.0 (A)	360 (X)			NS			NS																					
Trichloroethene	5.0 (A)	200 (X)			NS			NS																					
1,2-Dichloropropane	5.0 (A)	230 (X)			NS			NS																					
cis-1,3-Dichloropropene	NC	NC			NS			NS																					
trans-1,3-Dichloropropene	NC	NC			NS			NS																					
1,1,2-Trichloroethane	5.0 (A)	330 (X)			NS			NS																					
trans-1,4-Dichloro-2-butene	NC	NC			NS			NS																					
Dibromochloromethane	80 (A,W)	ID			NS			NS																					
1,2-Dibromoethane	NC	NC			NS			NS																					
1,1,1,2-Tetrachloroethane	77	ID			NS			NS																					
Isopropylbenzene	800	28			NS			NS																					
Bromoform	80 (A,W)	ID			NS			NS																					
1,1,2,2-Tetrachloroethane	8.5	78 (X)			NS			NS																					
1,2,3-Trichloropropane	42	NA			NS			NS																					
n-Propylbenzene	80	ID			NS			NS																					
Bromobenzene	18	NA			NS			NS																					
1,3,5-Trimethylbenzene	72 (E)	45			NS			NS																					

NOTES:	
	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S			Dup			Dup			
	Date Collected		10/27/16	10/27/16	11/1/16	10/31/16	11/1/16	11/1/16	10/27/16	10/27/16	10/31/16	10/31/16	10/31/16	10/31/16	10/27/16	10/31/16			10/27/16			10/31/16			
ANALYTE (ug/L)	DW	GSI																							
Arsenic (dissolved)	10	10			1.63			1.23		0.79	15			6	108	4			34						
Arsenic	10	10		1.69	0.7	4		6	0.93	1.05	52	1.26		11	265	17			259			2			
Chromium (dissolved)	100	160	G	0.95	20	6		24	407	340	0.18	0.56		0.41	2.41	2.86			0.59			0.64			
Chromium (total)	100	160	G	10	63	8	0.059	146	6540	619	19	1.31	0.62	6	2	9	22		6			1.38			
Chromium VI (dissolved)	100	160											14												
Chromium VI (total)	100	160																							
Copper (dissolved)	1000	20	G	0.91	4.31	2.20	0.99	2.22	31	32	1.25		6	6	6				3			0.86			
Copper	1000	20	G	5	18	1.41	1.1	4.16	203	64	2.46		6	1.85	6	10	2.94		6			1.63			
Lead (dissolved)	4	44	G	0.144	0.148	0.97	0.116		0.85	0.451			0.151	0.075	0.978	1.651			0.191			0.361			
Lead	4	44	G	2.32	0.895	1.33	0.306		3.00	0.632	0.35	0.161	0.479	0.523	1.3	5	2.855		3.000			0.928			
Selenium (dissolved)	50	5																							
Selenium	50	5																							
Zinc (dissolved)	2400	260	G	20.6	2.28	5	4.19		390	2.89	10	2.36	3.46	6	16	2.05			10			6			
Zinc	2400	260	G	12	5	6	2.35		1380	2	11		3.59	2.3	7	32	9		21			6			

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank	Dup	Trip Blank	Field Blank	Dup			
	Date Collected		10/27/16	10/27/16	11/1/16	10/31/16	11/1/16	11/1/16	10/27/16	10/27/16	10/31/16	10/31/16	10/31/16	10/31/16	10/27/16	10/31/16	10/27/16	10/27/16	10/27/16	10/31/16	10/31/16	10/31/16			
ANALYTE (ug/L)	DW	GSI																							
Acetone	730	1,700													10										
Methyl Iodide	NC	NC																							
Carbon disulfide	800	NC																							
2 Butanone (MEK)	13,000	2,200																							
Chloromethano	260	NC																							
Vinyl Chloride	2.0	13										8		72	2				2						
Chloroethane	430	1,100													3				3						
Trichlorofluoromethane	2,600	NA																							
1,1-Dichloroethene	7.0	130										3		4											
Methylene Chloride	5.0	1,500																							
trans-1,2-Dichloroetheno	100	1,500																							
1,1-Dichloroethane	880	740											2	2	2	11			2						
cis-1,2-Dichloroethene	70	620								2		32		10	2										
Tetrahydrofuran	95	11,000																							
Chloroform	80	350					1				3											2			
1,1,1-Trichloroethane	200	89																							
4-Methyl-2-pentanono (MIBK)	1800	ID																							
2-Hexanone	1000	ID																							
Carbontetrachloride	5.0	45									2											1			
Benzene	5.0	200																							
Bromodichloromethane	80.0	NC																							
Trichloroethene	5.0	200		3	2					3		119		41	3	50			2						
Toluene	790	270																							
Tetrachloroethene	5.0	60						34																	
Chlorobenzene	100	25																							
Styrene	100	80																							
Ethylbenzene	74	18																							
Total Xylenes	280	41																							
1,2-Dichlorobenzene	600	13																							
1,2,4-Trimethylbenzene	63	17																							
1,2,3-Trimethylbenzene	NC	NC																							
Naphthalene	520	11																							
2-Methylnaphthalene	260	19																							
Diethyl ether	10 (E)	ID																							
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)																							
Acrylonitrile	2.6	2.0 (M); 1.2																							
Dichlorodifluoromethane	1,700	ID																							
Bromomethane	10	35																							
1,2-Dichloroethane	5.0 (A)	360 (X)																							
Trichloroethene	5.0 (A)	200 (X)																							
1,2-Dichloropropane	5.0 (A)	230 (X)																							
cis-1,3-Dichloropropene	NC	NC																							
trans-1,3-Dichloropropene	NC	NC																							
1,1,2-Trichloroethano	5.0 (A)	330 (X)																							
trans-1,4-Dichloro-2-butene	NC	NC																							
Dibromochloromethane	80 (A,W)	ID																							
1,2-Dibromoethano	NC	NC																							
1,1,1,2-Tetrachloroethane	77	ID																							
Isopropylbenzene	800	28																							
Bromoform	80 (A,W)	ID																							
1,1,2,2-Tetrachloroethane	8.5	78 (X)																							
1,2,3-Trichloropropane	42	NA																							
n-Propylbenzene	80	ID																							
Bromobenzene	18	NA																							
1,3,5-Trimethylbenzene	72 (E)	45																							
tert-Butylbenzene	80	ID																							
1,2,4-Trimethylbenzene	63 (E)	17																							
1,2,3-Trichlorobenzene	NC	NC																							

NOTES:	
X	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
NC	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River
NS	No Sample
1	Filtered in lab
2	Filtered and preserved in lab
NA	Not analyzed due to turbidity

Detected Concentrations for compounds also found in the method blank that appear to be laboratory artifacts are not provided.

Table 1
GROUNDWATER ANALYTICAL DATA
RACER - Flint West #12990

As Erroneously Labeled in May 23, 2016 Laboratory Report

	Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank	Trip Blank	Field Blank	Dup1	Trip Blank	Field Blank	Dup2	Dup3
	Date Collected			NS	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	NS	NS	NS	6/13/17	6/13/17	NS	6/13/17	6/13/17			6/13/17				
ANALYTE (ug/L)	DW	GSI										NS	NS	NS			NS									
Arsenic (dissolved)	10	10			0.85		9.00	0.41	0.64	0.58		NS	NS	NS	1.37	82.00	NS					84.000				
Arsenic	10	10			0.63	3.00	13.00	0.53	0.56	1.11	0.44	NS	NS	NS	1.45	126.00	NS					123.000				
Chromium (dissolved)	100	160	G		1.57	12.00	0.22	28.00	37.00	100.00	0.16	NS	NS	NS	2.69	0.34	NS					0.62				
Chromium (total)	100	160	G		21	72.00	1.50	1640.00	776.00	2500.00		NS	NS	NS	7.00	0.37	NS					0.7				
Chromium VI (dissolved)	100	160				8.00	0.86					NS	NS	NS			NS									
Chromium VI (total)	100	160				6.00						NS	NS	NS			NS									
Copper (dissolved)	1000	20	G		0.59	1.56	0.86	6.00	2.38	4.31	1.61	NS	NS	NS	1.34		NS					0.4				
Copper	1000	20	G		2.47	8.00	1.81	33.00	8.00	28.00	1.60	NS	NS	NS	1.38		NS					0.62				
Lead (dissolved)	4	44	G			0.15	0.09		0.06	0.18	0.13	NS	NS	NS	0.21	0.06	NS									
Lead	4	44	G		0.547	2.82	0.53	0.14	0.22	0.76	0.14	NS	NS	NS	0.96	0.08	NS					0.066				
Selenium (dissolved)	50	5										NS	NS	NS			NS									
Selenium	50	5										NS	NS	NS			NS									
Zinc (dissolved)	2400	260	G		1.69	2.09	2.48	3.13	5.00	2.20	4.41	NS	NS	NS	1.72	2.22	NS					2.25				
Zinc	2400	260	G		3.16	9.00	3.22	2.59	13.00	4.68	3.01	NS	NS	NS	2.54	4.07	NS					5				

	Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Trip Blank	Field Blank	Trip Blank	Field Blank	Dup1	Trip Blank	Field Blank	Dup3	Dup3
	Date Collected		6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	6/13/17	NS	NS	NS	6/13/17	6/13/17	NS	6/13/17	6/13/17			6/13/17				
ANALYTE (ug/L)	DW	GSI	NS								NS	NS	NS			NS									
Acetone	730	1,700	NS	4.29	2.15	3.86	2.50	4.15	2.26	2.40	NS	NS	NS	4.31	5.87	NS	3.04	5.67			4.61				
Methyl iodide	NC	NC	NS								NS	NS	NS			NS									
Carbon disulfide	800	NC	NS								NS	NS	NS			NS									
2 Butanone (MEK)	13,000	2,200	NS	0.89							NS	NS	NS	0.80	2.00	NS		0.9			1.37				
Chloromethane	260	NC	NS								NS	NS	NS			NS									
Vinyl Chloride	2.0	13	NS								NS	NS	NS		10.00	NS					12				
Chloroethane	430	1,100	NS								NS	NS	NS		1.59	NS					2.05				
trichlorofluoromethane	2,600	NA	NS	0.56							NS	NS	NS			NS									
1,1-Dichloroethene	7.0	130	NS								NS	NS	NS		1.00	NS					2				
Methylene Chloride	5.0	1,500	NS								NS	NS	NS		0.35	NS		0.31			0.41				
trans-1,2-Dichloroethene	100	1,500	NS								NS	NS	NS		0.39	NS					0.53				
1,1-Dichloroethane	880	740	NS								NS	NS	NS		1.00	NS					1				
cis-1,2-Dichloroethene	70	620	NS								NS	NS	NS		4.00	NS					6				
Tetrahydrofuran	95	11,000	NS								NS	NS	NS			NS									
Chloroform	80	350	NS				1.00				NS	NS	NS			NS		11.000							
1,1,1-Trichloroethane	200	89	NS								NS	NS	NS			NS									
4-Methyl-2-pentanone (MIBK)	1800	ID	NS							0.15	NS	NS	NS		0.75	NS									
2-Hexanone	1000	ID	NS								NS	NS	NS		0.97	NS									
Carbontetrachloride	5.0	45	NS								NS	NS	NS			NS									
Benzene	5.0	200	NS								NS	NS	NS		0.20	NS									
Bromodichloromethane	80.0	NC	NS				0.55				NS	NS	NS			NS		2.00							
Trichloroethene	5.0	200	NS	0.97	0.74					0.25	NS	NS	NS	3.00	10.00	NS					15				
Toluene	790	270	NS								NS	NS	NS			NS									
Tetrachloroethene	5.0	60	NS					29.00			NS	NS	NS			NS									
Chlorobenzene	100	25	NS								NS	NS	NS			NS									
Styrene	100	80	NS								NS	NS	NS			NS									
Ethylbenzene	74	18	NS								NS	NS	NS			NS									
Total Xylenes	280	41	NS								NS	NS	NS			NS									
1,2 -Dichlorobenzene	600	13	NS								NS	NS	NS			NS									
1,2,4-Trimethylbenzene	63	17	NS								NS	NS	NS			NS									
1,2,3-Trimethylbenzene	NC	NC	NS								NS	NS	NS			NS									
Naphthalene	520	11	NS								NS	NS	NS			NS									
2-Methylnaphthalene	260	19	NS								NS	NS	NS	1.40		NS									
Diethyl ether	10 (E)	ID	NS								NS	NS	NS			NS									
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)	NS								NS	NS	NS			NS									
Acrylonitrile	2.6	2.0 (M); 1.2	NS								NS	NS	NS			NS									
Dichlorodifluoromethane	1,700	ID	NS								NS	NS	NS			NS		0.32							
Bromomethane	10	35	NS								NS	NS	NS			NS									
1,2-Dichloroethane	5.0 (A)	360 (X)	NS								NS	NS	NS			NS									
Trichloroethene	5.0 (A)	200 (X)	NS								NS	NS	NS			NS									
1,2-Dichloropropane	5.0 (A)	230 (X)	NS								NS	NS	NS			NS									
cis-1,3-Dichloropropene	NC	NC	NS								NS	NS	NS			NS									
trans-1,3-Dichloropropene	NC	NC	NS								NS	NS	NS			NS									
1,1,2-Trichloroethane	5.0 (A)	330 (X)	NS								NS	NS	NS			NS									
trans-1,4-Dichloro-2-butene	NC	NC	NS								NS	NS	NS			NS									
Dibromochloromethane	80 (A,W)	ID	NS								NS	NS	NS			NS									
1,2-Dibromoethane	NC	NC	NS								NS	NS	NS			NS									
1,1,1,2-Tetrachloroethane	77	ID	NS								NS	NS	NS			NS									
Isopropylbenzene	800	28	NS								NS	NS	NS			NS									
Bromoform	80 (A,W)	ID	NS								NS	NS	NS			NS									
1,1,2,2-Tetrachloroethane	8.5	78 (X)	NS								NS	NS	NS			NS									
1,2,3-Trichloropropane	42	NA	NS								NS	NS	NS			NS									
n-Propylbenzene	80	ID	NS								NS	NS	NS	0.30		NS									
Bromobenzene	18	NA	NS								NS	NS	NS			NS									
1,3,5-Trimethylbenzene	72 (E)	45	NS								NS	NS	NS			NS									
tert-Butylbenzene	80	ID	NS								NS	NS	NS			NS									
1,2,4-Trimethylbenzene	63 (E)	17	NS								NS	NS	NS			NS									
1,2,3-Trichlorobenzene	NC	NC	NS								NS	NS	NS			NS									
n-Butylbenzene	NC	NC	NS								NS	NS	NS	0.270		NS									

NOTES:

	Blank cells indicate no detectable concentrations	Blank cells indicate no detectable concentrations
X	Exceeds DW criteria	Exceeds DW criteria
X	Exceeds GSI criteria	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria	Exceeds both DW and GSI criteria
X	Compound also found in associated method blank, suggestin	Compound also found in associated method blank, suggesting a laboratory artifact.
NC	Insufficient data to develop criterion/no criterion	Insufficient data to develop criterion/no criterion
G	Groundwater to Surface Water Interface Criteria - calculated	Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected			1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18
METALS ANALYTE (ug/L)	DW	GSI																		
Arsenic (dissolved)	10	10		2	1.094	29	<2	<2		0.548				4	100		108			
Arsenic	10	10		3	3	34	<2	<2		<2				10	129		131			
Chromium (dissolved)	100	160	G	41	9	<5	86	13		<5				37	1.217		0.537			
Chromium (total)	100	160	G	244	28	<5	1,740	141		<5				68	1.540		0.4368			
Chromium VI (dissolved)	100	160		<10	<10	<10	<10	<10		<10				<10	<10		<10			
Chromium VI (total)	100	160		<10	<10	<20	<10	<10		<10				<10	<20		<20			
Copper (dissolved)	1000	20	G	5	2.446	0.908	5	1.182		1.134				3.403	0.547		0.555			
Copper	1000	20	G	21	4.359	0.736	34	3.337		1.057				7	1.333		1.671			
Lead (dissolved)	4	44	G	1.836	1.058	<3	<3	<3		<3				2.084	<3		<3			
Lead	4	44	G	4	3	<3	0.739	<3		<3				6	<3		1.217			
Selenium (dissolved)	50	5		2	4	<5	2	8		1				1	1		1			
Selenium	50	5		2	4	<5	2	11		1				1	<5		1			
Zinc (dissolved)	2400	260	G	8	5	1.90	<5	2		2.24				7	2.480		2.5			
Zinc	2400	260	G	18	11	2.55	14	2.31		1.55				12	6		15			
VOC ANALYTE (ug/L)	DW	GSI																		
Acetone	730	1,700																	6.3	6.4
Methyl iodide	NC	NC																		
Carbon disulfide	800	NC																		
2 Butanone (MEK)	13,000	2,200																		
Chloromethane	260	NC																		
Vinyl Chloride	2.0	13				0.29				0.77					2		1			
Chloroethane	430	1,100															0.31			
trichlorofluoromethane	2,600	NA																		
1,1-Dichloroethene	7.0	130												0.31						
Methylene Chloride	5.0	1,500																		
trans-1,2-Dichloroethene	100	1,500												0.16						
1,1-Dichloroethane	880	740								0.97				2	0.70		0.75			
cis-1,2-Dichloroethene	70	620								2.00				51	3		2			
Tetrahydrofuran	95	11,000																		
Chloroform	80	350					2.00							0.24						
1,1,1-Trichloroethane	200	89																		
4-Methyl-2-pentanone (MIBK)	1800	ID															0.410			
2-Hexanone	1000	ID															0.95			
Carbon tetrachloride	5.0	45																		
Benzene	5.0	200				0.20				0.18										
Bromodichloromethane	80.0	NC					0.68													
Trichloroethene	5.0	200		3						5.00				30	2		0.83			
Toluene	790	270																		
Tetrachloroethene	5.0	60						43												
Chlorobenzene	100	25																		
Styrene	100	80																		

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected			1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18
VOC ANALYTE (ug/L) {cont}	DW	GSI																		
Ethylbenzene	74	18																		
Total Xylenes	280	41																		
1,2 -Dichlorobenzene	600	13																		
1,3 -Dichlorobenzene	6.6	28		0.36	0.46	0.43		0.23						0.30	0.30		0.26			
1,2,4-Trimethylbenzene	63	17																		
1,2,3-Trimethylbenzene	NC	NC																		
Naphthalene	520	11																		
2-Methylnaphthalene	260	19																		
Diethyl ether	10 (E)	ID																		
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)																		
Acrylonitrile	2.6	2.0 (M); 1.2																		
Dichlorodifluoromethane	1,700	ID																		
Bromomethane	10	35																		
1,2-Dichloroethane	5.0 (A)	360 (X)																		
Trichloroethene	5.0 (A)	200 (X)																		
1,2-Dichloropropane	5.0 (A)	230 (X)																		
cis-1,3-Dichloropropene	NC	NC																		
trans-1,3-Dichloropropene	NC	NC																		
1,1,2-Trichloroethane	5.0 (A)	330 (X)																		
trans-1,4-Dichloro-2-butene	NC	NC																		
Dibromochloromethane	80 (A,W)	ID																		
1,2-Dibromoethane	NC	NC																		
1,1,1,2-Tetrachloroethane	77	ID																		
Isopropylbenzene	800	28																		
Bromoform	80 (A,W)	ID																		
1,1,2,2-Tetrachloroethane	8.5	78 (X)																		
1,2,3-Trichloropropane	42	NA																		
n-Propylbenzene	80	ID																		
Bromobenzene	18	NA																		
1,3,5-Trimethylbenzene	72 (E)	45																		
tert-Butylbenzene	80	ID																		
1,2,4-Trimethylbenzene	63 (E)	17																		
1,2,3-Trichlorobenzene	NC	NC																		
n-Butylbenzene	NC	NC																		
1,4-Dioxane (EPA8260)	7.2	2,800 (X)																		

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID				MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected				1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18	1/28/18
PFA ANALYTE (ng/L)	DW	GSI																			
Perfluorobutanesulfonic acid (PFBS)	NC	NC														8.1		5.3			
Perfluorohexanesulfonic acid (PFHxS)	NC	NC													1.9						
Perfluoroheptanesulfonic Acid (PFHpS)	NC	NC																			
Perfluorooctanesulfonic acid (PFOS)	CC	12 (X)			35	7									44	16		16			
Perfluorodecanesulfonic acid (PFDS)	NC	NC																			
Perfluorobutanoic acid (PFBA)	NC	NC			3.1	4.8									4.8	180		180			
Perfluoropentanoic acid (PFPeA)	NC	NC				2.3															
Perfluorohexanoic acid (PFHxA)	NC	NC				2.5									2.6						
Perfluoroheptanoic acid (PFHpA)	NC	NC																			
Perfluorooctanoic acid (PFOA)	CC	12,000 (X)			4.4	4.1									6.1	4.2		4			
Perfluorononanoic acid (PFNA)	NC	NC																			
Perfluorodecanoic acid (PFDA)	NC	NC																			
Perfluoroundecanoic acid (PFUnA)	NC	NC																			
Perfluorododecanoic acid (PFDoA)	NC	NC																			
Perfluorotridecanoic Acid (PFTriA)	NC	NC																			
Perfluorotetradecanoic acid (PFTeA)	NC	NC																			
Perfluorooctane Sulfonamide (FOSA)	NC	NC																			

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.
GSI - Groundwater Surface Water Interface Generic Criteria per
MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA
Combined PFOA and PFOS concentrations compared to 0.070 ppb (70 ppt) for the drinking water pathway.	CC

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected			5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18		5/29/18	5/29/18
METALS ANALYTE (ug/L)	DW	GSI	DRY				DRY		DRY		NS	NS	NS			NS	MW-102S			
Arsenic (dissolved)	10	10				1.41									23					
Arsenic	10	10				9									60					
Chromium (dissolved)	100	160	G	1.62	14	0.168		1.01		0.328				4.13	0.431		14			
Chromium (total)	100	160	G	2.64	14	0.276		44		0.208				4.17	0.296		14			0.095
Chromium VI (dissolved)	100	160																		
Chromium VI (total)	100	160																		
Copper (dissolved)	1000	20	G	0.381	0.498			0.816		1.73				0.611			0.469			
Copper	1000	20	G	0.748	0.341			1.78		1.43				2.42						
Lead (dissolved)	4	44	G																	
Lead	4	44	G	0.408		0.068		0.304		0.121				0.067	0.062					
Selenium (dissolved)	50	5																		
Selenium	50	5																		
Zinc (dissolved)	2400	260	G	6	8	7		8		12				15	8		9			
Zinc	2400	260	G	6	7	8		7		8				6	4.76		9			1.79
VOC ANALYTE (ug/L)	DW	GSI																		
Acetone	730	1,700		5	4.5	6.4		5.6						5.9	8.2		5.6	4.8		8.4
Methyl iodide	NC	NC																		
Carbon disulfide	800	NC																		
2 Butanone (MEK)	13,000	2,200																		
Chloromethane	260	NC																		
Vinyl Chloride	2.0	13													9					
Chloroethane	430	1,100																		
trichlorofluoromethane	2,600	NA																		
1,1-Dichloroethene	7.0	130													1					
Methylene Chloride	5.0	1,500													0.17					
trans-1,2-Dichloroethene	100	1,500													0.25					
1,1-Dichloroethane	880	740													1					
cis-1,2-Dichloroethene	70	620													3					
Tetrahydrofuran	95	11,000																4.8		
Chloroform	80	350																		0.46
1,1,1-Trichloroethane	200	89																		
4-Methyl-2-pentanone (MIBK)	1800	ID																		
2-Hexanone	1000	ID																		
Carbon tetrachloride	5.0	38 (X)																		
Benzene	5.0	200													0.20					
Bromodichloromethane	80.0	NC																		
Trichloroethene	5.0	200		1	0.67									7	13		0.7			
Toluene	790	270			0.39															
Tetrachloroethene	5.0	60						45												
Chlorobenzene	100	25																		
Styrene	100	80																		

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected			5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18			
VOC ANALYTE (ug/L) {cont}	DW	GSI																		
Ethylbenzene	74	18																		
Total Xylenes	280	49																		
1,2 -Dichlorobenzene	600	13																		
1,3 -Dichlorobenzene	6.6	28				0.23														
1,2,4-Trimethylbenzene	63	17																		
1,2,3-Trimethylbenzene	NC	NC																		
Naphthalene	520	11			0.21															
2-Methylnaphthalene	260	19																		
Diethyl ether	10 (E)	ID																		
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)																		
Acrylonitrile	2.6	2.0 (M); 1.2																		
Dichlorodifluoromethane	1,700	ID																		
Bromomethane	10	4.2; [5(M)]																		
1,2-Dichloroethane	5.0 (A)	360 (X)																		
Trichloroethene	5.0 (A)	200 (X)																		
1,2-Dichloropropane	5.0 (A)	230 (X)																		
cis-1,3-Dichloropropene	NC	NC																		
trans-1,3-Dichloropropene	NC	NC																		
1,1,2-Trichloroethane	5.0 (A)	330 (X)																		
trans-1,4-Dichloro-2-butene	NC	NC																		
Dibromochloromethane	80 (A,W)	ID																		
1,2-Dibromoethane	NC	NC																		
1,1,1,2-Tetrachloroethane	77	ID																		
Isopropylbenzene	800	28																		
Bromoform	80 (A,W)	ID																		
1,1,2,2-Tetrachloroethane	8.5	78 (X)																		
1,2,3-Trichloropropane	42	NA																		
n-Propylbenzene	80	ID																		
Bromobenzene	18	NA																		
1,3,5-Trimethylbenzene	72 (E)	45																		
tert-Butylbenzene	80	ID																		
1,2,4-Trimethylbenzene	63 (E)	17																		
1,2,3-Trichlorobenzene	NC	NC																		
n-Butylbenzene	NC	NC																		
1,4-Dioxane (EPA SIM8270)	7.2	2,800 (X)													0.13		0.025	0.025		

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	Field Dupe	Trip Blank	Field Blank	Equip Blank
Date Collected			5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18	5/29/18		5/29/18	5/29/18
PFA ANALYTE (ng/L)	DW	GSI																		
Perfluorobutane sulfonic acid (PFBS)	NC	NC			1.3												1.2			
Perfluoropentane sulfonic acid (PFPeS)	NC	NC																		
Perfluorohexane sulfonic acid (PFHxS)	NC	NC		1.4	2									1.6			2			
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC			0.18												1.1			
Perfluorooctane sulfonic acid (PFOS)	CC	12 (X)		12	12									47	27		12			
Perfluorononane sulfonic acid (PFNS)	NC	NC																		
Perfluorodecane sulfonic acid (PFDS)	NC	NC																		
Perfluorobutanoic acid (PFBA)	NC	NC													41					
Perfluoropentanoic acid (PFPeA)	NC	NC			1.2										1.7					
Perfluorohexanoic acid (PFHxA)	NC	NC			1.8												2.5			
Perfluoroheptanoic acid (PFHpA)	NC	NC			1.7															
Perfluorooctanoic acid (PFOA)	CC	12,000 (X)		2	4.2									1.7	2.5		4.3			
Perfluorononanoic acid (PFNA)	NC	NC		1.1	1										1.8					
Perfluorodecanoic acid (PFDA)	NC	NC																		
Perfluoroundecanoic acid (PFUnDA)	NC	NC													0.61					
Perfluorododecanoic acid (PFDoDA)	NC	NC		0.51																
Perfluorotridecanoic acid (PFTTrDA)	NC	NC		0.82										0.78	0.85			0.94	1.1	
Perfluorotetradecanoic acid (PFTeDA)	NC	NC		1.4	1.2															
Perfluorooctane sulfonamide (FOSA)	NC	NC																		
N-Methyl perfluorooctane sulfonamidoacetic acid	NC	NC																		
N-Ethyl perfluorooctane sulfonamidoacetic acid	NC	NC																		
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC																		
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC																		
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC																		

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

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MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA
Combined PFOA and PFOS concentrations compared to 0.070 ppb (70 ppt) for the drinking water pathway.	CC

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dup-1)	Field Dup (Dup-2)	Trip Blank	Trip Blank	Field Blank	Field Blank (FB2)	Equip Blank	Equip Blank	
Date Collected			9/5/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18	
METALS ANALYTE (ug/L)	DW	GSI																MW-104S	MW-109S							
Arsenic (dissolved)	10	10				19						4	1		52		1		3				1		1	
Arsenic	10	10				53		1	1			5	3		104		2		5				1		1	
Chromium (dissolved)	100	160	G		1		10	1	6				1	4		1	7	1								
Chromium (total)	100	160	G		2	6	388	62	789				1			1	9	13								
Chromium VI (dissolved)	100	160			1																					
Chromium VI	100	160												5			6									
Copper (dissolved)	1000	20	G	1	1	1		2	1	4	2	1	1	7	1		1	2	1							
Copper	1000	20	G		1	1		13	2	23	1	1	1		1		1	3	1							
Lead (dissolved)	4	44	G																							
Lead	4	44	G						1	1																
Selenium (dissolved)	50	5		1	4	2	3	3	8	1		2	4		5	1		1	9	2				1	1	
Selenium	50	5		2	4	4	4	3	9	5		4	1	3	2	3	3	3	6	2			1	1	1	
Zinc (dissolved)	2400	260	G	2	4	3	1	3	2	2	4	3	3	5	6	2	5	4	1	2			2	2	1	
Zinc	2400	260	G	3	2	5	2	5	2	6	2	4	5	3	2	4	5	3	1	2			1	1	1	
VOC ANALYTE (ug/L)	DW	GSI																								
Acetone	730	1,700			2.55	2.72	5.20	0.81	1.12	0.63	0.61		2.32			4.98	2.11	18.6		2.75	5.13	4.54	1.26	7.48	1.74	7.35
Methyl iodide	NC	NC																								
Carbon disulfide	800	NC																								
2 Butanone (MEK)	13,000	2,200				1.14									1.09								0.32	2.48		
Chloromethane	260	NC																		1.92						
Vinyl Chloride	2.0	13										42			5		9.5		41							
Chloroethane	430	1,100																								
trichlorofluoromethane	2,600	NA																								
1,1-Dichloroethene	7.0	130										2			0.66											
Methylene Chloride	5.0	1,500																								
trans-1,2-Dichloroethene	100	1,500										0.7							0.66							
1,1-Dichloroethane	880	740										1		0.27	0.63		3.6		1							
cis-1,2-Dichloroethene	70	620		9						0.34		68		5	2		490	0.36	65							
Tetrahydrofuran	95	11,000															16									
Chloroform	80	350					1				1												0.4	0.4	0.3	
1,1,1-Trichloroethane	200	89																								
4-Methyl-2-pentanone (MIBK)	1800	ID																								
2-Hexanone	1000	ID																								
Carbon tetrachloride	5.0	38 (X)									4															
Benzene	5.0	200				0.67																				
Bromodichloromethane	80.0	NC					0.5																	0.35		
Trichloroethene	5.0	200		4	4	0.39					1		17		12	7	1	210		17						
Toluene	790	270																								
Tetrachloroethene	5.0	60						40										40	0.22							
Chlorobenzene	100	25																								
Styrene	100	80																								

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dup-1)	Field Dup (Dup-2)	Trip Blank	Trip Blank	Field Blank	Field Blank (FB2)	Equip Blank	Equip Blank
Date Collected			9/5/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18
VOC ANALYTE (ug/L) {cont}	DW	GSI																							
Ethylbenzene	74	18																							
Total Xylenes	280	49																							
1,2 -Dichlorobenzene	600	13																							
1,3 -Dichlorobenzene	6.6	28																							
Naphthalene	520	11																							
2-Methylnaphthalene	260	19																	0.23						
Diethyl ether	10 (E)	ID																							
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)																							
Acrylonitrile	2.6	2.0 (M); 1.2																							
Dichlorodifluoromethane	1,700	ID																							
Bromomethane	10	4.2; [5(M)]																							
1,2-Dichloroethane	5.0 (A)	360 (X)																							
Trichloroethene	5.0 (A)	200 (X)																							
1,2-Dichloropropane	5.0 (A)	230 (X)																							
cis-1,3-Dichloropropene	NC	NC																							
trans-1,3-Dichloropropene	NC	NC																							
1,1,2-Trichloroethane	5.0 (A)	330 (X)																							
trans-1,4-Dichloro-2-butene	NC	NC																							
Dibromochloromethane	80 (A,W)	ID																							
1,2-Dibromoethane	NC	NC																							
1,1,1,2-Tetrachloroethane	77	ID																							
Isopropylbenzene	800	28																							
Bromoform	80 (A,W)	ID																							
1,1,2,2-Tetrachloroethane	8.5	78 (X)																							
1,2,3-Trichloropropane	42	NA																							
n-Propylbenzene	80	ID																							
Bromobenzene	18	NA																							
1,3,5-Trimethylbenzene	72 (E)	45																							
tert-Butylbenzene	80	ID																							
1,2,4-Trimethylbenzene	63 (E)	17																							
1,2,4-Trichlorobenzene	NC	NC																					0.21		
1,2,3-Trichlorobenzene	NC	NC																					0.21		
n-Butylbenzene	NC	NC																							

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID				MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dup-1)	Field Dup (Dup-2)	Trip Blank	Trip Blank	Field Blank	Field Blank (FB2)	Equip Blank	Equip Blank	
Date Collected				9/5/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	8/30/18	9/5/18	8/30/18	9/5/18	9/5/18	9/5/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18	8/30/18	9/5/18
PFA ANALYTE (ng/L)		DW	GSI																								
Perfluorobutane sulfonic acid (PFBS)	NC	NC		2.5	1.4	2	2.2	1.3	1.8	4.6		1.7	2.9	3.6	2.4	1.4	5	1.7	2.3	1.7							
Perfluoropentane sulfonic acid (PFPeS)	NC	NC																									
Perfluorohexane sulfonic acid (PFHxS)	NC	NC		4	1.9	6.1		2.1	12	3.3	2.7	2.9	3.2	4.3	3.8		2.6	2.4	12	2.6							
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC		1.4	1.2	2.4			2.5	1.3			2.6						2.1								
Perfluorooctane sulfonic acid (PFOS)	CC	12		20	33	11	91			7.3	18	6	27	8.5	59	10	13	26		30							
Perfluorononane sulfonic acid (PFNS)	NC	NC																									
Perfluorodecane sulfonic acid (PFDS)	NC	NC																									
Perfluorobutanoic acid (PFBA)	NC	NC			3.8	3.2			3.2	5.9			2.9	6.7		48	7.1	2.7		3.2							
Perfluoropentanoic acid (PFPeA)	NC	NC			1.2	1.4				1.1				3	1.3			3.6									
Perfluorohexanoic acid (PFHxA)	NC	NC		1	1.5	4.1		1.2	1.6	2			1.7	4.8			1	3.3	1.7			1.3		1.6		1.2	
Perfluoroheptanoic acid (PFHpA)	NC	NC				2				2				3.7			1.3	3.3	2.4								
Perfluorooctanoic acid (PFOA)	CC	12,000		2	4.5	6.1	2.6	0.79	4.5	12	2.1	0.58	2.6	11	1.7	2.2	2.6	4.3	4.1	2.8							
Perfluorononanoic acid (PFNA)	NC	NC			1.2		1.1						1.2					1.3		1.1							
Perfluorodecanoic acid (PFDA)	NC	NC					0.53			0.58																	
Perfluoroundecanoic acid (PFUnDA)	NC	NC																									
Perfluorododecanoic acid (PFDoDA)	NC	NC																									
Perfluorotridecanoic acid (PFTTrDA)	NC	NC																									
Perfluorotetradecanoic acid (PFTeDA)	NC	NC						1.6		2.8			1.7				1.9				3.3		1.8	1.9	1.7		
Perfluorooctane sulfonamide (FOSA)	NC	NC																					0.44				
N-Methyl perfluorooctane sulfonamidoacetic acid	NC	NC																									
N-Ethyl perfluorooctane sulfonamidoacetic acid	NC	NC					0.9																				
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC																									
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC																									
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC																									

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RACER - Flint West # 12990

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MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA
Combined PFOA and PFOS concentrations compared to 0.070 ppb (70 ppt) for the drinking water pathway.	CC

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dupe-1)	Field Dup (Dupe-2)	Trip Blank	Field Blank	Field Blank	Equip Blank
Date Collected			DRY	DRY	02/27/19	02/28/19	02/27/19	02/27/19	NS	02/27/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/27/19	02/28/19	02/28/19
METALS ANALYTE (ug/L)		DW	GSI														MW-112S	MW-114S					
Arsenic (dissolved)		10	10			10				0.711	0.445	2	1.05	0.317	35	1.11	28	9	20				
Arsenic		10	10			30				0.33	0.265	39	1.952	0.759	102	13	86	0.101	80				
Chromium (dissolved)		100	160	G	2.604	0.103	0.105	1.711			0.155	0.246	0.172	4.979	0.357	1.61	0.172	0.436		0.131		0.052	
Chromium (total)		100	160	G	4.664	0.251	43	65			0.354	0.6	0.522	4.651	0.507	13	0.258	0.417	0.412		0.175	0.748	0.655
Chromium VI (dissolved)		100	160																				
Chromium VI		100	160																				
Copper (dissolved)		1000	20	G	0.937		1.208	1.375		1.733	0.993		0.704	1.32		1.34	0.823		0.434		1.685	1.53	1.47
Copper		1000	20	G	0.679		1.871	2.247		1.124	0.979	0.381	0.963	0.691		3.06	1.92		2.25		2.092	1.59	1.24
Lead (dissolved)		4	44	G						0.706													
Lead		4	44	G							0.23	0.206				1.14	0.191		0.208				
Selenium (dissolved)		50	5		2		4	8			3												
Selenium		50	5		3		4	9			0												
Zinc (dissolved)		2400	260	G	7	3.45	1	5		11	6	3	3	7	4	8	4	3	3		4	6	7
Zinc		2400	260	G	1.482		0.892	1.577		7	2.24	2.19	1.61	0.776	0.774	13	3.98		5		1.814	2.27	0.962
VOC ANALYTE (ug/L)		DW	GSI																				
Acetone		730	1,700		7.88		8.1	6.7		7.8	7.6	9.51	9.07	8.79	12.41	11.34	33.8	11.74	35.1	6.99	7.3	9.10	9.36
Methyl iodide		NC	NC																				
Carbon disulfide		800	NC																				
2 Butanone (MEK)		13,000	2,200			3.13						0.34	0.3	0.33	1.61	1.95	11.1	1.63	11.9	0.64		0.78	0.77
Chloromethane		260	NC																				
Vinyl Chloride		2	13			0.64				0.88		5			2	1	12	2	12				
Chloroethane		430	1,100																				
trichlorofluoromethane		2,600	NA																				
1,1-Dichloroethene		7	130									0.6			0.41			0.38					
Methylene Chloride		5	1,500																				
trans-1,2-Dichloroethene		100	1,500									0.41					1.9		1.80				
1,1-Dichloroethane		880	740							0.55		0.97		0.76	0.82		3.2	0.79	3.5				
cis-1,2-Dichloroethene		70	620							2		9		13	2	2	295	1	290				
Tetrahydrofuran		95	11,000			2.3										1.9	11.1		11.9				
Chloroform		80	350				2				1			0.25									
1,1,1-Trichloroethane		200	89																1.7				
4-Methyl-2-pentanone (MIBK)		1800	ID												0.31			0.38					
2-Hexanone		1000	ID																				
Carbon tetrachloride		5.0	38	X							2												
Benzene		5.0	200			1				0.24													
Bromodichloromethane		80.0	NC				0.25																
Trichloroethene		5.0	200							1	0.25	13		39	3	9	162	3	163				
Toluene		790	270			0.32																	
Tetrachloroethene		5.0	60					78															
Chlorobenzene		100	25			2																	
Styrene		100	80												0.58	0.28		0.64					

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dupe-1)	Field Dup (Dupe-2)	Trip Blank	Field Blank	Field Blank	Equip Blank
Date Collected			DRY	DRY	02/27/19	02/28/19	02/27/19	02/27/19	NS	02/27/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/27/19	02/28/19	02/28/19
VOC ANALYTE (ug/L) {cont}	DW	GSI																					
Ethylbenzene	74	18																					
Total Xylenes	280	49																					
1,2 -Dichlorobenzene	600	13																					
1,3 -Dichlorobenzene	6.6	28																					
Naphthalene	520	11																					
2-Methylnaphthalene	260	19				0.18																	
Diethyl ether	10 (E)	ID																					
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)																					
Acrylonitrile	2.6	2.0 (M); 1.2																					
Dichlorodifluoromethane	1,700	ID																					
Bromomethane	10	4.2; [5(M)]																					
1,2-Dichloroethane	5.0 (A)	360 (X)																					
1,2-Dichloropropane	5.0 (A)	230 (X)																					
cis-1,3-Dichloropropene	NC	NC																					
trans-1,3-Dichloropropene	NC	NC																					
1,1,2-Trichloroethane	5.0 (A)	330 (X)																					
trans-1,4-Dichloro-2-butene	NC	NC																					
Dibromochloromethane	80 (A,W)	ID																					
1,2-Dibromoethane	NC	NC																					
1,1,1,2-Tetrachloroethane	77	ID																					
Isopropylbenzene	800	28																					
Bromoform	80 (A,W)	ID																					
1,1,2,2-Tetrachloroethane	8.5	78 (X)																					
1,2,3-Trichloropropane	42	NA																					
n-Propylbenzene	80	ID																					
Bromobenzene	18	NA																					
1,3,5-Trimethylbenzene	72 (E)	45																					
tert-Butylbenzene	80	ID																					
1,2,4-Trimethylbenzene	63 (E)	17																					
1,2,4-Trichlorobenzene	NC	NC																					
1,2,3-Trichlorobenzene	NC	NC																					
n-Butylbenzene	NC	NC																					

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Field Dup (Dupe-1)	Field Dup (Dupe-2)	Trip Blank	Field Blank	Field Blank	Equip Blank
Date Collected			DRY	DRY	02/27/19	02/28/19	02/27/19	02/27/19	NS	02/27/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/28/19	02/27/19	02/28/19	02/28/19
PFA ANALYTE (ng/L)	DW	GSI	NS	NS	NS	01/17/19	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	01/17/19	NS	NS	NS	NS	NS
Perfluorobutane sulfonic acid (PFBS)	NC	NC																					
Perfluoropentane sulfonic acid (PFPeS)	NC	NC																					
Perfluorohexane sulfonic acid (PFHxS)	NC	NC																					
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC																					
Perfluorooctane sulfonic acid (PFOS)	CC	12				90												90					
Perfluorononane sulfonic acid (PFNS)	NC	NC																					
Perfluorodecane sulfonic acid (PFDS)	NC	NC																					
Perfluorobutanoic acid (PFBA)	NC	NC																					
Perfluoropentanoic acid (PFPeA)	NC	NC																					
Perfluorohexanoic acid (PFHxA)	NC	NC																					
Perfluoroheptanoic acid (PFHpA)	NC	NC																					
Perfluorooctanoic acid (PFOA)	CC	12,000																					
Perfluorononanoic acid (PFNA)	NC	NC																					
Perfluorodecanoic acid (PFDA)	NC	NC																					
Perfluoroundecanoic acid (PFUnDA)	NC	NC																					
Perfluorododecanoic acid (PFDoDA)	NC	NC																					
Perfluorotridecanoic acid (PFTTrDA)	NC	NC																					
Perfluorotetradecanoic acid (PFTeDA)	NC	NC																					
Perfluorooctane sulfonamide (FOSA)	NC	NC																					
N-Methyl perfluorooctane sulfonamidoacetic acid	NC	NC																					
N-Ethyl perfluorooctane sulfonamidoacetic acid	NC	NC																					
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC																					
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC																					
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC																					

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.
GSI - Groundwater Surface Water Interface Generic Criteria per
MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA
Combined PFOA and PFOS concentrations compared to 0.070 ppb (70 ppt) for the drinking water pathway.	CC

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID		MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe 1	Dupe 2	Equipment + Blank	Equipment + Blank	Field Blank	Field Blank	Trip Blank	Trip Blank
Date Collected		07/16/2019	07/16/2019	07/17/2019	07/17/2019	07/16/2019	07/16/2019	07/16/2019	07/16/2019	07/17/2019	07/17/2019	07/17/2019	07/17/2019	07/16/2019	07/17/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019
VOC ANALYTE (ug/L) {cont}	DW	GSI																						
Ethylbenzene	74	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
Total Xylenes	280	49	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Styrene	100	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
Isopropylbenzene	800	28	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5	<5	<5
Bromoform	80 (A,W)	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
Bromobenzene	18	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
tert-Butylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
sec-Butylbenzene	230	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
p-Isopropyltoluene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	6.6	28	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	75	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	600	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
n-Butylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1	<5	<1	<1	<1	<1	<1
Hexachloroethane	21	6.7	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5	<5	<5
Naphthalene	520	11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	<5	<5	<5	<5
2-Methylnaphthalene	260	19	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<30	<5	<30	<5	0.26	<5	0.22	<5

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Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe 1	Dupe 2	Equipment + Blank	Equipment + Blank	Field Blank	Field Blank	Trip Blank	Trip Blank	
Date Collected			07/16/2019	07/16/2019	07/17/2019	07/17/2019	07/16/2019	07/16/2019	07/16/2019	07/16/2019	07/17/2019	07/17/2019	07/17/2019	07/17/2019	07/16/2019	07/17/2019	07/17/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019	07/16/2019	07/17/2019
PFA ANALYTE (ng/L)	DW	GSI	NS	NS			NS	NS	NS	NS				NS			NS	MW-114S	NS			7/17/2019		7/17/2019		
Perfluorobutanoic acid (PFBA)	NC	NC		NA	NA	<19	<19	NA	NA	NA	NA	<19	<19	20	<19	NA	<19	<19	NA	<19	NA	<19	NA	<20	NA	<19
Perfluoropentanoic acid (PFPeA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorohexanoic acid (PFHxA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorobutane sulfonic acid (PFBS)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluoroheptanoic acid (PFHpA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluoropentane sulfonic acid (PFPeS)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorooctanoic acid (PFOA)	CC	12,000		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorohexane sulfonic acid (PFHxS)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorononanoic acid (PFNA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorodecanoic acid (PFDA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorooctane sulfonic acid (PFOS)	CC	12		NA	NA	11	93	NA	NA	NA	NA	11	28	<9.6	36	NA	20	31	NA	32	NA	<9.4	NA	<10	NA	<9.3
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC		NA	NA	<9.7	44	NA	NA	NA	NA	<9.7	12	<9.6	16	NA	<9.5	17	NA	16	NA	<9.4	NA	<10	NA	<9.3
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC		NA	NA	<9.7	48	NA	NA	NA	NA	<9.7	16	<9.6	21	NA	16	15	NA	16	NA	<9.4	NA	<10	NA	<9.3
Perfluoroundecanoic acid (PFUnDA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorononane sulfonic acid (PFNS)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorododecanoic acid (PFDoDA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorodecane sulfonic acid (PFDS)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorotridecanoic acid (PFTTrDA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorooctane sulfonamide (FOSA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3
Perfluorotetradecanoic acid (PFTeDA)	NC	NC		NA	NA	<9.7	<9.4	NA	NA	NA	NA	<9.7	<9.7	<9.6	<9.6	NA	<9.5	<9.5	NA	<9.5	NA	<9.4	NA	<10	NA	<9.3

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.
GSI - Groundwater Surface Water Interface Generic Criteria per
MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA
Combined PFOA and PFOS concentrations compared to 0.070 ppb (70 ppt) for the drinking water pathway.	CC

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe 1	Dupe 2	Field Blank	Equip Blank	Field Blank	Equipment Blank	Trip	Equip	Field	
Date Collected			02/25/2020	02/25/2020	02/25/2020	02/28/2020	02/25/2020	02/25/2020	02/25/2020	02/25/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/25/2020	02/25/2020	02/27/2020	02/27/2020	02/28/2020	02/28/2020	02/28/2020	
METALS ANALYTE (ug/L)	DW	GSI																MW-112S	MW-114S								
Arsenic, Dissolved	10	10		<0.002	<0.002	<0.002	4	<0.002	<0.002	<0.002	<0.002	0.257	9	0.518	<0.002	13	1.511	25	13	24	NA	NA	NA	NA	NA	NA	
Arsenic	10	10		<0.002	<0.002	<0.002	46	<0.002	0.316	1.173	0.465	<0.002	69	2	0.998	41	3	62	43	69	NA	NA	NA	NA	NA	NA	
Chromium, Dissolved	100	160	G	0.275	0.891	7	0.204	0.562	0.463	0.719	<0.005	0.295	0.138	0.312	6	0.214	0.518	13	0.39	<0.005	NA	NA	NA	NA	NA	NA	
Chromium	100	160	G	0.42	2.753	6	0.388	16	280	764	0.185	0.431	1.767	0.862	6	0.349	6	0.97	0.356	1.084	NA	NA	NA	NA	NA	NA	
Chromium VI, Dissolved	100	160		<0.005	<0.005	8	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	4	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	
Chromium VI	100	160		<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	4	<0.025	<0.5	<0.5	<0.5	<0.025	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA	
Copper, Dissolved	1000	20	G	0.405	<0.005	<0.005	<0.005	3.473	0.396	0.576	0.86	1.357	<0.005	<0.005	0.501	<0.005	0.492	0.751	0.391	0.611	NA	NA	NA	NA	NA	NA	
Copper	1000	20	G	<0.005	0.698	0.516	0.528	9	6	14	0.996	0.564	<0.005	0.835	0.694	<0.005	0.973	6	<0.005	6	NA	NA	NA	NA	NA	NA	
Lead, Dissolved	4	44	G	<0.003	<0.003	<0.003	0.208	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.584	<0.003	NA	NA	NA	NA	NA	NA	
Lead	4	44	G	0.249	0.283	<0.003	<0.003	<0.003	<0.003	0.886	0.283	<0.003	<0.003	<0.003	0.242	0.339	<0.003	0.4	4	<0.003	4	NA	NA	NA	NA	NA	
Selenium, Dissolved	50	5		<0.005	<0.005	<0.005	<0.005	<0.005	9	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	
Selenium	50	5		<0.005	<0.005	<0.005	<0.005	<0.005	9	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	NA	
Zinc, Dissolved	2400	260	G	6	4.654	5	2.299	9	1.504	1.216	9	7	3.151	3.037	6	2.665	8	27	6	29	NA	NA	NA	NA	NA	NA	
Zinc	2400	260	G	1.56	2.074	1.632	2.05	14	1.948	7	6	2.742	2.004	1.879	1.594	1.588	6	44	1.221	43	NA	NA	NA	NA	NA	NA	
VOC ANALYTE (ug/L)	DW	GSI																MW-112S	MW-114S								
Diethyl ether	10 (E)	ID		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Acetone	730	1,700		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Methyl iodide	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Carbon disulfide	800	NC		<5	<5	<5	0.26	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.15	0.18	0.17	0.17	
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
Acrylonitrile	2.6	2.0 (M); 1.2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
2-Butanone (MEK)	13,000	2,200		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
Dichlorodifluoromethane	1,700	ID		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
Chloromethane	260	NC		0.15	<5	<5	<5	<5	<5	<5	<5	<5	0.13	<5	<5	<5	0.44	<5	<5	<5	<5	<5	<5	<5	<5	<5	
Vinyl chloride	2	13		<1	<1	<1	0.81	<1	<1	<1	<1	18	<1	<1	10	0.79	5	11	3	<1	<1	<1	<1	<1	<1	<1	
Bromomethane	10	4.2; [5(M)]		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
Chloroethane	430	1,100		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.39	<5	<5	
Trichlorofluoromethane	2,600	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1-Dichloroethene	7	130		<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	1	<1	0.84	1	0.82	<1	<1	<1	<1	<1	<1	<1	
Methylene chloride	5	1,500		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.11	<5	<5	<5	0.13	<5	0.43	0.41	0.36	0.76	0.22	0.36	0.45
trans-1,2-Dichloroethene	100	1,500		<1	<1	<1	<1	<1	<1	<1	<1	0.5	<1	<1	0.28	<1	0.78	0.24	0.83	<1	<1	<1	<1	<1	<1	<1	
1,1-Dichloroethane	880	740		<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	0.99	<1	3	1	2	<1	<1	<1	<1	<1	<1	<1	
cis-1,2-Dichloroethene	70	620		9	<1	<1	<1	<1	<1	0.11	<1	17	<1	0.35	3	0.44	127	3	125	<1	<1	<1	<1	<1	<1	<1	
Tetrahydrofuran	95	11,000		<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	0.22	<90	<90	<90	<90	<90	
Chloroform	80	350		<1	<1	<1	<1	0.71	<1	0.24	<1	0.81	<1	<1	<1	<1	<1	0.22	<1	0.23	<1	<1	<1	<1	<1	<1	
Bromochloromethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,1-Trichloroethane	200	89		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	2	<1	<1	<1	<1	<1	<1	<1	
4-Methyl-2-pentanone (MIBK)	1800	ID		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
2-Hexanone	1000	ID		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Carbon tetrachloride	5.0	38	X	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Benzene	5.0	200		<1	<1	<1	0.26	<1	<1	<1	<1	<1	<1	<1	0.2	<1	<1	<1	0.22	<1	<1	<1	<1	<1	<1	<1	
1,2-Dichloroethane	5.0 (A)	360 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Trichloroethene	5.0	200		16	2	0.16	<1	<1	<1	<1	0.15	0.14	13	<1	6	6	7	335	6	350	<1	<1	<1	<1	<1	<1	
1,2-Dichloropropane	5.0 (A)	230 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Bromodichloromethane	80.0	NC		<1	<1	<1	<1	0.17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Dibromomethane	230	NA		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
cis-1,3-Dichloropropene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Toluene	790	270		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
trans-1,3-Dichloropropene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2-Trichloroethane	5.0 (A)	330 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Tetrachloroethene	5.0	60		<1	<1	<1	<1	<1	78	<1	<1	<1	<1	<1	<1	<1	<1	0.2	<1	0.18	<1	<1	&lt				

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe 1	Dupe 2	Field Blank	Equip Blank	Field Blank	Equipment Blank	Trip	Equip	Field	
Date Collected			02/25/2020	02/25/2020	02/25/2020	02/28/2020	02/25/2020	02/25/2020	02/25/2020	02/25/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/25/2020	02/25/2020	02/27/2020	02/27/2020	02/28/2020	02/28/2020	02/28/2020
VOC ANALYTE (ug/L) {cont}	DW	GSI																									
			MW-112S	MW-114S																							
Ethylbenzene	74	18			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Total Xylenes	280	49			<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	
p,m-Xylene					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
o-Xylene					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Styrene	100	80			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Isopropylbenzene	800	28			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
Bromoform	80 (A,W)	ID			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2,2-Tetrachloroethane	8.5	78 (X)			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2,3-Trichloropropane	42	NA			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
n-Propylbenzene	80	ID			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Bromobenzene	18	NA			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,3,5-Trimethylbenzene	72 (E)	45			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
tert-Butylbenzene	80	ID			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2,4-Trimethylbenzene	63 (E)	17			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
sec-Butylbenzene	230	ID			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
p-Isopropyltoluene	NC	NC			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
1,3-Dichlorobenzene	6.6	28			0.32	0.25	0.11	<1	0.37	0.26	0.23	0.26	0.13	0.1	0.14	0.21	0.19	0.17	<1	0.2	<1	0.12	<1	<1	<1	<1	
1,4-Dichlorobenzene	75	17			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.13	<1	<1	
1,2-Dichlorobenzene	600	13			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.11	<1	<1	<1	<1	<1	<1	<1	
1,2,3-Trimethylbenzene	NC	NC			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
n-Butylbenzene	NC	NC			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Hexachloroethane	21	6.7			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
1,2-Dibromo-3-chloropropane	NC	NC			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
1,2,4-Trichlorobenzene	NC	NC			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.18	0.13	0.12		
1,2,3-Trichlorobenzene	NC	NC			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.12	0.11	<5	<5	<5	
Napthalene	520	11			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.17	0.15	0.13	<5	<5	
2-Methylnapthalene	260	19			<5	<5	0.1	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.18	0.15	0.12	<5	<5	

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe 1	Dupe 2	Field Blank	Equip Blank	Field Blank	Equipment Blank	Trip	Equip	Field	
Date Collected			02/25/2020	02/25/2020	02/25/2020	02/28/2020	02/25/2020	02/25/2020	02/25/2020	02/25/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/25/2020	02/25/2020	02/27/2020	02/27/2020	02/28/2020	02/28/2020	02/28/2020
PFA ANALYTE (ng/L)	DW	GSI																									
Perfluorobutanoic acid (PFBA)	NC	NC		<20	<21	NA	<19	NA	NA	8.1	<19	NA	5.5	<19	<20	<19	<19	<20	<20	<19	<19	<19	<21	<19	<20	<19	<19
Perfluoropentanoic acid (PFPeA)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorohexanoic acid (PFHxA)	400,000	NC		<9.8	1.7	NA	<9.5	NA	NA	3.5	<9.6	NA	1.4	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorobutane sulfonic acid (PFBS)	420	NC		2.7	2.3	NA	<9.5	NA	NA	4.5	1.9	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluoroheptanoic acid (PFHpA)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	2.8	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluoropentane sulfonic acid (PFPeS)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorooctanoic acid (PFOA)	8	12,000		<9.8	<10	NA	<9.5	NA	NA	8.7	<9.6	NA	2.3	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorohexane sulfonic acid (PFHxS)	51	NC		<9.8	<10	NA	2.7	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC		<9.8	<10	NA	3	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorononanoic acid (PFNA)	6	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorodecanoic acid (PFDA)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorooctane sulfonic acid (PFOS)	16	12		20	21	NA	84	NA	NA	7.3	14	NA	31	<9.5	32	22	6.2	31	19	35	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC		7.4	7.8	NA	47	NA	NA	<10	6.8	NA	11	<9.5	14	9.1	<9.5	15	8.4	17	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC		12	12	NA	35	NA	NA	6.4	6	NA	19	<9.5	16	11	4.2	14	9.1	17	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluoroundecanoic acid (PFUnDA)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorononane sulfonic acid (PFNS)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorododecanoic acid (PFDoDA)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorodecane sulfonic acid (PFDS)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorotridecanoic acid (PFTrDA)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorooctane sulfonamide (FOSA)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5
Perfluorotetradecanoic acid (PFTeDA)	NC	NC		<9.8	<10	NA	<9.5	NA	NA	<10	<9.6	NA	<9.9	<9.5	<10	<9.4	<9.5	<10	<10	<9.7	<9.6	<9.6	<10	<9.7	<10	<9.7	<9.5

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.
GSI - Groundwater Surface Water Interface Generic Criteria per
MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe #1	Dupe #2	Field Blank	Trip Blank	Equip Blank	Field Blank	
Date Collected			08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/19/2020		08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020
METALS ANALYTE (ug/L)	DW	GSI																MW-112S	MW-114S					
Arsenic, Dissolved	10	10		0.57	<2	0.362	13	<2	<2	0.934	<2	<0.002	16	0.616	0.589	18	1.145	20	19	21	<2	NA	<2	<2
Arsenic	10	10		<2	1.019	0.414	64	0.339	0.558	0.314	0.258	<0.002	113	1.261	0.676	68	4	119	70	114	<2	NA	<2	<2
Chromium, Dissolved	100	160	G	0.548	1.225	2.804	0.174	0.474	1.072	1.389	0.14	0.299	0.17	0.393	5	0.389	0.283	0.235	0.281	0.138	0.193	NA	0.095	0.137
Chromium	100	160	G	0.938	2.151	1170	0.221	61	24	22	<0.005	0.207	0.282	0.458	7	0.851	1.506	0.457	0.279	0.428	0.164	NA	0.112	0.12
Chromium VI, Dissolved	100	11		<10	<10	<10	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	<10	<10
Chromium VI	100	11		<10	<10	<10	<250	<10	<10	<10	<10	<10	<0.25	<50	<10	<250	<50	<50	<250	<50	<10	NA	<10	<10
Copper, Dissolved	1000	20	G	0.489	<5	1.301	<5	0.707	0.563	0.814	0.478	0.418	<5	<5	<5	<5	<5	1.604	<5	53	0.351	NA	<5	<5
Copper	1000	20	G	0.709	0.596	55	<5	2.148	0.971	1.003	0.417	0.448	<5	<5	0.392	<5	<5	1.803	<5	1.587	0.205	NA	<5	<5
Lead, Dissolved	4	44	G	0.274	<3	<3	<3	<3	<3	<3	<3	<3	<3	0.904	<3	<3	<3	0.369	<3	<3	<3	NA	<3	<3
Lead	4	44	G	0.234	0.409	<3	<3	<3	<3	<3	<3	<3	0.245	<0.003	<3	<3	<3	1.289	<3	1.194	<3	NA	<3	<3
Selenium, Dissolved	50	5		<5	<5	<5	<5	<5	9	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA	<5	<5
Selenium	50	5		<5	<5	<5	<5	<5	10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA	<5	<5
Zinc, Dissolved	2400	260	G	3.794	7	6	2.013	9	3.668	3.46	3.679	6	2.365	3.312	3.689	2.558	2.057	8	2.599	7	3.386	NA	2.785	2.769
Zinc	2400	260	G	2.732	2.35	1.075	1.046	1.538	6	1.828	1.729	4.07	1.703	1.381	1.424	1.471	1.634	15	1.117	16	1.264	NA	0.483	0.69
VOC ANALYTE (ug/L)	DW	GSI																						
Diethyl ether	10 (E)	ID		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<100	<10	<100	<10	<10	<10	<10
Acetone	730	1,700		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<500	<50	<500	<50	<50	<50	<50
Methyl iodide	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Carbon disulfide	800	NC		<5	<5	<5	<5	0.11	<5	<5	<5	0.12	0.1	<5	0.1	<5	0.12	<50	<5	<50	0.15	0.19	0.19	0.1
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
Acrylonitrile	2.6	2.0 (M); 1.2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<20	<2	<2	<2	<2
2-Butanone (MEK)	13,000	2,200		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<250	<25	<250	<25	<25	<25	<25
Dichlorodifluoromethane	1,700	ID		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
Chloromethane	260	NC		0.25	<5	0.15	0.91	0.17	<5	<5	0.11	0.23	0.22	0.17	0.2	<5	0.31	<50	<5	<50	<5	<5	<5	<5
Vinyl chloride	2	13		<1	<1	<1	0.99	<1	<1	<1	0.94	<1	11	<1	<1	6	2	10	5	10	<1	<1	<1	<1
Bromomethane	10	4.2; [5(M)]		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
Chloroethane	430	1,100		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
Trichlorofluoromethane	2,600	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,1-Dichloroethene	7	130		<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	1	0.21	<10	1	<10	<1	<1	<1	<1
Methylene chloride	5	1,500		<5	0.12	<5	<5	0.11	<5	<5	0.1	<5	0.12	<5	0.13	0.13	0.12	10.2	0.13	9.9	0.12	1.23	0.15	<5
trans-1,2-Dichloroethene	100	1,500		<1	<1	<1	<1	<1	<1	<1	<1	<1	0.57	<1	<1	0.19	<1	1.2	0.17	1	<1	<1	<1	<1
1,1-Dichloroethane	880	740		<1	<1	<1	<1	<1	<1	<1	0.29	<1	0.96	<1	<1	0.7	<1	3	0.66	3.1	<1	<1	<1	<1
cis-1,2-Dichloroethene	70	620		3	<1	<1	0.44	<1	<1	<1	1	<1	14	<1	1	2	1	130	2	120	<1	<1	<1	<1
Tetrahydrofuran	95	11,000		<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	7.6	<90	7.2	<90	0.46	<90	<90
Chloroform	80	350		<1	<1	<1	<1	1	<1	0.23	<1	1	<1	<1	0.11	<1	0.12	<10	<1	<10	<1	<1	<1	<1
Bromochloromethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,1,1-Trichloroethane	200	89		<1	<1	<1	<1	<1	<1	<1	<1	<1	0.15	<1	<1	<1	<1	1.9	<1	1.9	<1	<1	<1	<1
4-Methyl-2-pentanone (MIBK)	1800	ID		<50	<50	<50	<50	&																

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe #1	Dupe #2	Field Blank	Trip Blank	Equip Blank	Field Blank
Date Collected			08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020
VOC ANALYTE (ug/L) {cont}	DW	GSI																					
																		MW-112S	MW-114S				
Ethylbenzene	74	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Total Xylenes	280	49	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
p,m-Xylene			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<20	<2	<2	<2	<2
o-Xylene			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Styrene	100	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Isopropylbenzene	800	28	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
Bromoform	80 (A,W)	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Bromobenzene	18	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
tert-Butylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
sec-Butylbenzene	230	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
p-Isopropyltoluene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
1,3-Dichlorobenzene	6.6	28	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,4-Dichlorobenzene	75	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,2-Dichlorobenzene	600	13	<1	<1	<1	0.13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
n-Butylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1
Hexachloroethane	21	6.7	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
1,2-Dibromo-3-chloropropane	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
1,2,4-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
1,2,3-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	0.1	<5	<5
Naphthalene	520	11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	<5	<5	<5
2-Methylnaphthalene	260	19	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<50	<5	0.15	0.15	<5

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe #1	Dupe #2	Field Blank	Trip Blank	Equip Blank	Field Blank
Date Collected			08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020
PFA ANALYTE (ng/L)	DW	GSI																MW-112S	MW-114S				
Perfluorobutanoic acid (PFBA)	NC	NC	<9.8	<9.7	NA	<10	NA	NA	<10	<10	NA	<10	<10.0	<10	<9.9	<9.7	<9.7	<10	<10	<9.8	<9.9	<9.9	<10
Perfluoropentanoic acid (PFPeA)	NC	NC	<3.9	1.9	NA	<4.0	NA	NA	3.1	<4.1	NA	3.6	1.1	2.4	<4.0	1	1.1	<4.1	1.1	<3.9	<3.9	<3.9	<4.1
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorohexanoic acid (PFHxA)	400,000	NC	<2.0	<1.9	NA	<2.0	NA	NA	3.7	<2.1	NA	3.2	<2.0	1.6	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorobutane sulfonic acid (PFBS)	420	NC	1.6	1.9	NA	<2.0	NA	NA	3.2	<2.1	NA	2.7	1.9	1.5	<2.0	1.8	1.8	1.8	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluoroheptanoic acid (PFHpA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	3	<2.1	NA	1.5	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorooctanoic acid (PFOA)	8	12,000	<2.0	3.2	NA	<2.0	NA	NA	11	<2.1	NA	3.1	2.8	3	<2.0	<1.9	1.8	<2.1	2.1	<2.0	<2.0	<2.0	<2.0
Perfluorohexane sulfonic acid (PFHxS)	51	NC	<2.0	1.9	NA	2.2	NA	NA	3.1	<2.1	NA	2.5	2	1.9	<2.0	3.1	2.3	<2.1	3.1	<2.0	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	<2.0	1.6	NA	2.2	NA	NA	2.3	<2.1	NA	1.8	<2.0	<2.1	<2.0	2.6	1.6	<2.1	2.4	<2.0	<2.0	<2.0	<2.0
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorononanoic acid (PFNA)	6	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorodecanoic acid (PFDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	<3.9	<3.9	NA	<4.0	NA	NA	<4.0	<4.1	NA	<4.0	<4.0	<4.1	<4.0	<3.9	<3.9	<4.1	<4.1	<3.9	<3.9	<3.9	<4.1
Perfluorooctane sulfonic acid (PFOS)	16	12	18	30	NA	120	NA	NA	7.3	24	NA	29	5.9	33	11	26	29	13	36	<2.0	<2.0	<2.0	<2.0
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	8.5	12	NA	81	NA	NA	<2.0	15	NA	15	<2.0	17	5.2	5.7	18	5.9	21	<2.0	<2.0	<2.0	<2.0
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	8.9	18	NA	40	NA	NA	5.8	7.1	NA	13	4.5	15	4.9	19	12	5.8	14	<2.0	<2.0	<2.0	<2.0
Perfluoroundecanoic acid (PFUnDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorononane sulfonic acid (PFNS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorododecanoic acid (PFDoDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorodecane sulfonic acid (PFDS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorotridecanoic acid (PFTriDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorooctane sulfonamide (FOSA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	<3.9	<3.9	NA	<4.0	NA	NA	<4.0	<4.1	NA	<4.0	<4.0	<4.1	<4.0	<3.9	<3.9	<4.1	<4.1	<3.9	<3.9	<3.9	<4.1

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe #1	Dupe #2	Field Blank	Trip Blank	Equip Blank	Field Blank
Date Collected			08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/19/2020	08/18/2020	08/19/2020	08/18/2020	08/18/2020	08/19/2020	08/19/2020
PFA ANALYTE (ng/L) {cont}	DW	GSI																MW-112S	MW-114S				
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<2.0	<2.1	NA	<2.0	<2.0	<2.1	<2.0	<1.9	<1.9	<2.1	<2.0	<2.0	<2.0	<2.0	<2.0

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.
GSI - Groundwater Surface Water Interface Generic Criteria per
MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed due to turbidity	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID	MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe1	Dupe 2	FB-1	EB-1	FB-2	EB-2	Trip Blank	MW-103S MS	MW-103S MSD		
Date Collected	09/14/2021	09/14/2021	09/14/2021	09/16/2021	09/14/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/16/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/16/2021	09/16/2021	09/16/2021		
VOC ANALYTE (ug/L) {cont}	DW	GSI																								
2-Methylnaphthalene	260	19	<5	<5	<5	0.25	<5	0.11	<5	<5	<5	<5	<5	0.15	<5	<5	<50	<5	<5	0.21	0.15	<5	<5	0.25	64	66
4-Methyl-2-pentanone (MIBK)	1800	ID	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	0.31	<50	<500	<50	<50	<50	<50	<50	<50	<50	59	59	
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	56	55	
Methyl iodide	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	59	60	
Methylene chloride	5	1500	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	0.55	<5	<5	<5	<5	0.16	53	55
Napthalene	520	11	<5	<5	<5	0.13	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	0.1	<5	<5	<5	<5	0.14	62	62
n-Propylbenzene	80	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	55	55	
Styrene	100	80	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	57	57
1,1,1,2-Tetrachloroethane	77	ID	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	56	57
1,1,1-Trichloroethane	200	89	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	1	<1	<1	<1	<1	<1	<1	54	55
1,1,2,2-Tetrachloroethane	8.5	78 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	57	56
1,1,2-Trichloroethane	5.0 (A)	330 (X)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	57	57
1,2,3-Trichlorobenzene	NC	NC	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	0.11	61	61
1,2,3-Trichloropropane	42	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	56	57
1,2,3-Trimethylbenzene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	52	52
1,2,4-Trichlorobenzene	NC	NC	<5	<5	<5	0.11	<5	<5	<5	<5	<5	<5	<5	<5	<5	<50	<5	<5	<5	<5	<5	<5	<5	0.12	59	59
1,2,4-Trimethylbenzene	63 (E)	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	58	58
1,3,5-Trimethylbenzene	72 (E)	45	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	58	57
Tetrachloroethene	5	60	<1	<1	<1	<1	<1	93	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	59	59
Tetrahydrofuran	95	11000	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<900	<90	<90	<90	<90	<90	<90	<90	<90	51.66	52.57
Toluene	790	270	<1	0.11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	0.11	<1	<1	<1	<1	<1	<1	<1	56	57
Trichloroethene	5	200	14	3	0.67	<1	0.24	0.14	0.11	2	0.34	25	<1	16	4	29	200	4	226	0.11	<1	<1	<1	<1	54	55
Trichlorofluoromethane	2600	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	50	51
Vinyl chloride	2	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	11	<1	<1	4	1	9.3	4	11	<1	<1	<1	<1	<1	49	49
o-Xylene	NC	NC	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	55	55
p,m-Xylene	NC	NC	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2	<2	<2	<2	<2	<2	112	112
Xylenes, Total	280	49	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<30	<3	<3	<3	<3	<3	<3	<3	<3	167	167

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe1	Dupe 2	FB-1	EB-1	FB-2	EB-2	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected			09/14/2021	09/14/2021	09/14/2021	09/16/2021	09/14/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/16/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/16/2021	09/16/2021	09/16/2021
PFA ANALYTE (ng/L)	DW	GSI																								
Perfluorobutanoic acid (PFBA)	NC	NC	<9.8	<9.7	NA	<16	NA	NA	<9.6	19	NA	<9.8	<10	<9.8	<10	<10	<10	<10	<10	<9.6	<10	<10.0	<9.9	<10	120	110
Perfluoropentanoic acid (PFPeA)	NC	NC	1.1	2.6	NA	<3.9	NA	NA	3.3	<3.9	NA	2.1	1.5	2.9	<4.1	<4.1	<4.0	<4.0	<4.1	<3.8	<4.1	<4.0	<3.9	<4.1	92	88
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	93
Perfluorohexanoic acid (PFHxA)	400,000	NC	<2.0	2.1	NA	<2.0	NA	NA	3.8	<1.9	NA	<2.0	<2.1	<2.2	<2.0	<2.1	<2.2	<2.0	<2.4	<1.9	<2.0	<2.0	<2.0	<2.1	97	98
Perfluorobutane sulfonic acid (PFBS)	420	NC	1.6	<1.9	NA	<2.0	NA	NA	3.6	<1.9	NA	1.6	1.7	<2.0	<2.0	1.6	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	94	100
Perfluoroheptanoic acid (PFHpA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	2.1	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	93
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	86	88
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	<3.9	<3.9	NA	<3.9	NA	NA	<3.8	<3.9	NA	<3.9	<4.2	<3.9	<4.1	<4.1	<4.0	<4.0	<4.1	<3.8	<4.1	<4.0	<3.9	<4.1	84	97
Perfluorooctanoic acid (PFOA)	8	12,000	<2.0	5.5	NA	2.7	NA	NA	17	<1.9	NA	1.9	2.7	2	<2.0	1.7	1.7	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	99	92
Perfluorohexane sulfonic acid (PFHxS)	51	NC	<2.0	<1.9	NA	5	NA	NA	2.1	<1.9	NA	1.7	<2.1	<2.0	<2.0	1.8	2.5	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	120	100
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	<2.0	<1.9	NA	3.1	NA	NA	1.6	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	1.8	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	97	89
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	17	13
Perfluorononanoic acid (PFNA)	6	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	95	84
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	<3.9	<3.9	NA	<3.9	NA	NA	<3.8	<3.9	NA	<3.9	<4.2	<3.9	<4.1	<4.1	<4.0	<4.0	<4.1	<3.8	<4.1	<4.0	<3.9	<4.1	95	83
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	2.5	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	86	83
Perfluorodecanoic acid (PFDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	96	93
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	98	100
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	<3.9	<3.9	NA	<3.9	NA	NA	<3.8	<3.9	NA	<3.9	<4.2	<3.9	<4.1	<4.1	<4.0	<4.0	<4.1	<3.8	<4.1	<4.0	<3.9	<4.1	96	88
Perfluorooctane sulfonic acid (PFOS)	16	12	9.1	37	NA	46	NA	NA	18	6.6	NA	23	5.8	11	6.7	23	21	7.9	18	<1.9	<2.0	<2.0	<2.0	<2.1	140	130
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	5.5	23	NA	24	NA	NA	2.8	4	NA	12	<2.1	6.3	3.5	10	12	3.9	11	<1.9	<2.0	<2.0	<2.0	<2.1	87	82
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	3.8	13	NA	20	NA	NA	15	2.6	NA	11	4.5	4.5	3.3	13	8.7	4.1	7.4	<1.9	<2.0	<2.0	<2.0	<2.1	49	43
Perfluoroundecanoic acid (PFUnDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	93
Perfluorononane sulfonic acid (PFNS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	92	80
Perfluorododecanoic acid (PFDoDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	97	92
Perfluorodecane sulfonic acid (PFDS)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	81
Perfluorotridecanoic acid (PFTrDA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	110	100
Perfluorooctane sulfonamide (FOSA)	NC	NC	<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	97	86
Perfluorotetradecanoic acid (PFTeDA)	NC	NC	<3.9	<3.9	NA	<3.9	NA	NA	<3.8	<3.9	NA	<3.9	<4.2	<3.9	<4.1	<4.1	<4.0	<4.0	<4.1	<3.8	<4.1	<4.0	<3.9	<4.1	84	81

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID				MW-100S	MW-101S	MW-102S	MW-103S	MW-104S	MW-105S	MW-106SR	MW-107S	MW-108S	MW-109S	MW-110S	MW-111S	MW-112S	MW-113S	MW-114S	Dupe1	Dupe 2	FB-1	EB-1	FB-2	EB-2	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected				09/14/2021	09/14/2021	09/14/2021	09/16/2021	09/14/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/15/2021	09/14/2021	09/14/2021	09/15/2021	09/15/2021	09/16/2021	09/16/2021	09/16/2021
PFA ANALYTE (ng/L) {cont}		DW	GSI																									
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		NC	NC		<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	110	95
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)		NC	NC		<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	89
4,8-dioxa-3H-perfluorononanoic acid (ADONA)		NC	NC		<2.0	<1.9	NA	<2.0	NA	NA	<1.9	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.0	<1.9	<2.0	<2.0	<2.0	<2.1	100	98
Hexafluoropropylene oxide dimer (HFPO-DA)		NC	NC		<9.8	<9.7	NA	<9.8	NA	NA	<9.6	<9.7	NA	<9.8	<10	<9.8	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	110	100

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.
GSI - Groundwater Surface Water Interface Generic Criteria per
MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID				MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected				03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022
METALS ANALYTE (ug/L)		DW	GSI									MW-114S						
Arsenic, Dissolved	10	10		8	0.423	0.616	<2	1.91	32	13	1.131	11	0.124	0.364	NA	250	268	
Arsenic	10	10		39	0.872	1.593	1.122	9	89	52	0.597	49	<2	0.322	NA	298	298	
Chromium VI, Dissolved	100	11		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	<20	<20	
Chromium VI	100	11		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	<20	<20	
Chromium, Dissolved	100	160	G	0.238	0.725	0.875	0.298	0.216	0.38	0.215	0.417	0.286	0.229	0.216	NA	245	260	
Chromium	100	160	G	0.258	106	2,020	0.364	2.794	0.368	0.57	12	0.609	0.203	0.075	NA	257	249	
Copper, Dissolved	1000	20	G	<5	0.441	1	0.505	<0.005	<0.005	<5	1.321	<5	<5	<5	NA	234	245	
Copper	1000	20	G	<5	1.738	33	0.628	1.805	<0.005	3.007	2.285	3.227	0.161	<5	NA	246	245	
Lead, Dissolved	4	44	G	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	NA	231	248	
Lead	4	44	G	<3	<3	1.062	<3	0.99	<3	2.466	<3	2.637	<3	<3	NA	252	243	
Manganese, Dissolved	50	4500		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Manganese	50	4500		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Selenium, Dissolved	50	5		<5	3.52	3.6	3.13	<5	<5	<5	<5	<5	<5	<5	NA	249	271	
Selenium	50	5		<5	3.7	3.78	3.16	<5	<5	<5	<5	<5	<5	<5	NA	272	281	
Zinc, Dissolved	2400	260	G	1.75	1.968	10	2.015	6	1.144	12	1.719	13	0.44	0.461	NA	249	251	
Zinc	2400	260	G	1.72	1.933	31	2.611	8	1.89	37	2.169	23	0.598	0.651	NA	263	262	
VOC ANALYTE (ug/L)		DW	GSI															
Acetone	730	1700		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	14.6	<50	45	46.7	
Acrylonitrile	2.6	2.0 (M); 1.2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	46	49	
2-Butanone (MEK)	13000	2,200		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	48	50	
Benzene	5	200		0.54	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	46	43	
n-Butylbenzene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51	
Bromobenzene	18	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	49	
Bromochloromethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	49	
Bromodichloromethane	80	NC		<1	0.19	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	48	
Bromoform	80 (A,W)	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	52	
Bromomethane	10	4.2; [5(M)]		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	31	27	
sec-Butylbenzene	230	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	52	
tert-Butylbenzene	80	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	49	
Carbon disulfide	800	NC		0.18	0.19	0.24	0.2	0.2	0.23	0.19	0.18	0.2	0.26	0.15	0.26	43	41	
Carbon tetrachloride	5	38	X	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	45	43	
Chlorobenzene	100	25		0.64	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	49	49	
Chloroethane	430	1,100		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	29	27	
Chloroform	80	350		<1	0.45	<1	0.8	<1	<1	0.14	0.25	0.14	<1	<1	<1	49	47	
Chloromethane	260	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	35	34	
1,1-Dichloroethane	880	740		<1	<1	<1	<1	<1	0.41	2	<1	2	<1	<1	<1	48	45	
1,1-Dichloroethene	7	130		<1	<1	<1	<1	<1	0.38	1	<1	1	<1	<1	<1	43	41	
1,2-Dibromo-3-chloropropane	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	76	84	
1,2-Dibromoethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	53	
1,2-Dichlorobenzene	600	13		<1	<1	<1	<1	<1	0.12	<1	<1	<1	<1	<1	<1	52	51	
1,2-Dichloroethane	5.0 (A)	360 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	45	42	
1,2-Dichloropropane	5.0 (A)	230 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	45	43	
1,3-Dichlorobenzene	6.6	28		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51	
1,4-Dichlorobenzene	75	17		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	50	

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID				MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected				03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	
VOC ANALYTE (ug/L)	DW	GSI																
cis-1,2-Dichloroethene	70	620		0.12	<1	<1	<1	<1	0.88	131	0.21	124	<1	<1	<1	50	47	
cis-1,3-Dichloropropene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51	
Dibromochloromethane	80 (A,W)	ID		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	51	51	
Dibromomethane	230	NA		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	53	52	
Dichlorodifluoromethane	1700	ID		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	51	52	
Diethyl ether	10 (E)	ID		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	41	40	
trans-1,2-Dichloroethene	100	1500		<1	<1	<1	<1	<1	0.13	0.75	<1	0.67	<1	<1	<1	46	43	
trans-1,3-Dichloropropene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	54	
trans-1,4-Dichloro-2-butene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	35	36	
Ethylbenzene	74	18		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	49	47	
2-Hexanone	1000	ID		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	51	54	
Hexachloroethane	21	6.7		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	53	53	
p-Isopropyltoluene	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	52	51	
Isopropylbenzene	800	28		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	49	49	
VOC ANALYTE (ug/L) {cont}	DW	GSI																
2-Methylnaphthalene	260	19		0.3	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.11	0.26	<5	73	77
4-Methyl-2-pentanone (MIBK)	1800	ID		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	52	54	
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	46	45	
Methyl iodide	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	47	44	
Methylene chloride	5	1500		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.12	0.22	44	42
Naphthalene	520	11		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.12	<5	57	60
n-Propylbenzene	80	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	49	
Styrene	100	80		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	36	34	
1,1,1,2-Tetrachloroethane	77	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	48	
1,1,1-Trichloroethane	200	89		<1	<1	<1	<1	<1	<1	1	<1	1	<1	<1	<1	46	44	
1,1,2,2-Tetrachloroethane	8.5	78 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	49	51	
1,1,2-Trichloroethane	5.0 (A)	330 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	49	
1,2,3-Trichlorobenzene	NC	NC		0.14	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.2	<5	74	74
1,2,3-Trichloropropane	42	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	49	50	
1,2,3-Trimethylbenzene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	50	
1,2,4-Trichlorobenzene	NC	NC		0.17	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.14	<5	74	74
1,2,4-Trimethylbenzene	63 (E)	17		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	39	37	
1,3,5-Trimethylbenzene	72 (E)	45		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	48	47	
Tetrachloroethene	5	60		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	56	
Tetrahydrofuran	95	11000		<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	2.64	2.72	44.86	49.19
Toluene	790	270		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.12	<1	50	48
Trichloroethene	5	200		<1	0.21	<1	0.18	<1	1	172	1	162	<1	<1	<1	50	47	
Trichlorofluoromethane	2600	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	37	36	
Vinyl chloride	2	13		0.21	<1	<1	<1	<1	2	7	<1	6	<1	<1	<1	33	31	
o-Xylene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	48	46	
p,m-Xylene	NC	NC		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	96	91	
Xylenes, Total	280	49		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	144	137	

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID				MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected				03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022
PFA ANALYTE (ng/L)		DW	GSI														
Perfluorobutanoic acid (PFBA)	NC	NC		<39	NA	<9.7	NA	<9.8	<31	<9.8	<10	<10	<10	<10	<11	130	120
Perfluoropentanoic acid (PFPeA)	NC	NC		<3.9	NA	1.2	NA	<3.9	<4.1	<3.9	<4.0	<4.1	<4.0	<4.0	<4.2	120	110
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	100
Perfluorohexanoic acid (PFHxA)	400,000	NC		<2.0	NA	2	NA	<2.0	<2.1	1.7	<2.0	<2.1	<2.0	<2.0	<2.1	110	93
Perfluorobutane sulfonic acid (PFBS)	420	NC		1.6	NA	3.6	NA	2.3	1.5	1.5	<2.0	<2.1	<2.0	<2.0	<2.1	110	100
Perfluoroheptanoic acid (PFHpA)	NC	NC		<2.0	NA	2.2	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	96	99
Perfluoropentane sulfonic acid (PFPeS)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	120	100
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	100	110
Perfluorooctanoic acid (PFOA)	8	12,000		2.6	NA	15	NA	<2.0	<2.1	2.4	<2.0	<2.1	<2.0	<2.0	<2.1	110	93
Perfluorohexane sulfonic acid (PFHxS)	51	NC		2.1	NA	1.6	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	120	95
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC		2.1	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	100	78
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	16	15
Perfluorononanoic acid (PFNA)	6	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	83
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	87	110
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	95
Perfluorodecanoic acid (PFDA)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	97	92
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	110
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC		<3.9	NA	<3.9	NA	<3.9	<4.1	<3.9	<4.0	<4.1	<4.0	<4.0	<4.2	110	95
Perfluorooctane sulfonic acid (PFOS)	16	12		74	NA	11	NA	<2.0	10	16	<2.0	13	<2.0	<2.0	<2.1	160	170
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC		47	NA	3.3	NA	<2.0	4.9	6.8	<2.0	5	<2.0	<2.0	<2.1	110	110
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC		25	NA	7.8	NA	<2.0	5.6	9.6	<2.0	7.6	<2.0	<2.0	<2.1	51	52

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID				MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected				03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022	03/16/2022
PFA ANALYTE (ng/L)	DW	GSI															
Perfluoroundecanoic acid (PFUnDA)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	100	97
Perfluorononane sulfonic acid (PFNS)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	110
Perfluorododecanoic acid (PFDoDA)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	97	97
Perfluorodecane sulfonic acid (PFDS)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	110
Perfluorotridecanoic acid (PFTrDA)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	120	110
Perfluorooctane sulfonamide (FOSA)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	110
Perfluorotetradecanoic acid (PFTeDA)	NC	NC		<3.9	NA	<3.9	NA	<3.9	<4.1	<3.9	<4.0	<4.1	<4.0	<4.0	<4.2	130	110
PFA ANALYTE (ng/L) {cont}	DW	GSI															
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	110
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	110	100
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC		<2.0	NA	<1.9	NA	<2.0	<2.1	<2.0	<2.0	<2.1	<2.0	<2.0	<2.1	93	83
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC		<3.9	NA	<3.9	NA	<3.9	<4.1	<3.9	<4.0	<4.1	<4.0	<4.0	<4.2	98	86

1.64

Table 1
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.
GSI - Groundwater Surface Water Interface Generic Criteria per
MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.



Analytical Laboratory Report

Report ID: S40239.01(01)
Generated on 09/21/2022

Report to

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Report Summary

Lab Sample ID(s): S40239.01-S40239.08
Project: RACER Flint West #12990
Collected Date(s): 09/13/2022
Submitted Date/Time: 09/13/2022 15:35
Sampled by: Unknown
P.O. #: 795930

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
N/A	Not Applicable
SM3500-Cr B	Standard Method 3500 Cr B 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (8 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40239.01	MW-104s, 22913	Groundwater	09/13/22 09:50
S40239.02	MW-112s, 22913	Groundwater	09/13/22 10:58
S40239.03	MW-110s, 22913	Groundwater	09/13/22 12:00
S40239.04	MW-108s, 22913	Groundwater	09/13/22 12:58
S40239.05	Field Blank	Groundwater	09/13/22 09:27
S40239.06	MW-114s, 22913	Groundwater	09/13/22 13:33
S40239.07	Dupe122913	Groundwater	09/13/22 00:01
S40239.08	Trip Blank	Groundwater	09/13/22 00:01



Analytical Laboratory Report

Lab Sample ID: S40239.01

Sample Tag: MW-104s, 22913

Collected Date/Time: 09/13/2022 09:50

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.4	IR
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/15/22 12:30	BML	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/13/22 17:10, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/13/22 16:20, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.05	0.02	mg/L	5	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 11:57, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.004	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	17.1	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	0.129	0.005	0.000377	mg/L	5	7440-50-8	
Lead	0.000297	0.003	0.000190	mg/L	5	7439-92-1	b
Selenium	0.006	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.007	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 09/15/22 12:03, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.001779	0.002	0.000255	mg/L	5	7440-38-2	b
Chromium, Dissolved	0.010	0.005	0.0000965	mg/L	5	7440-47-3	
Copper, Dissolved	0.001252	0.005	0.000377	mg/L	5	7440-50-8	b
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	0.003904	0.005	0.00209	mg/L	5	7782-49-2	b
Zinc, Dissolved	Not detected	0.005	0.000730	mg/L	5	7440-66-6	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/14/22 23:30, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	0.13	5	0.13	ug/L	1	75-15-0	JB

b-Value detected less than reporting limit, but greater than MDL

J-Estimated value less than reporting limit, but greater than MDL B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S40239.01 (continued)

Sample Tag: MW-104s, 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/14/22 23:30, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	0.47	1	0.15	ug/L	1	67-66-3	J
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	0.28	1	0.19	ug/L	1	75-27-4	J
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40239.01 (continued)

Sample Tag: MW-104s, 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/14/22 23:30, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S40239.02

Sample Tag: MW-112s, 22913

Collected Date/Time: 09/13/2022 10:58

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.4	IR
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/15/22 12:30	BML	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/13/22 17:15, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/13/22 16:30, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 12:05, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.097	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.008	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	Not detected	0.005	0.000377	mg/L	5	7440-50-8	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	Not detected	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 09/15/22 12:07, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.045	0.002	0.000255	mg/L	5	7440-38-2	
Chromium, Dissolved	0.000728	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper, Dissolved	Not detected	0.005	0.000377	mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc, Dissolved	Not detected	0.005	0.000730	mg/L	5	7440-66-6	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/14/22 23:53, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	6.5	50	4.0	ug/L	1	67-64-1	J
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	

b-Value detected less than reporting limit, but greater than MDL

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40239.02 (continued)

Sample Tag: MW-112s, 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/14/22 23:53, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Carbon disulfide	0.15	5	0.13	ug/L	1	75-15-0	JB
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	2	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	0.39	1	0.27	ug/L	1	75-35-4	J
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	0.17	1	0.14	ug/L	1	156-60-5	J
1,1-Dichloroethane	0.69	1	0.15	ug/L	1	75-34-3	J
cis-1,2-Dichloroethene	3	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	7	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	

J-Estimated value less than reporting limit, but greater than MDL B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S40239.02 (continued)

Sample Tag: MW-112s, 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/14/22 23:53, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S40239.03

Sample Tag: MW-110s, 22913

Collected Date/Time: 09/13/2022 12:00

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.4	IR
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/15/22 12:30	BML	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/13/22 17:20, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/13/22 16:35, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 12:09, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.002	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.001516	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	0.000914	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.001038	0.005	0.000730	mg/L	5	7440-66-6	b

Method: E200.8, Run Date: 09/15/22 12:11, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.000968	0.002	0.000255	mg/L	5	7440-38-2	b
Chromium, Dissolved	0.001952	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper, Dissolved	0.000626	0.005	0.000377	mg/L	5	7440-50-8	b
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc, Dissolved	0.001812	0.005	0.000730	mg/L	5	7440-66-6	b

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 00:17, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40239.03 (continued)

Sample Tag: MW-110s, 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 00:17, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	



Analytical Laboratory Report

Lab Sample ID: S40239.03 (continued)

Sample Tag: MW-110s, 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 00:17, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S40239.04

Sample Tag: MW-108s, 22913

Collected Date/Time: 09/13/2022 12:58

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.4	IR
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/15/22 12:30	BML	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/13/22 17:25, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/13/22 16:45, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 12:14, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.000332	0.002	0.000255	mg/L	5	7440-38-2	b
Chromium	0.001308	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	0.000747	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	0.003116	0.005	0.00209	mg/L	5	7782-49-2	b
Zinc	0.002116	0.005	0.000730	mg/L	5	7440-66-6	b

Method: E200.8, Run Date: 09/15/22 12:26, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.000565	0.002	0.000255	mg/L	5	7440-38-2	b
Chromium, Dissolved	0.000428	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper, Dissolved	0.000853	0.005	0.000377	mg/L	5	7440-50-8	b
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	0.00248	0.005	0.00209	mg/L	5	7782-49-2	b
Zinc, Dissolved	0.002316	0.005	0.000730	mg/L	5	7440-66-6	b

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 00:40, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40239.04 (continued)

Sample Tag: MW-108s, 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 00:40, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	2	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	2	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	



Analytical Laboratory Report

Lab Sample ID: S40239.04 (continued)

Sample Tag: MW-108s, 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 00:40, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S40239.05

Sample Tag: Field Blank

Collected Date/Time: 09/13/2022 09:27

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.4	IR
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/15/22 12:30	BML	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/13/22 17:30, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/13/22 16:50, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 12:28, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.000405	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	0.000392	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	Not detected	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 09/15/22 12:30, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.000282	0.002	0.000255	mg/L	5	7440-38-2	b
Chromium, Dissolved	0.000255	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper, Dissolved	Not detected	0.005	0.000377	mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc, Dissolved	Not detected	0.005	0.000730	mg/L	5	7440-66-6	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 01:04, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40239.05 (continued)

Sample Tag: Field Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 01:04, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	0.64	5	0.16	ug/L	1	75-09-2	J
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	2	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40239.05 (continued)

Sample Tag: Field Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 01:04, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S40239.06

Sample Tag: MW-114s, 22913

Collected Date/Time: 09/13/2022 13:33

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.4	IR
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/15/22 12:30	BML	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/13/22 17:35, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/13/22 17:00, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 12:34, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.127	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.001219	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	0.008	0.005	0.000377	mg/L	5	7440-50-8	
Lead	0.006	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.032	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 09/15/22 12:35, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.045	0.002	0.000255	mg/L	5	7440-38-2	
Chromium, Dissolved	0.000437	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper, Dissolved	0.000459	0.005	0.000377	mg/L	5	7440-50-8	b
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc, Dissolved	0.003777	0.005	0.000730	mg/L	5	7440-66-6	b

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 01:27, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40239.06 (continued)

Sample Tag: MW-114s, 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 01:27, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	14	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	2	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	0.95	1	0.14	ug/L	1	156-60-5	J
1,1-Dichloroethane	2	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	142	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	1	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	252	1	0.29	ug/L	1	79-01-6	E
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	

J-Estimated value less than reporting limit, but greater than MDL

E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S40239.06 (continued)

Sample Tag: MW-114s, 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 01:27, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 09/19/22 20:34, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100	1.0	ug/L	10	60-29-7	Y
Acetone	Not detected	500	85	ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10	0.30	ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50	1.0	ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50	1.0	ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20	1.0	ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250	47	ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50	4.0	ug/L	10	75-71-8	Y
Chloromethane	Not detected	50	1.0	ug/L	10	74-87-3	Y
Vinyl chloride	10	10	1.0	ug/L	10	75-01-4	Y
Bromomethane	Not detected	50	1.0	ug/L	10	74-83-9	Y
Chloroethane	Not detected	50	2.0	ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10	4.0	ug/L	10	75-69-4	Y
1,1-Dichloroethene	1.6	10	1.0	ug/L	10	75-35-4	JY
Methylene chloride	Not detected	50	1.0	ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10	1.0	ug/L	10	156-60-5	Y
1,1-Dichloroethane	2.0	10	1.0	ug/L	10	75-34-3	JY
cis-1,2-Dichloroethene	120	10	1.0	ug/L	10	156-59-2	Y
Tetrahydrofuran*	4.7	900	2.0	ug/L	10	109-99-9	JYB
Chloroform	Not detected	10	1.0	ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10	1.0	ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10	1.0	ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500	1.0	ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500	1.0	ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10	1.0	ug/L	10	56-23-5	Y
Benzene	Not detected	10	1.0	ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10	1.0	ug/L	10	107-06-2	Y
Trichloroethene	200	10	1.0	ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10	1.0	ug/L	10	78-87-5	Y

Y-Elevated reporting limit due to high target concentration

J-Estimated value less than reporting limit, but greater than MDL

B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S40239.06 (continued)

Sample Tag: MW-114s, 22913

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 09/19/22 20:34, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromodichloromethane	Not detected	10	1.0	ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50	1.0	ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10	1.0	ug/L	10	10061-01-5	Y
Toluene	Not detected	10	1.0	ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10	1.0	ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10	0.50	ug/L	10	79-00-5	Y
Tetrachloroethene	Not detected	10	2.0	ug/L	10	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	10	1.0	ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50	0.20	ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10	1.0	ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10	1.0	ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10	1.0	ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10	1.0	ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20	2.0	ug/L	10		Y
o-Xylene	Not detected	10	0.50	ug/L	10	95-47-6	Y
Styrene	Not detected	10	1.0	ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50	0.30	ug/L	10	98-82-8	Y
Bromoform	Not detected	10	1.0	ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10	0.50	ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10	1.0	ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10	1.0	ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10	1.0	ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10	1.0	ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10	1.0	ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10	1.0	ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10	0.50	ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50	0.40	ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10	1.0	ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10	1.0	ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10	1.0	ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10	0.40	ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10	0.40	ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50	1.0	ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50	1.0	ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50	1.0	ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50	0.40	ug/L	10	87-61-6	Y
Naphthalene	1.6	50	1.0	ug/L	10	91-20-3	JYB
2-Methylnaphthalene	1.3	50	1.0	ug/L	10	91-57-6	JYB

Y-Elevated reporting limit due to high target concentration

J-Estimated value less than reporting limit, but greater than MDL B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S40239.07

Sample Tag: Dupe122913

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.4	IR
3	40ml Glass	HCL	Yes	4.4	IR
1	125ml Plastic	HNO3	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/15/22 12:30	BML	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/13/22 17:40, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/13/22 17:05, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.05	0.02	mg/L	5	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 12:38, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.176	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.003597	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	0.022	0.005	0.000377	mg/L	5	7440-50-8	
Lead	0.017	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.100	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 09/15/22 12:40, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.048	0.002	0.000255	mg/L	5	7440-38-2	
Chromium, Dissolved	0.000254	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper, Dissolved	0.000529	0.005	0.000377	mg/L	5	7440-50-8	b
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc, Dissolved	0.003372	0.005	0.000730	mg/L	5	7440-66-6	b

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 01:51, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	4.7	50	4.0	ug/L	1	67-64-1	J
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	

b-Value detected less than reporting limit, but greater than MDL

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40239.07 (continued)

Sample Tag: Dupe122913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 01:51, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	13	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	2	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	0.82	1	0.14	ug/L	1	156-60-5	J
1,1-Dichloroethane	2	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	136	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	1	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	219	1	0.29	ug/L	1	79-01-6	E
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	

J-Estimated value less than reporting limit, but greater than MDL

E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S40239.07 (continued)

Sample Tag: Dupe122913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/15/22 01:51, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 09/19/22 20:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	100	1.0	ug/L	10	60-29-7	Y
Acetone	Not detected	500	85	ug/L	10	67-64-1	Y
Methyl iodide	Not detected	10	0.30	ug/L	10	74-88-4	Y
Carbon disulfide	Not detected	50	1.0	ug/L	10	75-15-0	Y
tert-Methyl butyl ether (MTBE)	Not detected	50	1.0	ug/L	10	1634-04-4	Y
Acrylonitrile	Not detected	20	1.0	ug/L	10	107-13-1	Y
2-Butanone (MEK)	Not detected	250	47	ug/L	10	78-93-3	Y
Dichlorodifluoromethane	Not detected	50	4.0	ug/L	10	75-71-8	Y
Chloromethane	Not detected	50	1.0	ug/L	10	74-87-3	Y
Vinyl chloride	10	10	1.0	ug/L	10	75-01-4	Y
Bromomethane	Not detected	50	1.0	ug/L	10	74-83-9	Y
Chloroethane	Not detected	50	2.0	ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10	4.0	ug/L	10	75-69-4	Y
1,1-Dichloroethene	1.5	10	1.0	ug/L	10	75-35-4	JY
Methylene chloride	Not detected	50	1.0	ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10	1.0	ug/L	10	156-60-5	Y
1,1-Dichloroethane	2.0	10	1.0	ug/L	10	75-34-3	JY
cis-1,2-Dichloroethene	120	10	1.0	ug/L	10	156-59-2	Y
Tetrahydrofuran*	3.8	900	2.0	ug/L	10	109-99-9	JYB
Chloroform	Not detected	10	1.0	ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10	1.0	ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	1.3	10	1.0	ug/L	10	71-55-6	JY
4-Methyl-2-pentanone (MIBK)	Not detected	500	1.0	ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500	1.0	ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10	1.0	ug/L	10	56-23-5	Y
Benzene	Not detected	10	1.0	ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10	1.0	ug/L	10	107-06-2	Y
Trichloroethene	200	10	1.0	ug/L	10	79-01-6	Y

Y-Elevated reporting limit due to high target concentration

J-Estimated value less than reporting limit, but greater than MDL

B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S40239.07 (continued)

Sample Tag: Dupe122913

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 09/19/22 20:53, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Dichloropropane	Not detected	10	1.0	ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10	1.0	ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50	1.0	ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10	1.0	ug/L	10	10061-01-5	Y
Toluene	Not detected	10	1.0	ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10	1.0	ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10	0.50	ug/L	10	79-00-5	Y
Tetrachloroethene	Not detected	10	2.0	ug/L	10	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	10	1.0	ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50	0.20	ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10	1.0	ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10	1.0	ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10	1.0	ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10	1.0	ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20	2.0	ug/L	10		Y
o-Xylene	Not detected	10	0.50	ug/L	10	95-47-6	Y
Styrene	Not detected	10	1.0	ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50	0.30	ug/L	10	98-82-8	Y
Bromoform	Not detected	10	1.0	ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10	0.50	ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10	1.0	ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10	1.0	ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10	1.0	ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10	1.0	ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10	1.0	ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10	1.0	ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10	0.50	ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50	0.40	ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10	1.0	ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10	1.0	ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10	1.0	ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10	0.40	ug/L	10	526-73-8	Y
n-Butylbenzene	Not detected	10	0.40	ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50	1.0	ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50	1.0	ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50	1.0	ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50	0.40	ug/L	10	87-61-6	Y
Naphthalene	Not detected	50	1.0	ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50	1.0	ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S40239.08

Sample Tag: Trip Blank

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/15/22 12:30	BML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/20/22 13:31, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.27	ug/L	1	60-29-7	
Acetone	Not detected	50	4.0	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.24	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.13	ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5	0.25	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.38	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	3.3	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.57	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.20	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.24	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.18	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.21	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.28	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.27	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.16	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.14	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.15	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.21	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	1.2	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.15	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.36	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.27	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.35	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.19	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.19	ug/L	1	56-23-5	
Benzene	Not detected	1	0.11	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.17	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.29	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.18	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.19	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.45	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.17	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.17	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.20	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.34	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.13	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.26	ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S40239.08 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/20/22 13:31, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5	0.20	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.12	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.16	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.22	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.42	ug/L	1		
o-Xylene	Not detected	1	0.16	ug/L	1	95-47-6	
Styrene	Not detected	1	0.13	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.12	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.35	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.27	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.54	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.12	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.15	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.18	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.14	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.16	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.16	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.19	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.20	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.18	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.13	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.14	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.17	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.35	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.48	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.24	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.25	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.18	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.21	ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S40239

Client:APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Submitted:09/13/2022 15:35 Login User: BJB

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.4
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☐ Yes ☒ No ☐ N/A	COC adequately filled out Trip Blank not listed on COC
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☒ Yes ☐ No ☐ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

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

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S40239 Submitted: 09/13/2022 15:35

Client: APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Initial Preservation Check: 09/13/2022 15:55 BJB

Preservation Recheck (E200.8): N/A

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S40239.01	125ml Plastic HNO3	<2			
S40239.02	125ml Plastic HNO3	<2			
S40239.03	125ml Plastic HNO3	<2			
S40239.04	125ml Plastic HNO3	<2			
S40239.05	125ml Plastic HNO3	<2			
S40239.06	125ml Plastic HNO3	<2			
S40239.07	125ml Plastic HNO3	<2			



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C.O.C. PAGE # 1 OF 1



Analytical Laboratory Report

Report ID: S40240.01(01)
Generated on 10/10/2022

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:
Email: rabke@appliedecosystems.com

Report produced by

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

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

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S40240.01-S40240.07
Project: RACER Flint West #12990
Collected Date(s): 09/13/2022
Submitted Date/Time: 09/13/2022 15:35
Sampled by: Unknown
P.O. #: 795930

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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

Method Summary

Method	Version
ASTMD7979-19M	ASTM Method D7979 - 19 Modified (Isotopic Dilution)

Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40240.01	MW-104s, 22913	Groundwater	09/13/22 09:50
S40240.02	MW-112s, 22913	Groundwater	09/13/22 10:50
S40240.03	MW-110s, 22913	Groundwater	09/13/22 12:00
S40240.04	MW-108s, 22913	Groundwater	09/13/22 12:58
S40240.05	Field Blank	Groundwater	09/13/22 09:27
S40240.06	MW-114s, 22913	Groundwater	09/13/22 13:33
S40240.07	Dupe1,22913	Groundwater	09/13/22 00:01



Analytical Laboratory Report

Lab Sample ID: S40240.01

Sample Tag: MW-104s, 22913

Collected Date/Time: 09/13/2022 09:50

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.75/6.50/10	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 19:11, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.5	9.5	ng/L	1.9	375-22-4	
PFPeA*	Not detected	3.8	0.95	ng/L	1.9	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.9	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.9	307-24-4	
PFBS*	1.6	1.9	1.3	ng/L	1.9	375-73-5	J
PFHpA*	Not detected	1.9	1.3	ng/L	1.9	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.9	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.9	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.9	335-67-1	
PFHxS*	1.7	1.9	1.5	ng/L	1.9	355-46-4	J
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.9	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.9	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.9	375-95-1	
8:2 FTSA*	Not detected	1.9	0.95	ng/L	1.9	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.9	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.9	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.9	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.9	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.9	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.9	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.9	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.9	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.9	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.9	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.9	335-77-3	
PFTTrDA*	Not detected	1.9	1.1	ng/L	1.9	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.9	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.9	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.9	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.9	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.9	919005-14-4	
HFPO-DA*	Not detected	9.5	1.9	ng/L	1.9	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40240.02

Sample Tag: MW-112s, 22913

Collected Date/Time: 09/13/2022 10:50

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.01/6.57/10	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 19:31, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	28	9.2	ng/L	1.84	375-22-4	X
PFPeA*	Not detected	3.7	0.92	ng/L	1.84	2706-90-3	
4:2 FTSA*	Not detected	1.8	1.5	ng/L	1.84	757124-72-4	I
PFHxA*	Not detected	1.8	1.3	ng/L	1.84	307-24-4	
PFBS*	1.4	1.8	1.3	ng/L	1.84	375-73-5	J
PFHpA*	Not detected	1.8	1.3	ng/L	1.84	375-85-9	
PFPeS*	Not detected	1.8	1.7	ng/L	1.84	2706-91-4	
6:2 FTSA*	Not detected	1.8	1.8	ng/L	1.84	27619-97-2	I
PFOA*	Not detected	1.8	1.5	ng/L	1.84	335-67-1	
PFHxS*	Not detected	1.8	1.5	ng/L	1.84	355-46-4	
PFHxS-LN*	Not detected	1.8	1.5	ng/L	1.84	355-46-4-LN	
PFHxS-BR*	Not detected	1.8	1.5	ng/L	1.84	355-46-4-BR	
PFNA*	Not detected	1.8	1.7	ng/L	1.84	375-95-1	
8:2 FTSA*	Not detected	1.8	0.92	ng/L	1.84	39108-34-4	
PFHpS*	Not detected	1.8	1.8	ng/L	1.84	375-92-8	
PFDA*	Not detected	1.8	1.8	ng/L	1.84	335-76-2	
N-MeFOSAA*	Not detected	1.8	1.8	ng/L	1.84	2355-31-9	
EtFOSAA*	Not detected	3.7	1.8	ng/L	1.84	2991-50-6	
PFOS*	5.8	1.8	1.8	ng/L	1.84	1763-23-1	
PFOS-LN*	2.8	1.8	1.8	ng/L	1.84	1763-23-1-LN	
PFOS-BR*	3.0	1.8	1.8	ng/L	1.84	1763-23-1-BR	
PFUnDA*	Not detected	1.8	1.3	ng/L	1.84	2058-94-8	
PFNS*	Not detected	1.8	1.3	ng/L	1.84	68259-12-1	
PFDODA*	Not detected	1.8	1.5	ng/L	1.84	307-55-1	
PFDS*	Not detected	1.8	1.3	ng/L	1.84	335-77-3	
PFTTrDA*	Not detected	1.8	1.1	ng/L	1.84	72629-94-8	
FOSA*	Not detected	1.8	1.7	ng/L	1.84	754-91-6	
PFTeDA*	Not detected	3.7	1.7	ng/L	1.84	376-06-7	
11CI-PF3OUdS*	Not detected	1.8	1.7	ng/L	1.84	763051-92-9	
9CI-PF3ONS*	Not detected	1.8	1.3	ng/L	1.84	756426-58-1	
ADONA*	Not detected	1.8	1.8	ng/L	1.84	919005-14-4	
HFPO-DA*	Not detected	9.2	1.8	ng/L	1.84	13252-13-6	

X-Elevated reporting limit due to matrix interference

I-Matrix interference with internal standard

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40240.03

Sample Tag: MW-110s, 22913

Collected Date/Time: 09/13/2022 12:00

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.76/6.53/10	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 19:50, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.6	9.6	ng/L	1.91	375-22-4	
PFPeA*	Not detected	3.8	0.96	ng/L	1.91	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.91	757124-72-4	
PFHxA*	Not detected	1.9	1.3	ng/L	1.91	307-24-4	
PFBS*	1.7	1.9	1.3	ng/L	1.91	375-73-5	J
PFHpA*	Not detected	1.9	1.3	ng/L	1.91	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.91	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.91	27619-97-2	
PFOA*	2.5	1.9	1.5	ng/L	1.91	335-67-1	
PFHxS*	2.5	1.9	1.5	ng/L	1.91	355-46-4	
PFHxS-LN*	1.6	1.9	1.5	ng/L	1.91	355-46-4-LN	J
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.91	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.91	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.91	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.91	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.91	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.91	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.91	2991-50-6	
PFOS*	5.6	1.9	1.9	ng/L	1.91	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.91	1763-23-1-LN	
PFOS-BR*	4.6	1.9	1.9	ng/L	1.91	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.91	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.91	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.91	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.91	335-77-3	
PFTTrDA*	Not detected	1.9	1.1	ng/L	1.91	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.91	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.91	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.91	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.91	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.91	919005-14-4	
HFPO-DA*	Not detected	9.6	1.9	ng/L	1.91	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40240.04

Sample Tag: MW-108s, 22913

Collected Date/Time: 09/13/2022 12:58

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.00/6.51/10	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 20:10, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.1	9.1	ng/L	1.82	375-22-4	
PFPeA*	Not detected	3.6	0.91	ng/L	1.82	2706-90-3	
4:2 FTSA*	Not detected	1.8	1.5	ng/L	1.82	757124-72-4	
PFHxA*	Not detected	1.8	1.3	ng/L	1.82	307-24-4	
PFBS*	1.5	1.8	1.3	ng/L	1.82	375-73-5	J
PFHpA*	Not detected	1.8	1.3	ng/L	1.82	375-85-9	
PFPeS*	Not detected	1.8	1.6	ng/L	1.82	2706-91-4	
6:2 FTSA*	Not detected	1.8	1.8	ng/L	1.82	27619-97-2	
PFOA*	Not detected	1.8	1.5	ng/L	1.82	335-67-1	
PFHxS*	2.3	1.8	1.5	ng/L	1.82	355-46-4	
PFHxS-LN*	1.5	1.8	1.5	ng/L	1.82	355-46-4-LN	J
PFHxS-BR*	Not detected	1.8	1.5	ng/L	1.82	355-46-4-BR	
PFNA*	Not detected	1.8	1.6	ng/L	1.82	375-95-1	
8:2 FTSA*	Not detected	1.8	0.91	ng/L	1.82	39108-34-4	
PFHpS*	Not detected	1.8	1.8	ng/L	1.82	375-92-8	
PFDA*	Not detected	1.8	1.8	ng/L	1.82	335-76-2	
N-MeFOSAA*	Not detected	1.8	1.8	ng/L	1.82	2355-31-9	
EtFOSAA*	Not detected	3.6	1.8	ng/L	1.82	2991-50-6	
PFOS*	8.8	1.8	1.8	ng/L	1.82	1763-23-1	
PFOS-LN*	2.5	1.8	1.8	ng/L	1.82	1763-23-1-LN	
PFOS-BR*	6.3	1.8	1.8	ng/L	1.82	1763-23-1-BR	
PFUnDA*	Not detected	1.8	1.3	ng/L	1.82	2058-94-8	
PFNS*	Not detected	1.8	1.3	ng/L	1.82	68259-12-1	
PFDODA*	Not detected	1.8	1.5	ng/L	1.82	307-55-1	
PFDS*	Not detected	1.8	1.3	ng/L	1.82	335-77-3	
PFTTrDA*	Not detected	1.8	1.1	ng/L	1.82	72629-94-8	
FOSA*	Not detected	1.8	1.6	ng/L	1.82	754-91-6	
PFTeDA*	Not detected	3.6	1.6	ng/L	1.82	376-06-7	
11Cl-PF3OUdS*	Not detected	1.8	1.6	ng/L	1.82	763051-92-9	
9Cl-PF3ONS*	Not detected	1.8	1.3	ng/L	1.82	756426-58-1	
ADONA*	Not detected	1.8	1.8	ng/L	1.82	919005-14-4	
HFPO-DA*	Not detected	9.1	1.8	ng/L	1.82	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40240.05

Sample Tag: Field Blank

Collected Date/Time: 09/13/2022 09:27

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.62/6.94/11	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 20:29, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.7	9.7	ng/L	1.94	375-22-4	
PFPa*	Not detected	3.9	0.97	ng/L	1.94	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.6	ng/L	1.94	757124-72-4	
PFHxA*	Not detected	1.9	1.4	ng/L	1.94	307-24-4	
PFBS*	Not detected	1.9	1.4	ng/L	1.94	375-73-5	
PFHpA*	Not detected	1.9	1.4	ng/L	1.94	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.94	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.94	27619-97-2	
PFOA*	Not detected	1.9	1.6	ng/L	1.94	335-67-1	
PFHxS*	Not detected	1.9	1.6	ng/L	1.94	355-46-4	
PFHxS-LN*	Not detected	1.9	1.6	ng/L	1.94	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.6	ng/L	1.94	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.94	375-95-1	
8:2 FTSA*	Not detected	1.9	0.97	ng/L	1.94	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.94	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.94	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.94	2355-31-9	
EtFOSAA*	Not detected	3.9	1.9	ng/L	1.94	2991-50-6	
PFOS*	Not detected	1.9	1.9	ng/L	1.94	1763-23-1	
PFOS-LN*	Not detected	1.9	1.9	ng/L	1.94	1763-23-1-LN	
PFOS-BR*	Not detected	1.9	1.9	ng/L	1.94	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.4	ng/L	1.94	2058-94-8	
PFNS*	Not detected	1.9	1.4	ng/L	1.94	68259-12-1	
PFDODA*	Not detected	1.9	1.6	ng/L	1.94	307-55-1	
PFDS*	Not detected	1.9	1.4	ng/L	1.94	335-77-3	
PFTTrDA*	Not detected	1.9	1.2	ng/L	1.94	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.94	754-91-6	
PFTeDA*	Not detected	3.9	1.7	ng/L	1.94	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.94	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.4	ng/L	1.94	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.94	919005-14-4	
HFPO-DA*	Not detected	9.7	1.9	ng/L	1.94	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S40240.06

Sample Tag: MW-114s, 22913

Collected Date/Time: 09/13/2022 13:33

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.99/6.56/10	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 20:49, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.2	9.2	ng/L	1.84	375-22-4	
PFPeA*	Not detected	3.7	0.92	ng/L	1.84	2706-90-3	
4:2 FTSA*	Not detected	1.8	1.5	ng/L	1.84	757124-72-4	
PFHxA*	Not detected	1.8	1.3	ng/L	1.84	307-24-4	
PFBS*	1.7	1.8	1.3	ng/L	1.84	375-73-5	J
PFHpA*	Not detected	1.8	1.3	ng/L	1.84	375-85-9	
PFPeS*	Not detected	1.8	1.7	ng/L	1.84	2706-91-4	
6:2 FTSA*	Not detected	1.8	1.8	ng/L	1.84	27619-97-2	
PFOA*	2.2	1.8	1.5	ng/L	1.84	335-67-1	
PFHxS*	Not detected	1.8	1.5	ng/L	1.84	355-46-4	
PFHxS-LN*	Not detected	1.8	1.5	ng/L	1.84	355-46-4-LN	
PFHxS-BR*	Not detected	1.8	1.5	ng/L	1.84	355-46-4-BR	
PFNA*	Not detected	1.8	1.7	ng/L	1.84	375-95-1	
8:2 FTSA*	Not detected	1.8	0.92	ng/L	1.84	39108-34-4	
PFHpS*	Not detected	1.8	1.8	ng/L	1.84	375-92-8	
PFDA*	Not detected	1.8	1.8	ng/L	1.84	335-76-2	
N-MeFOSAA*	Not detected	1.8	1.8	ng/L	1.84	2355-31-9	
EtFOSAA*	Not detected	3.7	1.8	ng/L	1.84	2991-50-6	
PFOS*	30	1.8	1.8	ng/L	1.84	1763-23-1	
PFOS-LN*	18	1.8	1.8	ng/L	1.84	1763-23-1-LN	
PFOS-BR*	12	1.8	1.8	ng/L	1.84	1763-23-1-BR	
PFUnDA*	Not detected	1.8	1.3	ng/L	1.84	2058-94-8	
PFNS*	Not detected	1.8	1.3	ng/L	1.84	68259-12-1	
PFDODA*	Not detected	1.8	1.5	ng/L	1.84	307-55-1	
PFDS*	Not detected	1.8	1.3	ng/L	1.84	335-77-3	
PFTTrDA*	Not detected	1.8	1.1	ng/L	1.84	72629-94-8	
FOSA*	Not detected	1.8	1.7	ng/L	1.84	754-91-6	
PFTeDA*	Not detected	3.7	1.7	ng/L	1.84	376-06-7	
11Cl-PF3OUdS*	Not detected	1.8	1.7	ng/L	1.84	763051-92-9	
9Cl-PF3ONS*	Not detected	1.8	1.3	ng/L	1.84	756426-58-1	
ADONA*	Not detected	1.8	1.8	ng/L	1.84	919005-14-4	
HFPO-DA*	Not detected	9.2	1.8	ng/L	1.84	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40240.07

Sample Tag: Dupe1,22913

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.79/6.54/10	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 21:08, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.5	9.5	ng/L	1.9	375-22-4	
PFPeA*	Not detected	3.8	0.95	ng/L	1.9	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.9	757124-72-4	I
PFHxA*	Not detected	1.9	1.3	ng/L	1.9	307-24-4	
PFBS*	1.5	1.9	1.3	ng/L	1.9	375-73-5	J
PFHpA*	Not detected	1.9	1.3	ng/L	1.9	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.9	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.9	27619-97-2	
PFOA*	Not detected	1.9	1.5	ng/L	1.9	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.9	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.9	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.9	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.9	375-95-1	
8:2 FTSA*	Not detected	1.9	0.95	ng/L	1.9	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.9	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.9	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.9	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.9	2991-50-6	
PFOS*	23	1.9	1.9	ng/L	1.9	1763-23-1	
PFOS-LN*	14	1.9	1.9	ng/L	1.9	1763-23-1-LN	
PFOS-BR*	9.0	1.9	1.9	ng/L	1.9	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.9	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.9	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.9	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.9	335-77-3	
PFTTrDA*	Not detected	1.9	1.1	ng/L	1.9	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.9	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.9	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.9	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.9	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.9	919005-14-4	
HFPO-DA*	Not detected	9.5	1.9	ng/L	1.9	13252-13-6	

I-Matrix interference with internal standard

J-Estimated value less than reporting limit, but greater than MDL

Merit Laboratories Login Checklist

Lab Set ID:S40240

Client:APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Submitted:09/13/2022 15:35 Login User: BJB

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.4
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

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

Client Review By: _____ Date: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Rodney Abke
COMPANY Applied EcoSystems
ADDRESS G-4300 South Saginaw Street
CITY Burton STATE MI ZIP CODE 48529
PHONE NO. 810-715-2525 FAX NO. 810-715-2526 P.O. NO. PO795930
E-MAIL ADDRESS rabke@appliedecosystems.com QUOTE NO.

CONTACT NAME Monica Wallingford ☐ SAME
COMPANY Revitalizing Auto Communities Environmental Response (RACER) Trust
ADDRESS
CITY STATE ZIP CODE
PHONE NO. 313.486.2978 E-MAIL ADDRESS mwallingford@racertrust.org

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER Flint West #12990 SAMPLER(S) - PLEASE PRINT/SIGN NAME
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☒ OTHER report to MDLs

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

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
	DATE	TIME										
40240.01	9-13-22	950	MW-104s, 22913	dw	3							
02.03	9/13/2022	1058	~~MW-106SR, 22913~~									
03.04		1200	MW-112s, 22913									
04.05		1258	MW-110s, 22913									
05.06		9:27	Field Blank									
06.07		1333	MW-114s 22913									
07.08			Dupe 1 22913									

PFAS/PFOS **

Certifications

☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York
☐ Other

Special Instructions

** - 28 Compound List

report down to MDLs

RELINQUISHED BY: CLS/AE ☐ Sampler DATE 9/13/22 TIME 14:45
SIGNATURE/ORGANIZATION
RECEIVED BY: [Signature] DATE 9/13/22 TIME 15:41
SIGNATURE/ORGANIZATION
RELINQUISHED BY: [Signature] DATE 9/13/22 TIME 15:15
SIGNATURE/ORGANIZATION

RELINQUISHED BY: DATE TIME
SIGNATURE/ORGANIZATION
RECEIVED BY: [Signature] DATE 9/13/22 TIME 15:35
SIGNATURE/ORGANIZATION
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
NOTES: TEMP. ON ARRIVAL 4.4



Analytical Laboratory Report

Report ID: S40270.01(01)
Generated on 09/21/2022

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:
Email: rabke@appliedecosystems.com

Report produced by

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

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

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S40270.01-S40270.06
Project: RACER Flint West #12990
Collected Date(s): 09/13/2022
Submitted Date/Time: 09/14/2022 12:50
Sampled by: Unknown
P.O. #: 795930

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
E200.8	EPA Method 200.8 Revision 5.4
N/A	Not Applicable
SM3500-Cr B	Standard Method 3500 Cr B 2011
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40270.01	MW-117s - 22913	Groundwater	09/13/22 14:30
S40270.02	MW-103s - 22913	Groundwater	09/13/22 15:10
S40270.03	MW-103s - 22913 (MS)	Groundwater	09/13/22 15:10
S40270.04	MW-103s - 22913 (MSD)	Groundwater	09/13/22 15:10
S40270.05	MW-106sr - 22913	Groundwater	09/13/22 15:40
S40270.06	Equip Blank (EB)	Groundwater	09/13/22 15:45



Analytical Laboratory Report

Lab Sample ID: S40270.01

Sample Tag: MW-117s - 22913

Collected Date/Time: 09/13/2022 14:30

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.7	IR
3	40ml Glass	HCL	Yes	4.7	IR
1	125ml Plastic	HNO3	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/20/22 11:10	WAT	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/14/22 13:30, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/14/22 13:20, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 12:44, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.002	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.045	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	0.003600	0.005	0.000377	mg/L	5	7440-50-8	b
Lead	0.000407	0.003	0.000190	mg/L	5	7439-92-1	b
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.001893	0.005	0.000730	mg/L	5	7440-66-6	b

Method: E200.8, Run Date: 09/15/22 12:46, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.000716	0.002	0.000255	mg/L	5	7440-38-2	b
Chromium, Dissolved	0.000285	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper, Dissolved	0.003762	0.005	0.000377	mg/L	5	7440-50-8	b
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc, Dissolved	0.002006	0.005	0.000730	mg/L	5	7440-66-6	b

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 16:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.10	ug/L	1	60-29-7	
Acetone	Not detected	50	8.5	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.030	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.10	ug/L	1	75-15-0	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40270.01 (continued)

Sample Tag: MW-117s - 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 16:03, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Methyl butyl ether (MTBE)	Not detected	5	0.10	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.10	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	4.7	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.40	ug/L	1	75-71-8	
Chloromethane	0.12	5	0.10	ug/L	1	74-87-3	J
Vinyl chloride	Not detected	1	0.10	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.10	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.20	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.40	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.10	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.10	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.10	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.10	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.10	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	0.20	ug/L	1	109-99-9	
Chloroform	0.26	1	0.10	ug/L	1	67-66-3	J
Bromochloromethane	Not detected	1	0.10	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.10	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.10	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.10	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.10	ug/L	1	56-23-5	
Benzene	Not detected	1	0.10	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.10	ug/L	1	107-06-2	
Trichloroethene	1	1	0.10	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.10	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.10	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.10	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.10	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.10	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.10	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.050	ug/L	1	79-00-5	
Tetrachloroethene	0.21	1	0.20	ug/L	1	127-18-4	J
trans-1,4-Dichloro-2-butene	Not detected	1	0.10	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.020	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.10	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.10	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.10	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.20	ug/L	1		
o-Xylene	Not detected	1	0.050	ug/L	1	95-47-6	
Styrene	Not detected	1	0.10	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.030	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.10	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.050	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.10	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.10	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.10	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.10	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.10	ug/L	1	98-06-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40270.01 (continued)

Sample Tag: MW-117s - 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 16:03, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,4-Trimethylbenzene	Not detected	1	0.10	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.050	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.040	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.10	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.10	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.10	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.040	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.040	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.10	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.10	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.10	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.040	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.10	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.10	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S40270.02

Sample Tag: MW-103s - 22913

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.7	IR
3	40ml Glass	HCL	Yes	4.7	IR
1	125ml Plastic	HNO3	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/20/22 11:10	WAT	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/14/22 14:00, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/14/22 13:35, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.25	0.1	mg/L	25	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 12:20, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.057	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.000969	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper	Not detected	0.005	0.000377	mg/L	5	7440-50-8	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	Not detected	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 09/15/22 12:48, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.020	0.002	0.000255	mg/L	5	7440-38-2	
Chromium, Dissolved	0.000200	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper, Dissolved	Not detected	0.005	0.000377	mg/L	5	7440-50-8	
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc, Dissolved	0.000823	0.005	0.000730	mg/L	5	7440-66-6	b

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 15:44, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.10	ug/L	1	60-29-7	
Acetone	Not detected	50	8.5	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.030	ug/L	1	74-88-4	
Carbon disulfide	Not detected	5	0.10	ug/L	1	75-15-0	

b-Value detected less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40270.02 (continued)

Sample Tag: MW-103s - 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 15:44, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Methyl butyl ether (MTBE)	Not detected	5	0.10	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.10	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	4.7	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.40	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.10	ug/L	1	74-87-3	
Vinyl chloride	0.74	1	0.10	ug/L	1	75-01-4	J
Bromomethane	Not detected	5	0.10	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.20	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.40	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.10	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.10	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.10	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.10	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	0.16	1	0.10	ug/L	1	156-59-2	J
Tetrahydrofuran*	Not detected	90	0.20	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.10	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.10	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.10	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.10	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.10	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.10	ug/L	1	56-23-5	
Benzene	1	1	0.10	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.10	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.10	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.10	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.10	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.10	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.10	ug/L	1	10061-01-5	
Toluene	0.16	1	0.10	ug/L	1	108-88-3	J
trans-1,3-Dichloropropene	Not detected	1	0.10	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.050	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.10	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.020	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.10	ug/L	1	106-93-4	
Chlorobenzene	2	1	0.10	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.10	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.20	ug/L	1		
o-Xylene	Not detected	1	0.050	ug/L	1	95-47-6	
Styrene	Not detected	1	0.10	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.030	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.10	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.050	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.10	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.10	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.10	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.10	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.10	ug/L	1	98-06-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40270.02 (continued)

Sample Tag: MW-103s - 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 15:44, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,4-Trimethylbenzene	Not detected	1	0.10	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.050	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.040	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.10	ug/L	1	541-73-1	
1,4-Dichlorobenzene	0.13	1	0.10	ug/L	1	106-46-7	J
1,2-Dichlorobenzene	0.17	1	0.10	ug/L	1	95-50-1	J
1,2,3-Trimethylbenzene	Not detected	1	0.040	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.040	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.10	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.10	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.10	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.040	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.10	ug/L	1	91-20-3	
2-Methylnaphthalene	0.24	5	0.10	ug/L	1	91-57-6	JB

J-Estimated value less than reporting limit, but greater than MDL

B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S40270.03

Sample Tag: MW-103s - 22913 (MS)

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.7	IR
3	40ml Glass	HCL	Yes	4.7	IR
1	125ml Plastic	HNO3	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/20/22 11:10	WAT	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/14/22 14:05, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	0.022	0.01	0.004	mg/L	1	18540-29-9	I

Method: SM3500-Cr B, Run Date: 09/14/22 13:40, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	0.200	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 12:21, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.321	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.252	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	0.245	0.005	0.000377	mg/L	5	7440-50-8	
Lead	0.241	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	0.243	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.263	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 09/15/22 12:50, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.285	0.002	0.000255	mg/L	5	7440-38-2	
Chromium, Dissolved	0.255	0.005	0.0000965	mg/L	5	7440-47-3	
Copper, Dissolved	0.251	0.005	0.000377	mg/L	5	7440-50-8	
Lead, Dissolved	0.252	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	0.249	0.005	0.00209	mg/L	5	7782-49-2	
Zinc, Dissolved	0.263	0.005	0.000730	mg/L	5	7440-66-6	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 12:06, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	51	10	0.10	ug/L	1	60-29-7	1
Acetone	52	50	8.5	ug/L	1	67-64-1	1
Methyl iodide	52	1	0.030	ug/L	1	74-88-4	1

I-Matrix interference with internal standard

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S40270.03 (continued)

Sample Tag: MW-103s - 22913 (MS)

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 12:06, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Carbon disulfide	50	5	0.10	ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	53	5	0.10	ug/L	1	1634-04-4	1
Acrylonitrile	55	2	0.10	ug/L	1	107-13-1	1
2-Butanone (MEK)	52	25	4.7	ug/L	1	78-93-3	1
Dichlorodifluoromethane	52	5	0.40	ug/L	1	75-71-8	1
Chloromethane	52	5	0.10	ug/L	1	74-87-3	1
Vinyl chloride	53	1	0.10	ug/L	1	75-01-4	1
Bromomethane	51	5	0.10	ug/L	1	74-83-9	1
Chloroethane	49	5	0.20	ug/L	1	75-00-3	1
Trichlorofluoromethane	53	1	0.40	ug/L	1	75-69-4	1
1,1-Dichloroethene	49	1	0.10	ug/L	1	75-35-4	1
Methylene chloride	52	5	0.10	ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	50	1	0.10	ug/L	1	156-60-5	1
1,1-Dichloroethane	51	1	0.10	ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	51	1	0.10	ug/L	1	156-59-2	1
Tetrahydrofuran*	49.11	90	0.20	ug/L	1	109-99-9	J1
Chloroform	51	1	0.10	ug/L	1	67-66-3	1
Bromochloromethane	52	1	0.10	ug/L	1	74-97-5	1
1,1,1-Trichloroethane	50	1	0.10	ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	59	50	0.10	ug/L	1	108-10-1	1
2-Hexanone	61	50	0.10	ug/L	1	591-78-6	1
Carbon tetrachloride	52	1	0.10	ug/L	1	56-23-5	1
Benzene	53	1	0.10	ug/L	1	71-43-2	1
1,2-Dichloroethane	51	1	0.10	ug/L	1	107-06-2	1
Trichloroethene	53	1	0.10	ug/L	1	79-01-6	1
1,2-Dichloropropane	52	1	0.10	ug/L	1	78-87-5	1
Bromodichloromethane	53	1	0.10	ug/L	1	75-27-4	1
Dibromomethane	54	5	0.10	ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	55	1	0.10	ug/L	1	10061-01-5	1
Toluene	52	1	0.10	ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	55	1	0.10	ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	50	1	0.050	ug/L	1	79-00-5	1
Tetrachloroethene	52	1	0.20	ug/L	1	127-18-4	1
trans-1,4-Dichloro-2-butene	65	1	0.10	ug/L	1	110-57-6	1
Dibromochloromethane	58	5	0.020	ug/L	1	124-48-1	1
1,2-Dibromoethane	57	1	0.10	ug/L	1	106-93-4	1
Chlorobenzene	58	1	0.10	ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	56	1	0.10	ug/L	1	630-20-6	1
Ethylbenzene	55	1	0.10	ug/L	1	100-41-4	1
p,m-Xylene*	109	2	0.20	ug/L	1		1
o-Xylene	55	1	0.050	ug/L	1	95-47-6	1
Styrene	55	1	0.10	ug/L	1	100-42-5	1
Isopropylbenzene	55	5	0.030	ug/L	1	98-82-8	1
Bromoform	59	1	0.10	ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	57	1	0.050	ug/L	1	79-34-5	1
1,2,3-Trichloropropane	58	1	0.10	ug/L	1	96-18-4	1
n-Propylbenzene	55	1	0.10	ug/L	1	103-65-1	1
Bromobenzene	56	1	0.10	ug/L	1	108-86-1	1

1-Spiked at 50ug/L

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40270.03 (continued)
Sample Tag: MW-103s - 22913 (MS)

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 12:06, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,3,5-Trimethylbenzene	55	1	0.10	ug/L	1	108-67-8	1
tert-Butylbenzene	55	1	0.10	ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	56	1	0.10	ug/L	1	95-63-6	1
sec-Butylbenzene	54	1	0.050	ug/L	1	135-98-8	1
p-Isopropyltoluene	54	5	0.040	ug/L	1	99-87-6	1
1,3-Dichlorobenzene	55	1	0.10	ug/L	1	541-73-1	1
1,4-Dichlorobenzene	55	1	0.10	ug/L	1	106-46-7	1
1,2-Dichlorobenzene	56	1	0.10	ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	56	1	0.040	ug/L	1	526-73-8	1
n-Butylbenzene	55	1	0.040	ug/L	1	104-51-8	1
Hexachloroethane	60	5	0.10	ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	64	5	0.10	ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	57	5	0.10	ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	58	5	0.040	ug/L	1	87-61-6	1
Naphthalene	63	5	0.10	ug/L	1	91-20-3	1
2-Methylnaphthalene	77	5	0.10	ug/L	1	91-57-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S40270.04

Sample Tag: MW-103s - 22913 (MSD)

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.7	IR
3	40ml Glass	HCL	Yes	4.7	IR
1	125ml Plastic	HNO3	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/20/22 11:10	WAT	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/14/22 14:10, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	0.031	0.01	0.004	mg/L	1	18540-29-9	I

Method: SM3500-Cr B, Run Date: 09/14/22 13:45, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	0.196	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 12:22, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.316	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.251	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	0.248	0.005	0.000377	mg/L	5	7440-50-8	
Lead	0.252	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	0.251	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.259	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 09/15/22 12:51, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.290	0.002	0.000255	mg/L	5	7440-38-2	
Chromium, Dissolved	0.259	0.005	0.0000965	mg/L	5	7440-47-3	
Copper, Dissolved	0.253	0.005	0.000377	mg/L	5	7440-50-8	
Lead, Dissolved	0.248	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	0.267	0.005	0.00209	mg/L	5	7782-49-2	
Zinc, Dissolved	0.262	0.005	0.000730	mg/L	5	7440-66-6	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 12:26, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	50	10	0.10	ug/L	1	60-29-7	1
Acetone	48.7	50	8.5	ug/L	1	67-64-1	J1

I-Matrix interference with internal standard

1-Spiked at 50ug/L

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40270.04 (continued)

Sample Tag: MW-103s - 22913 (MSD)

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 12:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Methyl iodide	51	1	0.030	ug/L	1	74-88-4	1
Carbon disulfide	50	5	0.10	ug/L	1	75-15-0	1
tert-Methyl butyl ether (MTBE)	53	5	0.10	ug/L	1	1634-04-4	1
Acrylonitrile	53	2	0.10	ug/L	1	107-13-1	1
2-Butanone (MEK)	49	25	4.7	ug/L	1	78-93-3	1
Dichlorodifluoromethane	51	5	0.40	ug/L	1	75-71-8	1
Chloromethane	52	5	0.10	ug/L	1	74-87-3	1
Vinyl chloride	54	1	0.10	ug/L	1	75-01-4	1
Bromomethane	51	5	0.10	ug/L	1	74-83-9	1
Chloroethane	49	5	0.20	ug/L	1	75-00-3	1
Trichlorofluoromethane	52	1	0.40	ug/L	1	75-69-4	1
1,1-Dichloroethene	48	1	0.10	ug/L	1	75-35-4	1
Methylene chloride	52	5	0.10	ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	49	1	0.10	ug/L	1	156-60-5	1
1,1-Dichloroethane	50	1	0.10	ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	50	1	0.10	ug/L	1	156-59-2	1
Tetrahydrofuran*	47.82	90	0.20	ug/L	1	109-99-9	J1
Chloroform	51	1	0.10	ug/L	1	67-66-3	1
Bromochloromethane	51	1	0.10	ug/L	1	74-97-5	1
1,1,1-Trichloroethane	49	1	0.10	ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	56	50	0.10	ug/L	1	108-10-1	1
2-Hexanone	57	50	0.10	ug/L	1	591-78-6	1
Carbon tetrachloride	51	1	0.10	ug/L	1	56-23-5	1
Benzene	53	1	0.10	ug/L	1	71-43-2	1
1,2-Dichloroethane	51	1	0.10	ug/L	1	107-06-2	1
Trichloroethene	53	1	0.10	ug/L	1	79-01-6	1
1,2-Dichloropropane	51	1	0.10	ug/L	1	78-87-5	1
Bromodichloromethane	53	1	0.10	ug/L	1	75-27-4	1
Dibromomethane	54	5	0.10	ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	54	1	0.10	ug/L	1	10061-01-5	1
Toluene	51	1	0.10	ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	55	1	0.10	ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	53	1	0.050	ug/L	1	79-00-5	1
Tetrachloroethene	51	1	0.20	ug/L	1	127-18-4	1
trans-1,4-Dichloro-2-butene	62	1	0.10	ug/L	1	110-57-6	1
Dibromochloromethane	56	5	0.020	ug/L	1	124-48-1	1
1,2-Dibromoethane	55	1	0.10	ug/L	1	106-93-4	1
Chlorobenzene	56	1	0.10	ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	55	1	0.10	ug/L	1	630-20-6	1
Ethylbenzene	53	1	0.10	ug/L	1	100-41-4	1
p,m-Xylene*	107	2	0.20	ug/L	1		1
o-Xylene	54	1	0.050	ug/L	1	95-47-6	1
Styrene	54	1	0.10	ug/L	1	100-42-5	1
Isopropylbenzene	53	5	0.030	ug/L	1	98-82-8	1
Bromoform	58	1	0.10	ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	56	1	0.050	ug/L	1	79-34-5	1
1,2,3-Trichloropropane	56	1	0.10	ug/L	1	96-18-4	1
n-Propylbenzene	54	1	0.10	ug/L	1	103-65-1	1

1-Spiked at 50ug/L

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40270.04 (continued)
Sample Tag: MW-103s - 22913 (MSD)

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 12:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromobenzene	55	1	0.10	ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	53	1	0.10	ug/L	1	108-67-8	1
tert-Butylbenzene	53	1	0.10	ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	54	1	0.10	ug/L	1	95-63-6	1
sec-Butylbenzene	53	1	0.050	ug/L	1	135-98-8	1
p-Isopropyltoluene	54	5	0.040	ug/L	1	99-87-6	1
1,3-Dichlorobenzene	55	1	0.10	ug/L	1	541-73-1	1
1,4-Dichlorobenzene	55	1	0.10	ug/L	1	106-46-7	1
1,2-Dichlorobenzene	55	1	0.10	ug/L	1	95-50-1	1
1,2,3-Trimethylbenzene	55	1	0.040	ug/L	1	526-73-8	1
n-Butylbenzene	54	1	0.040	ug/L	1	104-51-8	1
Hexachloroethane	58	5	0.10	ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	62	5	0.10	ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	59	5	0.10	ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	62	5	0.040	ug/L	1	87-61-6	1
Naphthalene	64	5	0.10	ug/L	1	91-20-3	1
2-Methylnaphthalene	84	5	0.10	ug/L	1	91-57-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S40270.05

Sample Tag: MW-106sr - 22913

Collected Date/Time: 09/13/2022 15:40

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.7	IR
3	40ml Glass	HCL	Yes	4.7	IR
1	125ml Plastic	HNO3	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/20/22 11:10	WAT	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/14/22 14:15, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/14/22 13:50, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.05	0.02	mg/L	5	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 13:00, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	0.002	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	0.278	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	0.007	0.005	0.000377	mg/L	5	7440-50-8	
Lead	0.000271	0.003	0.000190	mg/L	5	7439-92-1	b
Selenium	0.007	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	0.006	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 09/15/22 13:03, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	0.001625	0.002	0.000255	mg/L	5	7440-38-2	b
Chromium, Dissolved	0.001056	0.005	0.0000965	mg/L	5	7440-47-3	b
Copper, Dissolved	0.001603	0.005	0.000377	mg/L	5	7440-50-8	b
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	0.004346	0.005	0.00209	mg/L	5	7782-49-2	b
Zinc, Dissolved	0.002639	0.005	0.000730	mg/L	5	7440-66-6	b

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 16:23, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.10	ug/L	1	60-29-7	
Acetone	Not detected	50	8.5	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.030	ug/L	1	74-88-4	
Carbon disulfide	0.15	5	0.10	ug/L	1	75-15-0	JB

b-Value detected less than reporting limit, but greater than MDL

J-Estimated value less than reporting limit, but greater than MDL B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S40270.05 (continued)

Sample Tag: MW-106sr - 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 16:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Methyl butyl ether (MTBE)	Not detected	5	0.10	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.10	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	4.7	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.40	ug/L	1	75-71-8	
Chloromethane	Not detected	5	0.10	ug/L	1	74-87-3	
Vinyl chloride	Not detected	1	0.10	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.10	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.20	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.40	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.10	ug/L	1	75-35-4	
Methylene chloride	Not detected	5	0.10	ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1	0.10	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.10	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.10	ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90	0.20	ug/L	1	109-99-9	
Chloroform	Not detected	1	0.10	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.10	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.10	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.10	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.10	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.10	ug/L	1	56-23-5	
Benzene	Not detected	1	0.10	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.10	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.10	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.10	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.10	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.10	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.10	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.10	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.10	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.050	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.10	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.020	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.10	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.10	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.10	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.20	ug/L	1		
o-Xylene	Not detected	1	0.050	ug/L	1	95-47-6	
Styrene	Not detected	1	0.10	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.030	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.10	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.050	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.10	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.10	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.10	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.10	ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1	0.10	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.10	ug/L	1	95-63-6	



Analytical Laboratory Report

Lab Sample ID: S40270.05 (continued)

Sample Tag: MW-106sr - 22913

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 16:23, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
sec-Butylbenzene	Not detected	1	0.050	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.040	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.10	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.10	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.10	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.040	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.040	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.10	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.10	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.10	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.040	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.10	ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5	0.10	ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S40270.06

Sample Tag: Equip Blank (EB)

Collected Date/Time: 09/13/2022 15:45

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	250ml Plastic	None	Yes	4.7	IR
3	40ml Glass	HCL	Yes	4.7	IR
1	125ml Plastic	HNO3	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/20/22 11:10	WAT	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	
Metal Digestion	Completed	SW3015A	09/15/22 10:30	CCM	

Inorganics

Method: SM3500-Cr B, Run Date: 09/14/22 14:20, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI, Dissolved	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Method: SM3500-Cr B, Run Date: 09/14/22 13:55, Analyst: JKB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chromium VI	Not detected	0.01	0.004	mg/L	1	18540-29-9	

Metals

Method: E200.8, Run Date: 09/15/22 11:52, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Chromium	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Copper	Not detected	0.005	0.000377	mg/L	5	7440-50-8	
Lead	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc	Not detected	0.005	0.000730	mg/L	5	7440-66-6	

Method: E200.8, Run Date: 09/15/22 11:53, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic, Dissolved	Not detected	0.002	0.000255	mg/L	5	7440-38-2	
Chromium, Dissolved	Not detected	0.005	0.0000965	mg/L	5	7440-47-3	
Copper, Dissolved	0.000591	0.005	0.000377	mg/L	5	7440-50-8	b
Lead, Dissolved	Not detected	0.003	0.000190	mg/L	5	7439-92-1	
Selenium, Dissolved	Not detected	0.005	0.00209	mg/L	5	7782-49-2	
Zinc, Dissolved	Not detected	0.005	0.000730	mg/L	5	7440-66-6	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 15:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10	0.10	ug/L	1	60-29-7	
Acetone	Not detected	50	8.5	ug/L	1	67-64-1	
Methyl iodide	Not detected	1	0.030	ug/L	1	74-88-4	
Carbon disulfide	0.24	5	0.10	ug/L	1	75-15-0	JB

b-Value detected less than reporting limit, but greater than MDL

J-Estimated value less than reporting limit, but greater than MDL B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S40270.06 (continued)

Sample Tag: Equip Blank (EB)

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 15:25, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Methyl butyl ether (MTBE)	Not detected	5	0.10	ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2	0.10	ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25	4.7	ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5	0.40	ug/L	1	75-71-8	
Chloromethane	0.32	5	0.10	ug/L	1	74-87-3	J
Vinyl chloride	Not detected	1	0.10	ug/L	1	75-01-4	
Bromomethane	Not detected	5	0.10	ug/L	1	74-83-9	
Chloroethane	Not detected	5	0.20	ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1	0.40	ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1	0.10	ug/L	1	75-35-4	
Methylene chloride	0.61	5	0.10	ug/L	1	75-09-2	J
trans-1,2-Dichloroethene	Not detected	1	0.10	ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1	0.10	ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1	0.10	ug/L	1	156-59-2	
Tetrahydrofuran*	0.33	90	0.20	ug/L	1	109-99-9	JB
Chloroform	1	1	0.10	ug/L	1	67-66-3	
Bromochloromethane	Not detected	1	0.10	ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1	0.10	ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50	0.10	ug/L	1	108-10-1	
2-Hexanone	Not detected	50	0.10	ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1	0.10	ug/L	1	56-23-5	
Benzene	Not detected	1	0.10	ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1	0.10	ug/L	1	107-06-2	
Trichloroethene	Not detected	1	0.10	ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1	0.10	ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1	0.10	ug/L	1	75-27-4	
Dibromomethane	Not detected	5	0.10	ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1	0.10	ug/L	1	10061-01-5	
Toluene	Not detected	1	0.10	ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1	0.10	ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1	0.050	ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1	0.20	ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1	0.10	ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5	0.020	ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1	0.10	ug/L	1	106-93-4	
Chlorobenzene	Not detected	1	0.10	ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1	0.10	ug/L	1	630-20-6	
Ethylbenzene	Not detected	1	0.10	ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2	0.20	ug/L	1		
o-Xylene	Not detected	1	0.050	ug/L	1	95-47-6	
Styrene	Not detected	1	0.10	ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5	0.030	ug/L	1	98-82-8	
Bromoform	Not detected	1	0.10	ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1	0.050	ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1	0.10	ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1	0.10	ug/L	1	103-65-1	
Bromobenzene	Not detected	1	0.10	ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1	0.10	ug/L	1	108-67-8	

J-Estimated value less than reporting limit, but greater than MDL

B-Compound also found in associated method blank



Analytical Laboratory Report

Lab Sample ID: S40270.06 (continued)

Sample Tag: Equip Blank (EB)

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/19/22 15:25, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
tert-Butylbenzene	Not detected	1	0.10	ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1	0.10	ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1	0.050	ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5	0.040	ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1	0.10	ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1	0.10	ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1	0.10	ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1	0.040	ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1	0.040	ug/L	1	104-51-8	
Hexachloroethane	Not detected	5	0.10	ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5	0.10	ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5	0.10	ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5	0.040	ug/L	1	87-61-6	
Naphthalene	Not detected	5	0.10	ug/L	1	91-20-3	
2-Methylnaphthalene	0.16	5	0.10	ug/L	1	91-57-6	JB

J-Estimated value less than reporting limit, but greater than MDL B-Compound also found in associated method blank

Merit Laboratories Login Checklist

Lab Set ID:S40270

Client:APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Submitted:09/14/2022 12:50 Login User: BJB

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.7
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC No Trip Blank received
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☒ Yes ☐ No ☐ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☒ No ☐ N/A	Do water VOC or TOX bottles contain headspace

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

Client Review By: _____ Date: _____

Merit Laboratories Bottle Preservation Check

Lab Set ID: S40270 Submitted: 09/14/2022 12:50

Client: APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Initial Preservation Check: 09/14/2022 13:20 BJB

Preservation Recheck (E200.8): N/A

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S40270.01	125ml Plastic HNO3	<2			
S40270.02	125ml Plastic HNO3	<2			
S40270.03	125ml Plastic HNO3	<2			
S40270.04	125ml Plastic HNO3	<2			
S40270.05	125ml Plastic HNO3	<2			
S40270.06	125ml Plastic HNO3	<2			



C.O.C. PAGE # 1 OF 2

INVOICE TO

CONTACT NAME		Monica Wallingford		☐ SAME	
COMPANY		Revitalizing Auto Communities Environmental Response (RACER) Trust			
ADDRESS					
CITY			STATE		ZIP CODE
PHONE NO.		E-MAIL ADDRESS			
313.486.2978		mwallingford@racertrust.org			



Analytical Laboratory Report

Report ID: S40271.01(01)
Generated on 10/10/2022

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:
Email: rabke@appliedecosystems.com

Report produced by

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

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

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S40271.01-S40271.07
Project: RACER Flint West #12990
Collected Date(s): 09/13/2022
Submitted Date/Time: 09/14/2022 12:50
Sampled by: Unknown
P.O. #: 795930

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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

Method Summary

Method	Version
ASTMD7979-19M	ASTM Method D7979 - 19 Modified (Isotopic Dilution)

Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6



Analytical Laboratory Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40271.01	MW-117s, 22913	Groundwater	09/13/22 14:30
S40271.02	MW-103s, 22913	Groundwater	09/13/22 15:10
S40271.03	MW-103s, 22913 (MS)	Groundwater	09/13/22 15:10
S40271.04	MW-103s, 22913 (MSD)	Groundwater	09/13/22 15:10
S40271.05	MW-106sr, 22913	Groundwater	09/13/22 15:40
S40271.06	Equip Blank (EB)	Groundwater	09/13/22 15:45
S40271.07	Trip Blank	Groundwater	09/13/22 00:01



Analytical Laboratory Report

Lab Sample ID: S40271.01

Sample Tag: MW-117s, 22913

Collected Date/Time: 09/13/2022 14:30

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.00/6.56/11	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 21:28, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.02	375-22-4	
PFPeA*	Not detected	4.0	1.0	ng/L	2.02	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.02	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.02	307-24-4	
PFBS*	1.5	2.0	1.4	ng/L	2.02	375-73-5	J
PFHpA*	Not detected	2.0	1.4	ng/L	2.02	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.02	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.02	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.02	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.02	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.02	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.02	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.02	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.02	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.02	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.02	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.02	2355-31-9	
EtFOSAA*	Not detected	4.0	2.0	ng/L	2.02	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.02	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.02	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.02	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.02	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.02	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.02	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.02	754-91-6	
PFTeDA*	Not detected	4.0	1.8	ng/L	2.02	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.02	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	2.02	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.02	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.02	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40271.02

Sample Tag: MW-103s, 22913

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.32/6.57/11	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 21:47, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	190	9.6	ng/L	1.91	375-22-4	X
PFPeA*	Not detected	3.8	0.96	ng/L	1.91	2706-90-3	
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.91	757124-72-4	I
PFHxA*	Not detected	5.7	1.3	ng/L	1.91	307-24-4	X
PFBS*	Not detected	1.9	1.3	ng/L	1.91	375-73-5	
PFHpA*	Not detected	1.9	1.3	ng/L	1.91	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.91	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.91	27619-97-2	I
PFOA*	2.5	1.9	1.5	ng/L	1.91	335-67-1	
PFHxS*	Not detected	1.9	1.5	ng/L	1.91	355-46-4	
PFHxS-LN*	Not detected	1.9	1.5	ng/L	1.91	355-46-4-LN	
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.91	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.91	375-95-1	
8:2 FTSA*	Not detected	1.9	0.96	ng/L	1.91	39108-34-4	I
PFHpS*	Not detected	1.9	1.9	ng/L	1.91	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.91	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.91	2355-31-9	I
EtFOSAA*	5.1	3.8	1.9	ng/L	1.91	2991-50-6	I
PFOS*	73	1.9	1.9	ng/L	1.91	1763-23-1	
PFOS-LN*	49	1.9	1.9	ng/L	1.91	1763-23-1-LN	
PFOS-BR*	20	1.9	1.9	ng/L	1.91	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.91	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.91	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.91	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.91	335-77-3	
PFTTrDA*	Not detected	1.9	1.1	ng/L	1.91	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.91	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.91	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.91	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.91	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.91	919005-14-4	
HFPO-DA*	Not detected	9.6	1.9	ng/L	1.91	13252-13-6	

X-Elevated reporting limit due to matrix interference

I-Matrix interference with internal standard



Analytical Laboratory Report

Lab Sample ID: S40271.03
Sample Tag: MW-103s, 22913 (MS)
Collected Date/Time: 09/13/2022 15:10
Matrix: Groundwater
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.75/6.51/10	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 22:07, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	330	9.6	9.6	ng/L	1.91	375-22-4	1
PFPeA*	110	3.8	0.96	ng/L	1.91	2706-90-3	1
4:2 FTSA*	120	1.9	1.5	ng/L	1.91	757124-72-4	1
PFHxA*	110	1.9	1.3	ng/L	1.91	307-24-4	1
PFBS*	110	1.9	1.3	ng/L	1.91	375-73-5	1
PFHpA*	94	1.9	1.3	ng/L	1.91	375-85-9	1
PFPeS*	100	1.9	1.7	ng/L	1.91	2706-91-4	1
6:2 FTSA*	92	1.9	1.9	ng/L	1.91	27619-97-2	1
PFOA*	92	1.9	1.5	ng/L	1.91	335-67-1	1
PFHxS*	120	1.9	1.5	ng/L	1.91	355-46-4	1
PFHxS-LN*	97	1.9	1.5	ng/L	1.91	355-46-4-LN	1
PFHxS-BR*	17	1.9	1.5	ng/L	1.91	355-46-4-BR	1
PFNA*	99	1.9	1.7	ng/L	1.91	375-95-1	1
8:2 FTSA*	110	1.9	0.96	ng/L	1.91	39108-34-4	1
PFHpS*	120	1.9	1.9	ng/L	1.91	375-92-8	1
PFDA*	130	1.9	1.9	ng/L	1.91	335-76-2	1
N-MeFOSAA*	100	1.9	1.9	ng/L	1.91	2355-31-9	1
EtFOSAA*	110	3.8	1.9	ng/L	1.91	2991-50-6	1
PFOS*	200	1.9	1.9	ng/L	1.91	1763-23-1	1
PFOS-LN*	140	1.9	1.9	ng/L	1.91	1763-23-1-LN	1
PFOS-BR*	62	1.9	1.9	ng/L	1.91	1763-23-1-BR	1
PFUnDA*	95	1.9	1.3	ng/L	1.91	2058-94-8	1
PFNS*	110	1.9	1.3	ng/L	1.91	68259-12-1	1
PFDODA*	99	1.9	1.5	ng/L	1.91	307-55-1	1
PFDS*	110	1.9	1.3	ng/L	1.91	335-77-3	1
PFTTrDA*	84	1.9	1.1	ng/L	1.91	72629-94-8	1
FOSA*	99	1.9	1.7	ng/L	1.91	754-91-6	1
PFTeDA*	96	3.8	1.7	ng/L	1.91	376-06-7	1
11Cl-PF3OUdS*	90	1.9	1.7	ng/L	1.91	763051-92-9	1
9Cl-PF3ONS*	96	1.9	1.3	ng/L	1.91	756426-58-1	1
ADONA*	110	1.9	1.9	ng/L	1.91	919005-14-4	1
HFPO-DA*	110	9.6	1.9	ng/L	1.91	13252-13-6	1

1-spiked @ 95.5ng/L; PFBA biased high due to matrix int.



Analytical Laboratory Report

Lab Sample ID: S40271.04

Sample Tag: MW-103s, 22913 (MSD)

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.07/6.52/10	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 22:26, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	300	9.0	9.0	ng/L	1.8	375-22-4	1
PFPeA*	110	3.6	0.90	ng/L	1.8	2706-90-3	1
4:2 FTSA*	120	1.8	1.4	ng/L	1.8	757124-72-4	1
PFHxA*	90	1.8	1.3	ng/L	1.8	307-24-4	1
PFBS*	100	1.8	1.3	ng/L	1.8	375-73-5	1
PFHpA*	110	1.8	1.3	ng/L	1.8	375-85-9	1
PFPeS*	99	1.8	1.6	ng/L	1.8	2706-91-4	1
6:2 FTSA*	100	1.8	1.8	ng/L	1.8	27619-97-2	1
PFOA*	100	1.8	1.4	ng/L	1.8	335-67-1	1
PFHxS*	110	1.8	1.4	ng/L	1.8	355-46-4	1
PFHxS-LN*	94	1.8	1.4	ng/L	1.8	355-46-4-LN	1
PFHxS-BR*	15	1.8	1.4	ng/L	1.8	355-46-4-BR	1
PFNA*	100	1.8	1.6	ng/L	1.8	375-95-1	1
8:2 FTSA*	110	1.8	0.90	ng/L	1.8	39108-34-4	1
PFHpS*	99	1.8	1.8	ng/L	1.8	375-92-8	1
PFDA*	99	1.8	1.8	ng/L	1.8	335-76-2	1
N-MeFOSAA*	96	1.8	1.8	ng/L	1.8	2355-31-9	1
EtFOSAA*	110	3.6	1.8	ng/L	1.8	2991-50-6	1
PFOS*	190	1.8	1.8	ng/L	1.8	1763-23-1	1
PFOS-LN*	130	1.8	1.8	ng/L	1.8	1763-23-1-LN	1
PFOS-BR*	58	1.8	1.8	ng/L	1.8	1763-23-1-BR	1
PFUnDA*	88	1.8	1.3	ng/L	1.8	2058-94-8	1
PFNS*	100	1.8	1.3	ng/L	1.8	68259-12-1	1
PFDoDA*	93	1.8	1.4	ng/L	1.8	307-55-1	1
PFDS*	91	1.8	1.3	ng/L	1.8	335-77-3	1
PFTTrDA*	86	1.8	1.1	ng/L	1.8	72629-94-8	1
FOSA*	88	1.8	1.6	ng/L	1.8	754-91-6	1
PFTeDA*	110	3.6	1.6	ng/L	1.8	376-06-7	1
11Cl-PF3OUdS*	81	1.8	1.6	ng/L	1.8	763051-92-9	1
9Cl-PF3ONS*	91	1.8	1.3	ng/L	1.8	756426-58-1	1
ADONA*	110	1.8	1.8	ng/L	1.8	919005-14-4	1
HFPO-DA*	88	9.0	1.8	ng/L	1.8	13252-13-6	1

1-spiked @ 90ng/L; PFBA biased high due to matrix int.



Analytical Laboratory Report

Lab Sample ID: S40271.05

Sample Tag: MW-106sr, 22913

Collected Date/Time: 09/13/2022 15:40

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.79/6.51/10	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 22:46, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.5	9.5	ng/L	1.89	375-22-4	
PFPeA*	1.8	3.8	0.95	ng/L	1.89	2706-90-3	J
4:2 FTSA*	Not detected	1.9	1.5	ng/L	1.89	757124-72-4	
PFHxA*	2.5	1.9	1.3	ng/L	1.89	307-24-4	
PFBS*	4.3	1.9	1.3	ng/L	1.89	375-73-5	
PFHpA*	2.1	1.9	1.3	ng/L	1.89	375-85-9	
PFPeS*	Not detected	1.9	1.7	ng/L	1.89	2706-91-4	
6:2 FTSA*	Not detected	1.9	1.9	ng/L	1.89	27619-97-2	
PFOA*	13	1.9	1.5	ng/L	1.89	335-67-1	
PFHxS*	1.9	1.9	1.5	ng/L	1.89	355-46-4	
PFHxS-LN*	1.6	1.9	1.5	ng/L	1.89	355-46-4-LN	J
PFHxS-BR*	Not detected	1.9	1.5	ng/L	1.89	355-46-4-BR	
PFNA*	Not detected	1.9	1.7	ng/L	1.89	375-95-1	
8:2 FTSA*	Not detected	1.9	0.95	ng/L	1.89	39108-34-4	
PFHpS*	Not detected	1.9	1.9	ng/L	1.89	375-92-8	
PFDA*	Not detected	1.9	1.9	ng/L	1.89	335-76-2	
N-MeFOSAA*	Not detected	1.9	1.9	ng/L	1.89	2355-31-9	
EtFOSAA*	Not detected	3.8	1.9	ng/L	1.89	2991-50-6	
PFOS*	16	1.9	1.9	ng/L	1.89	1763-23-1	
PFOS-LN*	4.3	1.9	1.9	ng/L	1.89	1763-23-1-LN	
PFOS-BR*	11	1.9	1.9	ng/L	1.89	1763-23-1-BR	
PFUnDA*	Not detected	1.9	1.3	ng/L	1.89	2058-94-8	
PFNS*	Not detected	1.9	1.3	ng/L	1.89	68259-12-1	
PFDODA*	Not detected	1.9	1.5	ng/L	1.89	307-55-1	
PFDS*	Not detected	1.9	1.3	ng/L	1.89	335-77-3	
PFTTrDA*	Not detected	1.9	1.1	ng/L	1.89	72629-94-8	
FOSA*	Not detected	1.9	1.7	ng/L	1.89	754-91-6	
PFTeDA*	Not detected	3.8	1.7	ng/L	1.89	376-06-7	
11Cl-PF3OUdS*	Not detected	1.9	1.7	ng/L	1.89	763051-92-9	
9Cl-PF3ONS*	Not detected	1.9	1.3	ng/L	1.89	756426-58-1	
ADONA*	Not detected	1.9	1.9	ng/L	1.89	919005-14-4	
HFPO-DA*	Not detected	9.5	1.9	ng/L	1.89	13252-13-6	

J-Estimated value less than reporting limit, but greater than MDL



Analytical Laboratory Report

Lab Sample ID: S40271.06

Sample Tag: Equip Blank (EB)

Collected Date/Time: 09/13/2022 15:45

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	12.14/6.51/11	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 23:05, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	9.8	9.8	ng/L	1.95	375-22-4	
PFPeA*	Not detected	3.9	0.98	ng/L	1.95	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	1.95	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	1.95	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	1.95	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	1.95	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	1.95	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	1.95	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	1.95	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	1.95	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	1.95	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	1.95	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	1.95	375-95-1	
8:2 FTSA*	Not detected	2.0	0.98	ng/L	1.95	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	1.95	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	1.95	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	1.95	2355-31-9	
EtFOSAA*	Not detected	3.9	2.0	ng/L	1.95	2991-50-6	
PFOS*	Not detected	2.0	1.9	ng/L	1.95	1763-23-1	
PFOS-LN*	Not detected	2.0	1.9	ng/L	1.95	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	1.9	ng/L	1.95	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	1.95	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	1.95	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	1.95	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	1.95	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	1.95	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	1.95	754-91-6	
PFTeDA*	Not detected	3.9	1.8	ng/L	1.95	376-06-7	
11Cl-PF3OUdS*	Not detected	2.0	1.8	ng/L	1.95	763051-92-9	
9Cl-PF3ONS*	Not detected	2.0	1.4	ng/L	1.95	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	1.95	919005-14-4	
HFPO-DA*	Not detected	9.8	2.0	ng/L	1.95	13252-13-6	



Analytical Laboratory Report

Lab Sample ID: S40271.07

Sample Tag: Trip Blank

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.87/6.96/10	ASTMD7979-19M	09/29/22 15:00	PTW	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 09/30/22 23:25, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
PFBA*	Not detected	10	10	ng/L	2.04	375-22-4	
PFPeA*	Not detected	4.1	1.0	ng/L	2.04	2706-90-3	
4:2 FTSA*	Not detected	2.0	1.6	ng/L	2.04	757124-72-4	
PFHxA*	Not detected	2.0	1.4	ng/L	2.04	307-24-4	
PFBS*	Not detected	2.0	1.4	ng/L	2.04	375-73-5	
PFHpA*	Not detected	2.0	1.4	ng/L	2.04	375-85-9	
PFPeS*	Not detected	2.0	1.8	ng/L	2.04	2706-91-4	
6:2 FTSA*	Not detected	2.0	2.0	ng/L	2.04	27619-97-2	
PFOA*	Not detected	2.0	1.6	ng/L	2.04	335-67-1	
PFHxS*	Not detected	2.0	1.6	ng/L	2.04	355-46-4	
PFHxS-LN*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-LN	
PFHxS-BR*	Not detected	2.0	1.6	ng/L	2.04	355-46-4-BR	
PFNA*	Not detected	2.0	1.8	ng/L	2.04	375-95-1	
8:2 FTSA*	Not detected	2.0	1.0	ng/L	2.04	39108-34-4	
PFHpS*	Not detected	2.0	2.0	ng/L	2.04	375-92-8	
PFDA*	Not detected	2.0	2.0	ng/L	2.04	335-76-2	
N-MeFOSAA*	Not detected	2.0	2.0	ng/L	2.04	2355-31-9	
EtFOSAA*	Not detected	4.1	2.0	ng/L	2.04	2991-50-6	
PFOS*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1	
PFOS-LN*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-LN	
PFOS-BR*	Not detected	2.0	2.0	ng/L	2.04	1763-23-1-BR	
PFUnDA*	Not detected	2.0	1.4	ng/L	2.04	2058-94-8	
PFNS*	Not detected	2.0	1.4	ng/L	2.04	68259-12-1	
PFDODA*	Not detected	2.0	1.6	ng/L	2.04	307-55-1	
PFDS*	Not detected	2.0	1.4	ng/L	2.04	335-77-3	
PFTTrDA*	Not detected	2.0	1.2	ng/L	2.04	72629-94-8	
FOSA*	Not detected	2.0	1.8	ng/L	2.04	754-91-6	
PFTeDA*	Not detected	4.1	1.8	ng/L	2.04	376-06-7	
11CI-PF3OUdS*	Not detected	2.0	1.8	ng/L	2.04	763051-92-9	
9CI-PF3ONS*	Not detected	2.0	1.4	ng/L	2.04	756426-58-1	
ADONA*	Not detected	2.0	2.0	ng/L	2.04	919005-14-4	
HFPO-DA*	Not detected	10	2.0	ng/L	2.04	13252-13-6	

Merit Laboratories Login Checklist

Lab Set ID:S40271

Client:APPLIED (Applied Ecosystems)

Project: RACER Flint West #12990

Submitted:09/14/2022 12:50 Login User: BJB

Attention: Rodney Abke

Address: Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525

FAX:

Email: rabke@appliedecosystems.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.7
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

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

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME				Rodney Abke											
COMPANY				Applied EcoSystems											
ADDRESS								G-4300 South Saginaw Street							
CITY						STATE		MI		ZIP CODE		48529			
PHONE NO.				810-715-2525				FAX NO.		810-715-2526					
E-MAIL ADDRESS						rabke@appliedecosystems.com						QUOTE NO.		PO795930	

PROJECT NO./NAME RACER Flint West #12990	SAMPLER(S) - PLEASE PRINT/SIGN NAME
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☒ OTHER <u>report to MDLs</u>	

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

[illegible]

RELINQUISHED BY:	<i>AP</i>	☐ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION			9/14/88	12:04
RECEIVED BY:	<i>H. J. Schalk</i>		DATE	TIME
SIGNATURE/ORGANIZATION			9/14/88	12:04
RELINQUISHED BY:	<i>J. J. Schalk</i>		DATE	TIME
SIGNATURE/ORGANIZATION			9/14/88	12:50
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				

RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
 SEAL NO. SEAL INTACT INITIALS YES ☐ NO ☐		9/14/2022	1258
SEAL NO. SEAL INTACT INITIALS YES ☐ NO ☐		NOTES:	TEMP. ON ARRIVAL - 4.7



Quality Control Report

Report ID: QC-S40239-01
Generated on 09/21/2022

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Report Summary

Lab Sample ID(s): S40239.01-S40239.08
Project: RACER Flint West #12990
Submitted Date/Time: 09/13/2022 15:35
Sampled by: Unknown
P.O. #: 795930

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-9)
Prep Batch Summary (Pages 10-12)
Surrogates per Lab Sample (Pages 13-20)
Surrogates per QC Sample (Pages 21-23)
Batch QC Results (Pages 24-44)

Report Flag Descriptions

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

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

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S40239.01

Sample Tag: MW-104s, 22913

Collected Date/Time: 09/13/2022 09:50

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:10	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	09/13/22 16:20	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Metals						
Arsenic, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 11:57	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 11:57	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 11:57	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 11:57	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 11:57	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 11:57	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/14/22 23:30	220914B3	VF220914W4	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S40239.02

Sample Tag: MW-112s, 22913

Collected Date/Time: 09/13/2022 10:58

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:15	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	09/13/22 16:30	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Metals						
Arsenic, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 12:05	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 12:05	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 12:05	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 12:05	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 12:05	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 12:05	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/14/22 23:53	220914B3	VF220914W4	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S40239.03

Sample Tag: MW-110s, 22913

Collected Date/Time: 09/13/2022 12:00

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:20	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	09/13/22 16:35	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Metals						
Arsenic, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 12:09	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 12:09	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 12:09	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 12:09	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 12:09	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 12:09	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/15/22 00:17	220914B3	VF220914W4	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S40239.04

Sample Tag: MW-108s, 22913

Collected Date/Time: 09/13/2022 12:58

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:25	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	09/13/22 16:45	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Metals						
Arsenic, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 12:14	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 12:14	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 12:14	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 12:14	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 12:14	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 12:14	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/15/22 00:40	220914B3	VF220914W4	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S40239.05

Sample Tag: Field Blank

Collected Date/Time: 09/13/2022 09:27

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:30	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	09/13/22 16:50	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Metals						
Arsenic, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 12:28	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 12:28	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 12:28	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 12:28	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 12:28	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 12:28	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/15/22 01:04	220914B3	VF220914W4	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S40239.06

Sample Tag: MW-114s, 22913

Collected Date/Time: 09/13/2022 13:33

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:35	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	09/13/22 17:00	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Metals						
Arsenic, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 12:34	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 12:34	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 12:34	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 12:34	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 12:34	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 12:34	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/15/22 01:27	220914B3	VF220914W4	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List (Replicate 01)	SW5030C/8260C	09/19/22 20:34	220919A9	VF220919W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40239.07

Sample Tag: Dupe122913

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:40	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Chromium VI	SM3500-Cr B	09/13/22 17:05	CHR220913-W1	CHR220913-W1	No	BLK/LCS/MS/DUP
Metals						
Arsenic, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 12:38	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 12:38	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 12:38	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 12:38	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 12:38	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 12:38	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/15/22 01:51	220914B3	VF220914W4	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List (Replicate 01)	SW5030C/8260C	09/19/22 20:53	220919A9	VF220919W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40239.08

Sample Tag: Trip Blank

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/20/22 13:31	220920A3	VF220920W2	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CHR220913-W1

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40239.01	Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:10	CHR220913-W1
S40239.01	Chromium VI	SM3500-Cr B	09/13/22 16:20	CHR220913-W1
S40239.02	Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:15	CHR220913-W1
S40239.02	Chromium VI	SM3500-Cr B	09/13/22 16:30	CHR220913-W1
S40239.03	Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:20	CHR220913-W1
S40239.03	Chromium VI	SM3500-Cr B	09/13/22 16:35	CHR220913-W1
S40239.04	Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:25	CHR220913-W1
S40239.04	Chromium VI	SM3500-Cr B	09/13/22 16:45	CHR220913-W1
S40239.05	Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:30	CHR220913-W1
S40239.05	Chromium VI	SM3500-Cr B	09/13/22 16:50	CHR220913-W1
S40239.06	Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:35	CHR220913-W1
S40239.06	Chromium VI	SM3500-Cr B	09/13/22 17:00	CHR220913-W1
S40239.07	Chromium VI, Dissolved	SM3500-Cr B	09/13/22 17:40	CHR220913-W1
S40239.07	Chromium VI	SM3500-Cr B	09/13/22 17:05	CHR220913-W1

Metals, Prep Batch ID: MTD-091522-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40239.01	Arsenic, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A
S40239.01	Arsenic	E200.8	09/15/22 11:57	MT4-22-0915A
S40239.01	Chromium, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A
S40239.01	Chromium	E200.8	09/15/22 11:57	MT4-22-0915A
S40239.01	Copper, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A
S40239.01	Copper	E200.8	09/15/22 11:57	MT4-22-0915A
S40239.01	Lead, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A
S40239.01	Lead	E200.8	09/15/22 11:57	MT4-22-0915A
S40239.01	Selenium, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A
S40239.01	Selenium	E200.8	09/15/22 11:57	MT4-22-0915A
S40239.01	Zinc, Dissolved	E200.8	09/15/22 12:03	MT4-22-0915A
S40239.01	Zinc	E200.8	09/15/22 11:57	MT4-22-0915A
S40239.02	Arsenic, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A
S40239.02	Arsenic	E200.8	09/15/22 12:05	MT4-22-0915A
S40239.02	Chromium, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A
S40239.02	Chromium	E200.8	09/15/22 12:05	MT4-22-0915A
S40239.02	Copper, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A
S40239.02	Copper	E200.8	09/15/22 12:05	MT4-22-0915A
S40239.02	Lead, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A
S40239.02	Lead	E200.8	09/15/22 12:05	MT4-22-0915A
S40239.02	Selenium, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A
S40239.02	Selenium	E200.8	09/15/22 12:05	MT4-22-0915A
S40239.02	Zinc, Dissolved	E200.8	09/15/22 12:07	MT4-22-0915A
S40239.02	Zinc	E200.8	09/15/22 12:05	MT4-22-0915A
S40239.03	Arsenic, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A
S40239.03	Arsenic	E200.8	09/15/22 12:09	MT4-22-0915A
S40239.03	Chromium, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A
S40239.03	Chromium	E200.8	09/15/22 12:09	MT4-22-0915A
S40239.03	Copper, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A
S40239.03	Copper	E200.8	09/15/22 12:09	MT4-22-0915A
S40239.03	Lead, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A
S40239.03	Lead	E200.8	09/15/22 12:09	MT4-22-0915A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-091522-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40239.03	Selenium, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A
S40239.03	Selenium	E200.8	09/15/22 12:09	MT4-22-0915A
S40239.03	Zinc, Dissolved	E200.8	09/15/22 12:11	MT4-22-0915A
S40239.03	Zinc	E200.8	09/15/22 12:09	MT4-22-0915A
S40239.04	Arsenic, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A
S40239.04	Arsenic	E200.8	09/15/22 12:14	MT4-22-0915A
S40239.04	Chromium, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A
S40239.04	Chromium	E200.8	09/15/22 12:14	MT4-22-0915A
S40239.04	Copper, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A
S40239.04	Copper	E200.8	09/15/22 12:14	MT4-22-0915A
S40239.04	Lead, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A
S40239.04	Lead	E200.8	09/15/22 12:14	MT4-22-0915A
S40239.04	Selenium, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A
S40239.04	Selenium	E200.8	09/15/22 12:14	MT4-22-0915A
S40239.04	Zinc, Dissolved	E200.8	09/15/22 12:26	MT4-22-0915A
S40239.04	Zinc	E200.8	09/15/22 12:14	MT4-22-0915A
S40239.05	Arsenic, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A
S40239.05	Arsenic	E200.8	09/15/22 12:28	MT4-22-0915A
S40239.05	Chromium, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A
S40239.05	Chromium	E200.8	09/15/22 12:28	MT4-22-0915A
S40239.05	Copper, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A
S40239.05	Copper	E200.8	09/15/22 12:28	MT4-22-0915A
S40239.05	Lead, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A
S40239.05	Lead	E200.8	09/15/22 12:28	MT4-22-0915A
S40239.05	Selenium, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A
S40239.05	Selenium	E200.8	09/15/22 12:28	MT4-22-0915A
S40239.05	Zinc, Dissolved	E200.8	09/15/22 12:30	MT4-22-0915A
S40239.05	Zinc	E200.8	09/15/22 12:28	MT4-22-0915A
S40239.06	Arsenic, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A
S40239.06	Arsenic	E200.8	09/15/22 12:34	MT4-22-0915A
S40239.06	Chromium, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A
S40239.06	Chromium	E200.8	09/15/22 12:34	MT4-22-0915A
S40239.06	Copper, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A
S40239.06	Copper	E200.8	09/15/22 12:34	MT4-22-0915A
S40239.06	Lead, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A
S40239.06	Lead	E200.8	09/15/22 12:34	MT4-22-0915A
S40239.06	Selenium, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A
S40239.06	Selenium	E200.8	09/15/22 12:34	MT4-22-0915A
S40239.06	Zinc, Dissolved	E200.8	09/15/22 12:35	MT4-22-0915A
S40239.06	Zinc	E200.8	09/15/22 12:34	MT4-22-0915A
S40239.07	Arsenic, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A
S40239.07	Arsenic	E200.8	09/15/22 12:38	MT4-22-0915A
S40239.07	Chromium, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A
S40239.07	Chromium	E200.8	09/15/22 12:38	MT4-22-0915A
S40239.07	Copper, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A
S40239.07	Copper	E200.8	09/15/22 12:38	MT4-22-0915A
S40239.07	Lead, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A
S40239.07	Lead	E200.8	09/15/22 12:38	MT4-22-0915A
S40239.07	Selenium, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-091522-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40239.07	Selenium	E200.8	09/15/22 12:38	MT4-22-0915A
S40239.07	Zinc, Dissolved	E200.8	09/15/22 12:40	MT4-22-0915A
S40239.07	Zinc	E200.8	09/15/22 12:38	MT4-22-0915A

Organics - Volatiles, Prep Batch ID: VF220914W4

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40239.01	Volatile Organics - DEQ List	SW5030C/8260C	09/14/22 23:30	220914B3
S40239.02	Volatile Organics - DEQ List	SW5030C/8260C	09/14/22 23:53	220914B3
S40239.03	Volatile Organics - DEQ List	SW5030C/8260C	09/15/22 00:17	220914B3
S40239.04	Volatile Organics - DEQ List	SW5030C/8260C	09/15/22 00:40	220914B3
S40239.05	Volatile Organics - DEQ List	SW5030C/8260C	09/15/22 01:04	220914B3
S40239.06	Volatile Organics - DEQ List	SW5030C/8260C	09/15/22 01:27	220914B3
S40239.07	Volatile Organics - DEQ List	SW5030C/8260C	09/15/22 01:51	220914B3

Organics - Volatiles, Prep Batch ID: VF220919W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40239.06	Volatile Organics - DEQ List (Replicate 01)	SW5030C/8260C	09/19/22 20:34	220919A9
S40239.07	Volatile Organics - DEQ List (Replicate 01)	SW5030C/8260C	09/19/22 20:53	220919A9

Organics - Volatiles, Prep Batch ID: VF220920W2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40239.08	Volatile Organics - DEQ List	SW5030C/8260C	09/20/22 13:31	220920A3

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40239.01

Sample Tag: MW-104s, 22913

Collected Date/Time: 09/13/2022 09:50

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220914B3, Run Date: 09/14/2022 23:30, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		107.2	80.0	124.0
1,2-Dichloroethane-D4		98.8	72.0	125.0
Toluene-D8		104.2	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40239.02

Sample Tag: MW-112s, 22913

Collected Date/Time: 09/13/2022 10:58

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220914B3, Run Date: 09/14/2022 23:53, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		106.0	80.0	124.0
1,2-Dichloroethane-D4		95.0	72.0	125.0
Toluene-D8		103.4	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40239.03

Sample Tag: MW-110s, 22913

Collected Date/Time: 09/13/2022 12:00

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220914B3, Run Date: 09/15/2022 00:17, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		106.2	80.0	124.0
1,2-Dichloroethane-D4		102.8	72.0	125.0
Toluene-D8		104.6	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40239.04

Sample Tag: MW-108s, 22913

Collected Date/Time: 09/13/2022 12:58

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220914B3, Run Date: 09/15/2022 00:40, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.2	80.0	124.0
1,2-Dichloroethane-D4		99.0	72.0	125.0
Toluene-D8		103.4	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40239.05

Sample Tag: Field Blank

Collected Date/Time: 09/13/2022 09:27

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220914B3, Run Date: 09/15/2022 01:04, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.4	80.0	124.0
1,2-Dichloroethane-D4		102.4	72.0	125.0
Toluene-D8		103.6	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40239.06

Sample Tag: MW-114s, 22913

Collected Date/Time: 09/13/2022 13:33

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220914B3, Run Date: 09/15/2022 01:27, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		104.6	80.0	124.0
1,2-Dichloroethane-D4		89.4	72.0	125.0
Toluene-D8		103.6	89.0	112.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List (Replicate 01)

Run in Batch: 220919A9, Run Date: 09/19/2022 20:34, Matrix: WW, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.9	80.0	124.0
1,2-Dichloroethane-D4		107.2	72.0	125.0
Toluene-D8		101.3	89.0	112.0

Lab Sample ID: S40239.07

Sample Tag: Dupe122913

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220914B3, Run Date: 09/15/2022 01:51, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		107.4	80.0	124.0
1,2-Dichloroethane-D4		98.6	72.0	125.0
Toluene-D8		104.2	89.0	112.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List (Replicate 01)

Run in Batch: 220919A9, Run Date: 09/19/2022 20:53, Matrix: WW, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.9	80.0	124.0
1,2-Dichloroethane-D4		108.5	72.0	125.0
Toluene-D8		101.0	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40239.08

Sample Tag: Trip Blank

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220920A3, Run Date: 09/20/2022 13:31, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		110.0	80.0	124.0
1,2-Dichloroethane-D4		96.0	72.0	125.0
Toluene-D8		102.8	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220914W4

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220914B3.BLKW14B

Run in Batch: 220914B3, Run Date: 09/14/2022 23:06, Prep Date: 09/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.2	80.0	124.0
1,2-Dichloroethane-D4		95.0	72.0	125.0
Toluene-D8		104.0	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220914B3.LCSW14B

Run in Batch: 220914B3, Run Date: 09/14/2022 21:32, Prep Date: 09/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		109.8	80.0	124.0
1,2-Dichloroethane-D4		91.8	72.0	125.0
Toluene-D8		102.6	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220914B3.LCSDW14B, Parent Sample ID: 220914B3.LCSW14B

Run in Batch: 220914B3, Run Date: 09/14/2022 21:55, Prep Date: 09/14/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		110.8	80.0	124.0
1,2-Dichloroethane-D4		95.2	72.0	125.0
Toluene-D8		103.2	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220919W1

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

Blank (BLK)

Lab Sample ID: 220919A9.BLKW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 13:24, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.2	80.0	124.0
1,2-Dichloroethane-D4		101.4	72.0	125.0
Toluene-D8		101.6	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.4	80.0	124.0
1,2-Dichloroethane-D4		101.2	72.0	125.0
Toluene-D8		101.4	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220919A9.LCSDW19A, Parent Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:46, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.6	80.0	124.0
1,2-Dichloroethane-D4		101.0	72.0	125.0
Toluene-D8		101.5	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220919A9.4027003M, Parent Sample ID: S40270.02

Run in Batch: 220919A9, Run Date: 09/19/2022 12:06, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.1	80.0	124.0
1,2-Dichloroethane-D4		97.2	72.0	125.0
Toluene-D8		101.4	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220919A9.4027004N, Parent Sample ID: 220919A9.4027003M

Run in Batch: 220919A9, Run Date: 09/19/2022 12:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		104.3	80.0	124.0
1,2-Dichloroethane-D4		96.8	72.0	125.0
Toluene-D8		101.5	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220920W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220920A3.BLKW20A

Run in Batch: 220920A3, Run Date: 09/20/2022 13:07, Prep Date: 09/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		109.0	80.0	124.0
1,2-Dichloroethane-D4		93.4	72.0	125.0
Toluene-D8		103.4	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220920A3.LCSW20A

Run in Batch: 220920A3, Run Date: 09/20/2022 11:32, Prep Date: 09/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		113.4	80.0	124.0
1,2-Dichloroethane-D4		93.8	72.0	125.0
Toluene-D8		102.6	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220920A3.LCSDW20A, Parent Sample ID: 220920A3.LCSW20A

Run in Batch: 220920A3, Run Date: 09/20/2022 11:56, Prep Date: 09/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		113.0	80.0	124.0
1,2-Dichloroethane-D4		97.8	72.0	125.0
Toluene-D8		102.4	89.0	112.0

QC Report - Batch QC Results

Inorganics, Prep Batch ID: CHR220913-W1

Surrogates: No, QC Types: BLK/LCS/MS/DUP

Blank (BLK)

Lab Sample ID: CHR220913-W1.LRB1

Run in Batch: CHR220913-W1, Run Date: 09/13/2022 16:00, Prep Date: 09/13/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Chromium VI		ND	0.01	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: CHR220913-W1.LCS1

Run in Batch: CHR220913-W1, Run Date: 09/13/2022 16:15, Prep Date: 09/13/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI		106	90	110

Matrix Spike (MS)

Lab Sample ID: CHR220913-W1.MS1, Parent Sample ID: S40239.05

Run in Batch: CHR220913-W1, Run Date: 09/13/2022 16:55, Prep Date: 09/13/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI		102	80	120

Duplicate (DUP)

Lab Sample ID: CHR220913-W1.DP1, Parent Sample ID: S40239.01

Run in Batch: CHR220913-W1, Run Date: 09/13/2022 16:25, Prep Date: 09/13/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	RPD	RPD CL
Chromium VI		<1	15

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-091522-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-22-0915A.019.LRB

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 11:45, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Selenium		ND	0.001	mg/L
Zinc		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-0915A.018.LCS

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 11:43, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		101	85	115
Chromium		99	85	115
Copper		101	85	115
Lead		97	85	115
Selenium		101	85	115
Zinc		102	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-22-0915A.038.MS, Parent Sample ID: S40270.02

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:21, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		106	75	125
Chromium		101	75	125
Copper		98	75	125
Lead		96	75	125
Selenium		97	75	125
Zinc		105	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-22-0915A.061.MS, Parent Sample ID: S40270.02

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:50, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		106	75	125
Chromium		102	75	125
Copper		100	75	125
Lead		101	75	125
Selenium		100	75	125
Zinc		105	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0915A.039.MSD, Parent Sample ID: MT4-22-0915A.038.MS

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:22, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		104	75	125	2	20
Chromium		100	75	125	0	20

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-091522-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: MT4-22-0915A.039.MSD, Parent Sample ID: MT4-22-0915A.038.MS

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:22, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Copper		99	75	125	1	20
Lead		101	75	125	4	20
Selenium		100	75	125	3	20
Zinc		104	75	125	2	20

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0915A.062.MSD, Parent Sample ID: MT4-22-0915A.061.MS

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:51, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		108	75	125	2	20
Chromium		104	75	125	2	20
Copper		101	75	125	1	20
Lead		99	75	125	2	20
Selenium		107	75	125	7	20
Zinc		105	75	125	0	20

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220914W4

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

Blank (BLK)

Lab Sample ID: 220914B3.BLKW14B

Run in Batch: 220914B3, Run Date: 09/14/2022 23:06, Prep Date: 09/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220914W4 (continued)

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

Blank (BLK) (continued)

Lab Sample ID: 220914B3.BLKW14B

Run in Batch: 220914B3, Run Date: 09/14/2022 23:06, Prep Date: 09/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220914B3.LCSW14B

Run in Batch: 220914B3, Run Date: 09/14/2022 21:32, Prep Date: 09/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		107.2	67.4	121.2
Acetone		140.5	29.9	161.5
Methyl iodide		105.8	68.8	116.4
Carbon disulfide		104.4	63.8	137.4
tert-Methyl butyl ether (MTBE)		96.7	73.2	122.4
Acrylonitrile		126.0	69.9	128.9
2-Butanone (MEK)		124.9	44.0	134.4
Dichlorodifluoromethane		77.4	10.0	222.8
Chloromethane		96.7	23.8	166.5
Vinyl chloride		91.0	43.5	149.1
Bromomethane		108.2	56.8	151.3
Chloroethane		105.4	53.4	149.4
Trichlorofluoromethane		104.4	59.7	151.8
1,1-Dichloroethene		98.5	69.6	139.4
Methylene chloride		103.8	73.3	121.1
trans-1,2-Dichloroethene		101.2	73.6	129.3
1,1-Dichloroethane		100.2	71.5	126.2
cis-1,2-Dichloroethene		106.0	76.6	122.1
Tetrahydrofuran	*	124.0	59.0	117.9
Chloroform		103.5	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220914W4 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220914B3.LCSW14B

Run in Batch: 220914B3, Run Date: 09/14/2022 21:32, Prep Date: 09/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		110.2	78.2	120.8
1,1,1-Trichloroethane		100.5	79.4	130.9
4-Methyl-2-pentanone (MIBK)		108.6	71.6	125.2
2-Hexanone		114.8	55.4	136.9
Carbon tetrachloride		106.2	72.6	133.0
Benzene		104.3	79.9	124.9
1,2-Dichloroethane		103.7	76.0	126.3
Trichloroethene		105.2	79.7	124.2
1,2-Dichloropropane		106.0	78.6	126.4
Bromodichloromethane		108.3	80.4	128.2
Dibromomethane		115.2	76.9	122.1
cis-1,3-Dichloropropene		105.3	79.8	129.9
Toluene		101.7	79.8	124.5
trans-1,3-Dichloropropene		108.3	74.0	131.3
1,1,2-Trichloroethane		111.0	78.7	123.1
Tetrachloroethene		110.1	74.5	124.5
trans-1,4-Dichloro-2-butene		111.1	68.6	135.4
Dibromochloromethane		121.1	74.6	127.2
1,2-Dibromoethane		122.8	70.3	133.7
Chlorobenzene		115.3	79.2	122.7
1,1,1,2-Tetrachloroethane		115.9	80.3	128.2
Ethylbenzene		111.7	79.5	129.1
p,m-Xylene		111.9	79.4	132.2
o-Xylene		111.5	80.2	131.0
Styrene		117.6	69.5	126.7
Isopropylbenzene		112.3	74.4	121.5
Bromoform	*	128.3	69.4	128.0
1,1,2,2-Tetrachloroethane		123.0	79.8	126.3
1,2,3-Trichloropropane		119.6	78.3	138.8
n-Propylbenzene		109.1	82.0	130.7
Bromobenzene		120.2	78.7	124.6
1,3,5-Trimethylbenzene		111.0	81.3	128.9
tert-Butylbenzene		103.5	80.7	128.9
1,2,4-Trimethylbenzene		109.9	81.4	130.8
sec-Butylbenzene		98.2	77.4	129.8
p-Isopropyltoluene		102.6	79.8	137.5
1,3-Dichlorobenzene		112.8	77.0	131.3
1,4-Dichlorobenzene		115.5	20.7	137.7
1,2-Dichlorobenzene		114.4	10.0	166.2
1,2,3-Trimethylbenzene		105.0	76.3	124.2
n-Butylbenzene		95.2	80.0	133.3
Hexachloroethane		103.3	23.8	138.1
1,2-Dibromo-3-chloropropane		129.3	21.2	189.4
1,2,4-Trichlorobenzene		103.8	27.4	143.4
1,2,3-Trichlorobenzene		103.4	75.4	131.4
Naphthalene		111.5	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220914W4 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220914B3.LCSW14B

Run in Batch: 220914B3, Run Date: 09/14/2022 21:32, Prep Date: 09/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		97.3	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220914B3.LCSDW14B, Parent Sample ID: 220914B3.LCSW14B

Run in Batch: 220914B3, Run Date: 09/14/2022 21:55, Prep Date: 09/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		106.5	67.4	121.2	0.7	30.0
Acetone		140.6	29.9	161.5	0.1	30.0
Methyl iodide		101.9	68.8	116.4	3.8	30.0
Carbon disulfide		99.3	63.8	137.4	5.1	30.0
tert-Methyl butyl ether (MTBE)		96.7	73.2	122.4	0.0	30.0
Acrylonitrile		124.9	69.9	128.9	0.8	30.0
2-Butanone (MEK)		124.4	44.0	134.4	0.3	30.0
Dichlorodifluoromethane		73.7	10.0	222.8	5.0	30.0
Chloromethane		90.2	23.8	166.5	6.9	30.0
Vinyl chloride		87.5	43.5	149.1	3.9	30.0
Bromomethane		105.4	56.8	151.3	2.6	30.0
Chloroethane		98.1	53.4	149.4	7.2	30.0
Trichlorofluoromethane		97.9	59.7	151.8	6.4	30.0
1,1-Dichloroethene		95.2	69.6	139.4	3.4	30.0
Methylene chloride		101.2	73.3	121.1	2.6	30.0
trans-1,2-Dichloroethene		97.0	73.6	129.3	4.2	30.0
1,1-Dichloroethane		95.5	71.5	126.2	4.8	30.0
cis-1,2-Dichloroethene		101.4	76.6	122.1	4.4	30.0
Tetrahydrofuran	*	133.3	59.0	117.9	7.2	30.0
Chloroform		98.9	78.4	124.0	4.5	30.0
Bromochloromethane		107.6	78.2	120.8	2.4	30.0
1,1,1-Trichloroethane		96.3	79.4	130.9	4.3	30.0
4-Methyl-2-pentanone (MIBK)		111.7	71.6	125.2	2.8	30.0
2-Hexanone		119.1	55.4	136.9	3.7	30.0
Carbon tetrachloride		101.2	72.6	133.0	4.8	30.0
Benzene		101.4	79.9	124.9	2.8	30.0
1,2-Dichloroethane		101.9	76.0	126.3	1.7	30.0
Trichloroethene		101.7	79.7	124.2	3.4	30.0
1,2-Dichloropropane		102.9	78.6	126.4	3.0	30.0
Bromodichloromethane		106.2	80.4	128.2	2.0	30.0
Dibromomethane		115.8	76.9	122.1	0.6	30.0
cis-1,3-Dichloropropene		103.6	79.8	129.9	1.6	30.0
Toluene		97.9	79.8	124.5	3.8	30.0
trans-1,3-Dichloropropene		106.9	74.0	131.3	1.3	30.0
1,1,2-Trichloroethane		111.0	78.7	123.1	0.0	30.0
Tetrachloroethene		104.8	74.5	124.5	5.0	30.0
trans-1,4-Dichloro-2-butene		113.1	68.6	135.4	1.9	30.0
Dibromochloromethane		119.0	74.6	127.2	1.7	30.0
1,2-Dibromoethane		120.3	70.3	133.7	2.1	30.0
Chlorobenzene		112.0	79.2	122.7	2.8	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220914W4 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220914B3.LCSDW14B, Parent Sample ID: 220914B3.LCSW14B

Run in Batch: 220914B3, Run Date: 09/14/2022 21:55, Prep Date: 09/14/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		113.0	80.3	128.2	2.6	30.0
Ethylbenzene		107.1	79.5	129.1	4.2	30.0
p,m-Xylene		108.0	79.4	132.2	3.6	30.0
o-Xylene		108.5	80.2	131.0	2.7	30.0
Styrene		113.1	69.5	126.7	3.9	30.0
Isopropylbenzene		106.7	74.4	121.5	5.1	30.0
Bromoform		127.3	69.4	128.0	0.8	30.0
1,1,2,2-Tetrachloroethane		122.9	79.8	126.3	0.1	30.0
1,2,3-Trichloropropane		123.0	78.3	138.8	2.8	30.0
n-Propylbenzene		103.5	82.0	130.7	5.2	30.0
Bromobenzene		118.0	78.7	124.6	1.8	30.0
1,3,5-Trimethylbenzene		106.8	81.3	128.9	3.9	30.0
tert-Butylbenzene		99.2	80.7	128.9	4.2	30.0
1,2,4-Trimethylbenzene		107.0	81.4	130.8	2.7	30.0
sec-Butylbenzene		91.8	77.4	129.8	6.8	30.0
p-Isopropyltoluene		97.9	79.8	137.5	4.7	30.0
1,3-Dichlorobenzene		107.9	77.0	131.3	4.4	30.0
1,4-Dichlorobenzene		111.9	20.7	137.7	3.2	30.0
1,2-Dichlorobenzene		110.0	10.0	166.2	3.9	30.0
1,2,3-Trimethylbenzene		100.7	76.3	124.2	4.1	30.0
n-Butylbenzene		90.3	80.0	133.3	5.3	30.0
Hexachloroethane		100.5	23.8	138.1	2.7	30.0
1,2-Dibromo-3-chloropropane		128.0	21.2	189.4	1.0	30.0
1,2,4-Trichlorobenzene		99.3	27.4	143.4	4.4	30.0
1,2,3-Trichlorobenzene		100.0	75.4	131.4	3.3	30.0
Naphthalene		110.6	32.9	135.8	0.8	30.0
2-Methylnaphthalene		96.1	25.5	165.5	1.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220919W1

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

Blank (BLK)

Lab Sample ID: 220919A9.BLKW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 13:24, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Blank (BLK) (continued)

Lab Sample ID: 220919A9.BLKW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 13:24, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		101.1	67.4	121.2
Acetone		93.6	29.9	161.5
Methyl iodide		98.0	68.8	116.4
Carbon disulfide		91.6	63.8	137.4
tert-Methyl butyl ether (MTBE)		102.6	73.2	122.4
Acrylonitrile		108.3	69.9	128.9
2-Butanone (MEK)		100.7	44.0	134.4
Dichlorodifluoromethane		96.6	10.0	222.8
Chloromethane		101.7	23.8	166.5
Vinyl chloride		97.2	43.5	149.1
Bromomethane		100.2	56.8	151.3
Chloroethane		90.1	53.4	149.4
Trichlorofluoromethane		94.6	59.7	151.8
1,1-Dichloroethene		89.6	69.6	139.4
Methylene chloride		100.1	73.3	121.1
trans-1,2-Dichloroethene		93.9	73.6	129.3
1,1-Dichloroethane		96.7	71.5	126.2
cis-1,2-Dichloroethene		97.2	76.6	122.1
Tetrahydrofuran		99.0	59.0	117.9
Chloroform		97.8	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		100.1	78.2	120.8
1,1,1-Trichloroethane		91.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		106.2	71.6	125.2
2-Hexanone		108.5	55.4	136.9
Carbon tetrachloride		92.4	72.6	133.0
Benzene		97.5	79.9	124.9
1,2-Dichloroethane		98.2	76.0	126.3
Trichloroethene		95.4	79.7	124.2
1,2-Dichloropropane		100.2	78.6	126.4
Bromodichloromethane		103.7	80.4	128.2
Dibromomethane		103.7	76.9	122.1
cis-1,3-Dichloropropene		105.6	79.8	129.9
Toluene		97.1	79.8	124.5
trans-1,3-Dichloropropene		106.9	74.0	131.3
1,1,2-Trichloroethane		101.8	78.7	123.1
Tetrachloroethene		94.1	74.5	124.5
trans-1,4-Dichloro-2-butene		120.8	68.6	135.4
Dibromochloromethane		110.6	74.6	127.2
1,2-Dibromoethane		107.6	70.3	133.7
Chlorobenzene		102.2	79.2	122.7
1,1,1,2-Tetrachloroethane		105.3	80.3	128.2
Ethylbenzene		100.5	79.5	129.1
p,m-Xylene		100.8	79.4	132.2
o-Xylene		101.9	80.2	131.0
Styrene		104.4	69.5	126.7
Isopropylbenzene		98.0	74.4	121.5
Bromoform		112.8	69.4	128.0
1,1,2,2-Tetrachloroethane		107.3	79.8	126.3
1,2,3-Trichloropropane		107.3	78.3	138.8
n-Propylbenzene		100.5	82.0	130.7
Bromobenzene		106.1	78.7	124.6
1,3,5-Trimethylbenzene		100.6	81.3	128.9
tert-Butylbenzene		98.7	80.7	128.9
1,2,4-Trimethylbenzene		102.7	81.4	130.8
sec-Butylbenzene		97.8	77.4	129.8
p-Isopropyltoluene		100.1	79.8	137.5
1,3-Dichlorobenzene		103.8	77.0	131.3
1,4-Dichlorobenzene		102.2	20.7	137.7
1,2-Dichlorobenzene		104.7	10.0	166.2
1,2,3-Trimethylbenzene		104.9	76.3	124.2
n-Butylbenzene		99.6	80.0	133.3
Hexachloroethane		112.1	23.8	138.1
1,2-Dibromo-3-chloropropane		114.9	21.2	189.4
1,2,4-Trichlorobenzene		104.5	27.4	143.4
1,2,3-Trichlorobenzene		106.0	75.4	131.4
Naphthalene		109.8	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		119.3	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220919A9.LCSDW19A, Parent Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:46, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		98.6	67.4	121.2	2.5	30.0
Acetone		89.3	29.9	161.5	4.7	30.0
Methyl iodide		95.1	68.8	116.4	3.0	30.0
Carbon disulfide		88.8	63.8	137.4	3.1	30.0
tert-Methyl butyl ether (MTBE)		101.2	73.2	122.4	1.4	30.0
Acrylonitrile		101.2	69.9	128.9	6.8	30.0
2-Butanone (MEK)		94.6	44.0	134.4	6.2	30.0
Dichlorodifluoromethane		97.2	10.0	222.8	0.6	30.0
Chloromethane		96.2	23.8	166.5	5.6	30.0
Vinyl chloride		94.9	43.5	149.1	2.4	30.0
Bromomethane		98.1	56.8	151.3	2.1	30.0
Chloroethane		90.1	53.4	149.4	0.0	30.0
Trichlorofluoromethane		90.7	59.7	151.8	4.2	30.0
1,1-Dichloroethene		86.7	69.6	139.4	3.3	30.0
Methylene chloride		96.5	73.3	121.1	3.7	30.0
trans-1,2-Dichloroethene		91.2	73.6	129.3	2.9	30.0
1,1-Dichloroethane		92.9	71.5	126.2	4.1	30.0
cis-1,2-Dichloroethene		93.9	76.6	122.1	3.5	30.0
Tetrahydrofuran		89.1	59.0	117.9	10.6	30.0
Chloroform		94.0	78.4	124.0	4.0	30.0
Bromochloromethane		97.6	78.2	120.8	2.5	30.0
1,1,1-Trichloroethane		88.4	79.4	130.9	3.7	30.0
4-Methyl-2-pentanone (MIBK)		102.0	71.6	125.2	4.0	30.0
2-Hexanone		102.6	55.4	136.9	5.5	30.0
Carbon tetrachloride		90.4	72.6	133.0	2.1	30.0
Benzene		95.4	79.9	124.9	2.2	30.0
1,2-Dichloroethane		98.1	76.0	126.3	0.1	30.0
Trichloroethene		93.5	79.7	124.2	2.0	30.0
1,2-Dichloropropane		98.0	78.6	126.4	2.2	30.0
Bromodichloromethane		101.8	80.4	128.2	1.8	30.0
Dibromomethane		103.4	76.9	122.1	0.3	30.0
cis-1,3-Dichloropropene		103.9	79.8	129.9	1.6	30.0
Toluene		95.9	79.8	124.5	1.3	30.0
trans-1,3-Dichloropropene		105.4	74.0	131.3	1.5	30.0
1,1,2-Trichloroethane		102.0	78.7	123.1	0.2	30.0
Tetrachloroethene		92.5	74.5	124.5	1.7	30.0
trans-1,4-Dichloro-2-butene		118.6	68.6	135.4	1.9	30.0
Dibromochloromethane		109.5	74.6	127.2	1.0	30.0
1,2-Dibromoethane		108.0	70.3	133.7	0.4	30.0
Chlorobenzene		101.9	79.2	122.7	0.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220919A9.LCSDW19A, Parent Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:46, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		105.3	80.3	128.2	0.0	30.0
Ethylbenzene		99.6	79.5	129.1	1.0	30.0
p,m-Xylene		100.2	79.4	132.2	0.6	30.0
o-Xylene		101.9	80.2	131.0	0.0	30.0
Styrene		102.4	69.5	126.7	2.0	30.0
Isopropylbenzene		98.3	74.4	121.5	0.3	30.0
Bromoform		112.9	69.4	128.0	0.1	30.0
1,1,2,2-Tetrachloroethane		106.8	79.8	126.3	0.5	30.0
1,2,3-Trichloropropane		107.7	78.3	138.8	0.4	30.0
n-Propylbenzene		100.0	82.0	130.7	0.5	30.0
Bromobenzene		105.6	78.7	124.6	0.5	30.0
1,3,5-Trimethylbenzene		100.9	81.3	128.9	0.3	30.0
tert-Butylbenzene		99.2	80.7	128.9	0.5	30.0
1,2,4-Trimethylbenzene		102.0	81.4	130.8	0.7	30.0
sec-Butylbenzene		97.8	77.4	129.8	0.0	30.0
p-Isopropyltoluene		99.9	79.8	137.5	0.2	30.0
1,3-Dichlorobenzene		101.6	77.0	131.3	2.1	30.0
1,4-Dichlorobenzene		103.6	20.7	137.7	1.3	30.0
1,2-Dichlorobenzene		102.9	10.0	166.2	1.8	30.0
1,2,3-Trimethylbenzene		104.0	76.3	124.2	0.9	30.0
n-Butylbenzene		100.3	80.0	133.3	0.8	30.0
Hexachloroethane		109.2	23.8	138.1	2.6	30.0
1,2-Dibromo-3-chloropropane		112.1	21.2	189.4	2.4	30.0
1,2,4-Trichlorobenzene		107.7	27.4	143.4	3.0	30.0
1,2,3-Trichlorobenzene		109.2	75.4	131.4	3.0	30.0
Naphthalene		111.1	32.9	135.8	1.2	30.0
2-Methylnaphthalene		126.6	25.5	165.5	6.0	30.0

Matrix Spike (MS)

Lab Sample ID: 220919A9.4027003M, Parent Sample ID: S40270.02

Run in Batch: 220919A9, Run Date: 09/19/2022 12:06, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		101.7	67.4	121.2
Acetone		94.3	29.9	161.5
Methyl iodide		103.1	68.8	116.4
Carbon disulfide		99.5	63.8	137.4
tert-Methyl butyl ether (MTBE)		105.4	73.2	122.4
Acrylonitrile		109.0	69.9	128.9
2-Butanone (MEK)		103.3	44.0	134.4
Dichlorodifluoromethane		103.6	10.0	222.8
Chloromethane		104.2	23.8	166.5
Vinyl chloride		106.7	43.5	149.1
Bromomethane		102.6	56.8	151.3
Chloroethane		97.2	53.4	149.4
Trichlorofluoromethane		105.6	59.7	151.8
1,1-Dichloroethene		98.5	69.6	139.4

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: 220919A9.4027003M, Parent Sample ID: S40270.02

Run in Batch: 220919A9, Run Date: 09/19/2022 12:06, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		104.1	73.3	121.1
trans-1,2-Dichloroethene		100.4	73.6	129.3
1,1-Dichloroethane		102.2	71.5	126.2
cis-1,2-Dichloroethene		101.7	76.6	122.1
Tetrahydrofuran		98.2	59.0	117.9
Chloroform		102.4	78.4	124.0
Bromochloromethane		103.3	78.2	120.8
1,1,1-Trichloroethane		100.1	79.4	130.9
4-Methyl-2-pentanone (MIBK)		118.0	71.6	125.2
2-Hexanone		122.6	55.4	136.9
Carbon tetrachloride		103.7	72.6	133.0
Benzene		104.1	79.9	124.9
1,2-Dichloroethane		102.0	76.0	126.3
Trichloroethene		106.4	79.7	124.2
1,2-Dichloropropane		104.3	78.6	126.4
Bromodichloromethane		106.4	80.4	128.2
Dibromomethane		107.9	76.9	122.1
cis-1,3-Dichloropropene		109.2	79.8	129.9
Toluene		104.2	79.8	124.5
trans-1,3-Dichloropropene		109.2	74.0	131.3
1,1,2-Trichloroethane		99.8	78.7	123.1
Tetrachloroethene		103.3	74.5	124.5
trans-1,4-Dichloro-2-butene		130.6	68.6	135.4
Dibromochloromethane		115.6	74.6	127.2
1,2-Dibromoethane		113.7	70.3	133.7
Chlorobenzene		110.9	79.2	122.7
1,1,1,2-Tetrachloroethane		112.7	80.3	128.2
Ethylbenzene		110.0	79.5	129.1
p,m-Xylene		109.1	79.4	132.2
o-Xylene		110.6	80.2	131.0
Styrene		110.4	69.5	126.7
Isopropylbenzene		109.3	74.4	121.5
Bromoform		117.1	69.4	128.0
1,1,2,2-Tetrachloroethane		114.4	79.8	126.3
1,2,3-Trichloropropane		115.8	78.3	138.8
n-Propylbenzene		110.1	82.0	130.7
Bromobenzene		112.3	78.7	124.6
1,3,5-Trimethylbenzene		109.5	81.3	128.9
tert-Butylbenzene		109.7	80.7	128.9
1,2,4-Trimethylbenzene		111.6	81.4	130.8
sec-Butylbenzene		107.6	77.4	129.8
p-Isopropyltoluene		108.9	79.8	137.5
1,3-Dichlorobenzene		109.1	77.0	131.3
1,4-Dichlorobenzene		110.6	20.7	137.7
1,2-Dichlorobenzene		111.7	10.0	166.2
1,2,3-Trimethylbenzene		111.5	76.3	124.2

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: 220919A9.4027003M, Parent Sample ID: S40270.02

Run in Batch: 220919A9, Run Date: 09/19/2022 12:06, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		109.6	80.0	133.3
Hexachloroethane		119.5	23.8	138.1
1,2-Dibromo-3-chloropropane		127.6	21.2	189.4
1,2,4-Trichlorobenzene		114.8	27.4	143.4
1,2,3-Trichlorobenzene		116.3	75.4	131.4
Naphthalene		125.2	32.9	135.8
2-Methylnaphthalene		154.3	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220919A9.4027004N, Parent Sample ID: 220919A9.4027003M

Run in Batch: 220919A9, Run Date: 09/19/2022 12:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		100.6	67.4	121.2	1.0	30.0
Acetone		88.1	29.9	161.5	6.2	30.0
Methyl iodide		102.5	68.8	116.4	0.6	30.0
Carbon disulfide		99.1	63.8	137.4	0.4	30.0
tert-Methyl butyl ether (MTBE)		105.2	73.2	122.4	0.2	30.0
Acrylonitrile		105.3	69.9	128.9	3.5	30.0
2-Butanone (MEK)		98.4	44.0	134.4	4.8	30.0
Dichlorodifluoromethane		101.6	10.0	222.8	1.9	30.0
Chloromethane		103.3	23.8	166.5	0.9	30.0
Vinyl chloride		107.2	43.5	149.1	0.4	30.0
Bromomethane		103.0	56.8	151.3	0.4	30.0
Chloroethane		97.5	53.4	149.4	0.3	30.0
Trichlorofluoromethane		104.0	59.7	151.8	1.5	30.0
1,1-Dichloroethene		96.6	69.6	139.4	2.0	30.0
Methylene chloride		103.7	73.3	121.1	0.3	30.0
trans-1,2-Dichloroethene		98.7	73.6	129.3	1.7	30.0
1,1-Dichloroethane		100.2	71.5	126.2	2.0	30.0
cis-1,2-Dichloroethene		100.1	76.6	122.1	1.6	30.0
Tetrahydrofuran		95.6	59.0	117.9	2.7	30.0
Chloroform		101.2	78.4	124.0	1.2	30.0
Bromochloromethane		101.9	78.2	120.8	1.4	30.0
1,1,1-Trichloroethane		98.0	79.4	130.9	2.2	30.0
4-Methyl-2-pentanone (MIBK)		112.9	71.6	125.2	4.5	30.0
2-Hexanone		114.5	55.4	136.9	6.9	30.0
Carbon tetrachloride		101.2	72.6	133.0	2.4	30.0
Benzene		102.5	79.9	124.9	1.5	30.0
1,2-Dichloroethane		101.8	76.0	126.3	0.2	30.0
Trichloroethene		105.8	79.7	124.2	0.6	30.0
1,2-Dichloropropane		102.8	78.6	126.4	1.4	30.0
Bromodichloromethane		106.8	80.4	128.2	0.3	30.0
Dibromomethane		107.5	76.9	122.1	0.3	30.0
cis-1,3-Dichloropropene		108.2	79.8	129.9	0.9	30.0
Toluene		102.1	79.8	124.5	2.0	30.0
trans-1,3-Dichloropropene		109.0	74.0	131.3	0.2	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220919A9.4027004N, Parent Sample ID: 220919A9.4027003M

Run in Batch: 220919A9, Run Date: 09/19/2022 12:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		105.4	78.7	123.1	5.5	30.0
Tetrachloroethene		101.8	74.5	124.5	1.5	30.0
trans-1,4-Dichloro-2-butene		124.3	68.6	135.4	5.0	30.0
Dibromochloromethane		111.8	74.6	127.2	3.3	30.0
1,2-Dibromoethane		110.1	70.3	133.7	3.3	30.0
Chlorobenzene		107.4	79.2	122.7	3.1	30.0
1,1,1,2-Tetrachloroethane		110.6	80.3	128.2	1.9	30.0
Ethylbenzene		106.5	79.5	129.1	3.2	30.0
p,m-Xylene		107.0	79.4	132.2	2.0	30.0
o-Xylene		108.5	80.2	131.0	1.9	30.0
Styrene		108.8	69.5	126.7	1.4	30.0
Isopropylbenzene		106.3	74.4	121.5	2.8	30.0
Bromoform		115.8	69.4	128.0	1.1	30.0
1,1,2,2-Tetrachloroethane		111.7	79.8	126.3	2.5	30.0
1,2,3-Trichloropropane		112.2	78.3	138.8	3.2	30.0
n-Propylbenzene		107.1	82.0	130.7	2.8	30.0
Bromobenzene		110.6	78.7	124.6	1.5	30.0
1,3,5-Trimethylbenzene		106.3	81.3	128.9	3.0	30.0
tert-Butylbenzene		105.4	80.7	128.9	4.0	30.0
1,2,4-Trimethylbenzene		108.6	81.4	130.8	2.7	30.0
sec-Butylbenzene		106.3	77.4	129.8	1.2	30.0
p-Isopropyltoluene		107.1	79.8	137.5	1.7	30.0
1,3-Dichlorobenzene		109.0	77.0	131.3	0.1	30.0
1,4-Dichlorobenzene		109.5	20.7	137.7	1.0	30.0
1,2-Dichlorobenzene		110.9	10.0	166.2	0.7	30.0
1,2,3-Trimethylbenzene		110.6	76.3	124.2	0.7	30.0
n-Butylbenzene		108.4	80.0	133.3	1.1	30.0
Hexachloroethane		116.0	23.8	138.1	2.9	30.0
1,2-Dibromo-3-chloropropane		124.7	21.2	189.4	2.3	30.0
1,2,4-Trichlorobenzene		117.4	27.4	143.4	2.2	30.0
1,2,3-Trichlorobenzene		123.4	75.4	131.4	5.9	30.0
Naphthalene		127.5	32.9	135.8	1.8	30.0
2-Methylnaphthalene	*	167.6	25.5	165.5	8.2	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220920W2

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

Blank (BLK)

Lab Sample ID: 220920A3.BLKW20A

Run in Batch: 220920A3, Run Date: 09/20/2022 13:07, Prep Date: 09/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220920W2 (continued)

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

Blank (BLK) (continued)

Lab Sample ID: 220920A3.BLKW20A

Run in Batch: 220920A3, Run Date: 09/20/2022 13:07, Prep Date: 09/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220920A3.LCSW20A

Run in Batch: 220920A3, Run Date: 09/20/2022 11:32, Prep Date: 09/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		102.8	67.4	121.2
Acetone		123.5	29.9	161.5
Methyl iodide		103.7	68.8	116.4
Carbon disulfide		95.9	63.8	137.4
tert-Methyl butyl ether (MTBE)		95.6	73.2	122.4
Acrylonitrile		117.1	69.9	128.9
2-Butanone (MEK)		123.8	44.0	134.4
Dichlorodifluoromethane		85.9	10.0	222.8
Chloromethane		103.5	23.8	166.5
Vinyl chloride		94.0	43.5	149.1
Bromomethane		112.7	56.8	151.3
Chloroethane		100.5	53.4	149.4
Trichlorofluoromethane		98.6	59.7	151.8
1,1-Dichloroethene		90.1	69.6	139.4
Methylene chloride		102.6	73.3	121.1
trans-1,2-Dichloroethene		95.7	73.6	129.3
1,1-Dichloroethane		96.5	71.5	126.2
cis-1,2-Dichloroethene		103.9	76.6	122.1
Tetrahydrofuran	*	126.3	59.0	117.9
Chloroform		100.8	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220920W2 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220920A3.LCSW20A

Run in Batch: 220920A3, Run Date: 09/20/2022 11:32, Prep Date: 09/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		108.0	78.2	120.8
1,1,1-Trichloroethane		95.8	79.4	130.9
4-Methyl-2-pentanone (MIBK)		109.7	71.6	125.2
2-Hexanone		117.3	55.4	136.9
Carbon tetrachloride		100.8	72.6	133.0
Benzene		104.2	79.9	124.9
1,2-Dichloroethane		103.0	76.0	126.3
Trichloroethene		104.1	79.7	124.2
1,2-Dichloropropane		107.4	78.6	126.4
Bromodichloromethane		110.9	80.4	128.2
Dibromomethane		116.2	76.9	122.1
cis-1,3-Dichloropropene		113.6	79.8	129.9
Toluene		101.3	79.8	124.5
trans-1,3-Dichloropropene		113.5	74.0	131.3
1,1,2-Trichloroethane		112.5	78.7	123.1
Tetrachloroethene		106.8	74.5	124.5
trans-1,4-Dichloro-2-butene		118.8	68.6	135.4
Dibromochloromethane		116.9	74.6	127.2
1,2-Dibromoethane		116.2	70.3	133.7
Chlorobenzene		111.7	79.2	122.7
1,1,1,2-Tetrachloroethane		113.9	80.3	128.2
Ethylbenzene		105.0	79.5	129.1
p,m-Xylene		107.4	79.4	132.2
o-Xylene		109.1	80.2	131.0
Styrene		113.9	69.5	126.7
Isopropylbenzene		105.1	74.4	121.5
Bromoform		124.2	69.4	128.0
1,1,2,2-Tetrachloroethane		116.5	79.8	126.3
1,2,3-Trichloropropane		118.8	78.3	138.8
n-Propylbenzene		103.5	82.0	130.7
Bromobenzene		117.0	78.7	124.6
1,3,5-Trimethylbenzene		106.7	81.3	128.9
tert-Butylbenzene		98.1	80.7	128.9
1,2,4-Trimethylbenzene		107.0	81.4	130.8
sec-Butylbenzene		88.6	77.4	129.8
p-Isopropyltoluene		93.9	79.8	137.5
1,3-Dichlorobenzene		105.5	77.0	131.3
1,4-Dichlorobenzene		107.6	20.7	137.7
1,2-Dichlorobenzene		103.1	10.0	166.2
1,2,3-Trimethylbenzene		97.8	76.3	124.2
n-Butylbenzene		86.1	80.0	133.3
Hexachloroethane		94.8	23.8	138.1
1,2-Dibromo-3-chloropropane		117.5	21.2	189.4
1,2,4-Trichlorobenzene		96.0	27.4	143.4
1,2,3-Trichlorobenzene		95.7	75.4	131.4
Naphthalene		100.7	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220920W2 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220920A3.LCSW20A

Run in Batch: 220920A3, Run Date: 09/20/2022 11:32, Prep Date: 09/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		87.2	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220920A3.LCSDW20A, Parent Sample ID: 220920A3.LCSW20A

Run in Batch: 220920A3, Run Date: 09/20/2022 11:56, Prep Date: 09/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		104.2	67.4	121.2	1.4	30.0
Acetone		126.9	29.9	161.5	2.7	30.0
Methyl iodide		99.6	68.8	116.4	4.0	30.0
Carbon disulfide		91.7	63.8	137.4	4.4	30.0
tert-Methyl butyl ether (MTBE)		97.0	73.2	122.4	1.4	30.0
Acrylonitrile		119.7	69.9	128.9	2.2	30.0
2-Butanone (MEK)		124.0	44.0	134.4	0.1	30.0
Dichlorodifluoromethane		77.6	10.0	222.8	10.2	30.0
Chloromethane		97.6	23.8	166.5	5.8	30.0
Vinyl chloride		89.5	43.5	149.1	4.8	30.0
Bromomethane		103.1	56.8	151.3	8.8	30.0
Chloroethane		93.0	53.4	149.4	7.8	30.0
Trichlorofluoromethane		94.4	59.7	151.8	4.4	30.0
1,1-Dichloroethene		86.6	69.6	139.4	3.9	30.0
Methylene chloride		100.3	73.3	121.1	2.3	30.0
trans-1,2-Dichloroethene		92.2	73.6	129.3	3.8	30.0
1,1-Dichloroethane		93.7	71.5	126.2	2.9	30.0
cis-1,2-Dichloroethene		100.1	76.6	122.1	3.7	30.0
Tetrahydrofuran	*	126.7	59.0	117.9	0.3	30.0
Chloroform		95.2	78.4	124.0	5.7	30.0
Bromochloromethane		107.8	78.2	120.8	0.2	30.0
1,1,1-Trichloroethane		89.2	79.4	130.9	7.1	30.0
4-Methyl-2-pentanone (MIBK)		107.7	71.6	125.2	1.8	30.0
2-Hexanone		119.0	55.4	136.9	1.5	30.0
Carbon tetrachloride		93.6	72.6	133.0	7.4	30.0
Benzene		98.6	79.9	124.9	5.5	30.0
1,2-Dichloroethane		101.3	76.0	126.3	1.7	30.0
Trichloroethene		97.5	79.7	124.2	6.6	30.0
1,2-Dichloropropane		100.1	78.6	126.4	7.0	30.0
Bromodichloromethane		106.9	80.4	128.2	3.7	30.0
Dibromomethane		114.9	76.9	122.1	1.1	30.0
cis-1,3-Dichloropropene		108.1	79.8	129.9	5.0	30.0
Toluene		95.0	79.8	124.5	6.4	30.0
trans-1,3-Dichloropropene		109.6	74.0	131.3	3.5	30.0
1,1,2-Trichloroethane		110.5	78.7	123.1	1.8	30.0
Tetrachloroethene		100.7	74.5	124.5	5.9	30.0
trans-1,4-Dichloro-2-butene		118.1	68.6	135.4	0.6	30.0
Dibromochloromethane		115.2	74.6	127.2	1.5	30.0
1,2-Dibromoethane		113.5	70.3	133.7	2.4	30.0
Chlorobenzene		106.1	79.2	122.7	5.2	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220920W2 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220920A3.LCSDW20A, Parent Sample ID: 220920A3.LCSW20A

Run in Batch: 220920A3, Run Date: 09/20/2022 11:56, Prep Date: 09/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		109.3	80.3	128.2	4.1	30.0
Ethylbenzene		100.1	79.5	129.1	4.7	30.0
p,m-Xylene		101.8	79.4	132.2	5.4	30.0
o-Xylene		99.6	80.2	131.0	9.1	30.0
Styrene		105.8	69.5	126.7	7.4	30.0
Isopropylbenzene		98.1	74.4	121.5	6.9	30.0
Bromoform		121.2	69.4	128.0	2.4	30.0
1,1,2,2-Tetrachloroethane		116.9	79.8	126.3	0.3	30.0
1,2,3-Trichloropropane		117.1	78.3	138.8	1.4	30.0
n-Propylbenzene		96.9	82.0	130.7	6.6	30.0
Bromobenzene		112.4	78.7	124.6	4.0	30.0
1,3,5-Trimethylbenzene		100.6	81.3	128.9	5.9	30.0
tert-Butylbenzene		92.2	80.7	128.9	6.2	30.0
1,2,4-Trimethylbenzene		101.7	81.4	130.8	5.1	30.0
sec-Butylbenzene		83.4	77.4	129.8	6.0	30.0
p-Isopropyltoluene		89.2	79.8	137.5	5.2	30.0
1,3-Dichlorobenzene		101.0	77.0	131.3	4.3	30.0
1,4-Dichlorobenzene		102.9	20.7	137.7	4.5	30.0
1,2-Dichlorobenzene		102.0	10.0	166.2	1.1	30.0
1,2,3-Trimethylbenzene		93.1	76.3	124.2	5.0	30.0
n-Butylbenzene		82.7	80.0	133.3	4.1	30.0
Hexachloroethane		90.5	23.8	138.1	4.6	30.0
1,2-Dibromo-3-chloropropane		118.4	21.2	189.4	0.7	30.0
1,2,4-Trichlorobenzene		94.3	27.4	143.4	1.8	30.0
1,2,3-Trichlorobenzene		96.1	75.4	131.4	0.4	30.0
Naphthalene		102.9	32.9	135.8	2.1	30.0
2-Methylnaphthalene		91.2	25.5	165.5	4.5	30.0



Quality Control Report

Report ID: QC-S40240-01
Generated on 10/11/2022

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Report Summary

Lab Sample ID(s): S40240.01-S40240.07
Project: RACER Flint West #12990
Submitted Date/Time: 09/13/2022 15:35
Sampled by: Unknown
P.O. #: 795930

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-8)
Prep Batch Summary (Page 9)
Internal Standards per Lab Sample (Pages 10-16)
Internal Standards per QC Sample (Pages 17-21)
Batch QC Results (Pages 22-26)

Report Flag Descriptions

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

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

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S40240.01

Sample Tag: MW-104s, 22913

Collected Date/Time: 09/13/2022 09:50

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 19:11	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40240.02

Sample Tag: MW-112s, 22913

Collected Date/Time: 09/13/2022 10:50

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 19:31	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40240.03

Sample Tag: MW-110s, 22913

Collected Date/Time: 09/13/2022 12:00

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 19:50	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40240.04

Sample Tag: MW-108s, 22913

Collected Date/Time: 09/13/2022 12:58

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 20:10	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40240.05

Sample Tag: Field Blank

Collected Date/Time: 09/13/2022 09:27

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 20:29	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40240.06

Sample Tag: MW-114s, 22913

Collected Date/Time: 09/13/2022 13:33

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 20:49	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40240.07

Sample Tag: Dupe1,22913

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 21:08	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF220929W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40240.01	28 PFAs	ASTMD7979-19M	09/30/22 19:11	AK220930B
S40240.02	28 PFAs	ASTMD7979-19M	09/30/22 19:31	AK220930B
S40240.03	28 PFAs	ASTMD7979-19M	09/30/22 19:50	AK220930B
S40240.04	28 PFAs	ASTMD7979-19M	09/30/22 20:10	AK220930B
S40240.05	28 PFAs	ASTMD7979-19M	09/30/22 20:29	AK220930B
S40240.06	28 PFAs	ASTMD7979-19M	09/30/22 20:49	AK220930B
S40240.07	28 PFAs	ASTMD7979-19M	09/30/22 21:08	AK220930B

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40240.01

Sample Tag: MW-104s, 22913

Collected Date/Time: 09/13/2022 09:50

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 19:11, Matrix: WW, Dilution: 1.9

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		122.1	50.0	150.0
M2-6:2FTSA		123.2	50.0	150.0
M2-8:2FTSA		119.4	50.0	150.0
M2PFTeDA		81.2	12.0	218.0
M3PFBS		124.7	50.0	150.0
M3PFHxS		121.8	50.0	150.0
M4PFHpA		118.2	50.0	150.0
M5PFHxA		116.8	50.0	150.0
M5PFPeA		119.1	50.0	150.0
M6PFDA		123.8	50.0	150.0
M7PFUnDA		107.3	50.0	150.0
M8FOSA		103.2	50.0	150.0
M8PFOA		107.8	50.0	150.0
M8PFOS		118.8	50.0	150.0
M9-PFNA		100.2	50.0	150.0
MPFBA		118.2	50.0	150.0
MPFDoDA		104.2	50.0	150.0
d3N-MeFOSAA		122.4	50.0	150.0
d5EtFOSAA		105.8	50.0	150.0
MHFPO-DA		105.1	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40240.02

Sample Tag: MW-112s, 22913

Collected Date/Time: 09/13/2022 10:50

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 19:31, Matrix: WW, Dilution: 1.84

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	221.5	50.0	150.0
M2-6:2FTSA	*	174.8	50.0	150.0
M2-8:2FTSA		139.6	50.0	150.0
M2PFTeDA		112.9	12.0	218.0
M3PFBS		118.4	50.0	150.0
M3PFHxS		119.5	50.0	150.0
M4PFHpA		116.4	50.0	150.0
M5PFHxA		112.2	50.0	150.0
M5PFPeA		108.1	50.0	150.0
M6PFDA		128.9	50.0	150.0
M7PFUnDA		103.5	50.0	150.0
M8FOSA		109.3	50.0	150.0
M8PFOA		106.7	50.0	150.0
M8PFOS		124.4	50.0	150.0
M9-PFNA		96.7	50.0	150.0
MPFBA		113.4	50.0	150.0
MPFDoDA		122.7	50.0	150.0
d3N-MeFOSAA		130.2	50.0	150.0
d5EtFOSAA		123.9	50.0	150.0
MHFPO-DA		113.7	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40240.03

Sample Tag: MW-110s, 22913

Collected Date/Time: 09/13/2022 12:00

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 19:50, Matrix: WW, Dilution: 1.91

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		120.9	50.0	150.0
M2-6:2FTSA		104.0	50.0	150.0
M2-8:2FTSA		95.9	50.0	150.0
M2PFTeDA		103.6	12.0	218.0
M3PFBS		112.0	50.0	150.0
M3PFHxS		103.5	50.0	150.0
M4PFHpA		107.1	50.0	150.0
M5PFHxA		101.8	50.0	150.0
M5PFPeA		108.2	50.0	150.0
M6PFDA		111.0	50.0	150.0
M7PFUnDA		108.2	50.0	150.0
M8FOSA		93.5	50.0	150.0
M8PFOA		104.9	50.0	150.0
M8PFOS		116.0	50.0	150.0
M9-PFNA		95.4	50.0	150.0
MPFBA		108.5	50.0	150.0
MPFDoDA		103.3	50.0	150.0
d3N-MeFOSAA		109.0	50.0	150.0
d5EtFOSAA		97.4	50.0	150.0
MHFPO-DA		94.4	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40240.04

Sample Tag: MW-108s, 22913

Collected Date/Time: 09/13/2022 12:58

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 20:10, Matrix: WW, Dilution: 1.82

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		130.6	50.0	150.0
M2-6:2FTSA		102.2	50.0	150.0
M2-8:2FTSA		115.2	50.0	150.0
M2PFTeDA		77.8	12.0	218.0
M3PFBS		108.3	50.0	150.0
M3PFHxS		104.5	50.0	150.0
M4PFHpA		110.3	50.0	150.0
M5PFHxA		107.3	50.0	150.0
M5PFPeA		104.9	50.0	150.0
M6PFDA		99.6	50.0	150.0
M7PFUnDA		95.5	50.0	150.0
M8FOSA		84.1	50.0	150.0
M8PFOA		94.2	50.0	150.0
M8PFOS		105.3	50.0	150.0
M9-PFNA		97.6	50.0	150.0
MPFBA		105.3	50.0	150.0
MPFDoDA		82.8	50.0	150.0
d3N-MeFOSAA		110.9	50.0	150.0
d5EtFOSAA		99.7	50.0	150.0
MHFPO-DA		93.1	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40240.05

Sample Tag: Field Blank

Collected Date/Time: 09/13/2022 09:27

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 20:29, Matrix: WW, Dilution: 1.94

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		122.6	50.0	150.0
M2-6:2FTSA		110.0	50.0	150.0
M2-8:2FTSA		80.9	50.0	150.0
M2PFTeDA		84.5	12.0	218.0
M3PFBS		122.9	50.0	150.0
M3PFHxS		112.7	50.0	150.0
M4PFHpA		121.2	50.0	150.0
M5PFHxA		114.8	50.0	150.0
M5PFPeA		113.4	50.0	150.0
M6PFDA		114.7	50.0	150.0
M7PFUnDA		113.5	50.0	150.0
M8FOSA		105.8	50.0	150.0
M8PFOA		110.6	50.0	150.0
M8PFOS		124.5	50.0	150.0
M9-PFNA		112.1	50.0	150.0
MPFBA		116.6	50.0	150.0
MPFDoDA		103.1	50.0	150.0
d3N-MeFOSAA		122.0	50.0	150.0
d5EtFOSAA		112.2	50.0	150.0
MHFPO-DA		122.6	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40240.06

Sample Tag: MW-114s, 22913

Collected Date/Time: 09/13/2022 13:33

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 20:49, Matrix: WW, Dilution: 1.84

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		135.3	50.0	150.0
M2-6:2FTSA		135.3	50.0	150.0
M2-8:2FTSA		101.9	50.0	150.0
M2PFTeDA		85.7	12.0	218.0
M3PFBS		108.0	50.0	150.0
M3PFHxS		103.6	50.0	150.0
M4PFHpA		102.9	50.0	150.0
M5PFHxA		100.7	50.0	150.0
M5PFPeA		103.8	50.0	150.0
M6PFDA		101.6	50.0	150.0
M7PFUnDA		103.7	50.0	150.0
M8FOSA		91.8	50.0	150.0
M8PFOA		102.7	50.0	150.0
M8PFOS		102.7	50.0	150.0
M9-PFNA		100.2	50.0	150.0
MPFBA		107.7	50.0	150.0
MPFDoDA		95.7	50.0	150.0
d3N-MeFOSAA		111.2	50.0	150.0
d5EtFOSAA		91.6	50.0	150.0
MHFPO-DA		111.7	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40240.07

Sample Tag: Dupe1,22913

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 21:08, Matrix: WW, Dilution: 1.9

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	160.9	50.0	150.0
M2-6:2FTSA		143.7	50.0	150.0
M2-8:2FTSA		117.1	50.0	150.0
M2PFTeDA		101.5	12.0	218.0
M3PFBS		114.1	50.0	150.0
M3PFHxS		116.1	50.0	150.0
M4PFHpA		112.5	50.0	150.0
M5PFHxA		106.7	50.0	150.0
M5PFPeA		117.1	50.0	150.0
M6PFDA		117.1	50.0	150.0
M7PFUnDA		109.6	50.0	150.0
M8FOSA		104.0	50.0	150.0
M8PFOA		110.3	50.0	150.0
M8PFOS		122.4	50.0	150.0
M9-PFNA		104.3	50.0	150.0
MPFBA		117.5	50.0	150.0
MPFDoDA		115.6	50.0	150.0
d3N-MeFOSAA		138.8	50.0	150.0
d5EtFOSAA		115.4	50.0	150.0
MHFPO-DA		115.0	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF220929W1

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

Blank (BLK)

Lab Sample ID: AK220930B.BLK220929

Run in Batch: AK220930B, Run Date: 09/30/2022 18:32, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		110.4	50.0	150.0
M2-6:2FTSA		102.1	50.0	150.0
M2-8:2FTSA		106.7	50.0	150.0
M2PFTeDA		117.5	12.0	218.0
M3PFBS		104.9	50.0	150.0
M3PFHxS		100.1	50.0	150.0
M4PFHpA		108.9	50.0	150.0
M5PFHxA		103.9	50.0	150.0
M5PFPeA		100.1	50.0	150.0
M6PFDA		105.3	50.0	150.0
M7PFUnDA		98.4	50.0	150.0
M8FOSA		91.6	50.0	150.0
M8PFOA		95.6	50.0	150.0
M8PFOS		101.0	50.0	150.0
M9-PFNA		104.2	50.0	150.0
MPFBA		101.5	50.0	150.0
MPFDoDA		104.7	50.0	150.0
d3N-MeFOSAA		110.0	50.0	150.0
d5EtFOSAA		95.6	50.0	150.0
MHFPO-DA		100.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: AK220930B.LCS220929

Run in Batch: AK220930B, Run Date: 09/30/2022 17:34, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		106.6	50.0	150.0
M2-6:2FTSA		112.3	50.0	150.0
M2-8:2FTSA		96.2	50.0	150.0
M2PFTeDA		127.7	12.0	218.0
M3PFBS		103.2	50.0	150.0
M3PFHxS		93.5	50.0	150.0
M4PFHpA		98.2	50.0	150.0
M5PFHxA		99.6	50.0	150.0
M5PFPeA		100.1	50.0	150.0
M6PFDA		104.5	50.0	150.0
M7PFUnDA		107.5	50.0	150.0
M8FOSA		94.0	50.0	150.0
M8PFOA		93.8	50.0	150.0
M8PFOS		112.6	50.0	150.0
M9-PFNA		103.1	50.0	150.0
MPFBA		99.6	50.0	150.0
MPFDoDA		105.9	50.0	150.0
d3N-MeFOSAA		111.8	50.0	150.0
d5EtFOSAA		107.1	50.0	150.0
MHFPO-DA		101.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220930B.LCSD220929, Parent Sample ID: AK220930B.LCS220929

Run in Batch: AK220930B, Run Date: 09/30/2022 17:53, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		103.1	50.0	150.0
M2-6:2FTSA		114.7	50.0	150.0
M2-8:2FTSA		95.0	50.0	150.0
M2PFTeDA		97.2	12.0	218.0
M3PFBS		108.2	50.0	150.0
M3PFHxS		103.7	50.0	150.0
M4PFHpA		105.3	50.0	150.0
M5PFHxA		97.8	50.0	150.0
M5PFPeA		99.0	50.0	150.0
M6PFDA		94.5	50.0	150.0
M7PFUnDA		97.6	50.0	150.0
M8FOSA		93.1	50.0	150.0
M8PFOA		87.1	50.0	150.0
M8PFOS		99.1	50.0	150.0
M9-PFNA		103.1	50.0	150.0
MPFBA		97.5	50.0	150.0
MPFDoDA		92.0	50.0	150.0
d3N-MeFOSAA		102.2	50.0	150.0
d5EtFOSAA		103.8	50.0	150.0
MHFPO-DA		98.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike (MS)

Lab Sample ID: AK220930B.4027103M, Parent Sample ID: S40271.02

Run in Batch: AK220930B, Run Date: 09/30/2022 22:07, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.91

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	453.9	50.0	150.0
M2-6:2FTSA	*	298.7	50.0	150.0
M2-8:2FTSA	*	169.7	50.0	150.0
M2PFTeDA		92.2	12.0	218.0
M3PFBS		106.7	50.0	150.0
M3PFHxS		99.2	50.0	150.0
M4PFHpA		126.2	50.0	150.0
M5PFHxA		108.8	50.0	150.0
M5PFPeA		104.1	50.0	150.0
M6PFDA		121.5	50.0	150.0
M7PFUnDA		98.4	50.0	150.0
M8FOSA		100.2	50.0	150.0
M8PFOA		113.4	50.0	150.0
M8PFOS		111.9	50.0	150.0
M9-PFNA		99.1	50.0	150.0
MPFBA		85.7	50.0	150.0
MPFDoDA		116.5	50.0	150.0
d3N-MeFOSAA		148.8	50.0	150.0
d5EtFOSAA		137.8	50.0	150.0
MHFPO-DA		96.8	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike Duplicate (MSD)

Lab Sample ID: AK220930B.4027104N, Parent Sample ID: AK220930B.4027103M

Run in Batch: AK220930B, Run Date: 09/30/2022 22:26, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.8

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	422.4	50.0	150.0
M2-6:2FTSA	*	250.7	50.0	150.0
M2-8:2FTSA	*	173.5	50.0	150.0
M2PFTeDA		66.1	12.0	218.0
M3PFBS		103.2	50.0	150.0
M3PFHxS		95.1	50.0	150.0
M4PFHpA		103.7	50.0	150.0
M5PFHxA		100.3	50.0	150.0
M5PFPeA		94.7	50.0	150.0
M6PFDA		126.5	50.0	150.0
M7PFUnDA		94.0	50.0	150.0
M8FOSA		97.1	50.0	150.0
M8PFOA		99.2	50.0	150.0
M8PFOS		109.4	50.0	150.0
M9-PFNA		87.7	50.0	150.0
MPFBA		84.2	50.0	150.0
MPFDoDA		96.5	50.0	150.0
d3N-MeFOSAA	*	157.9	50.0	150.0
d5EtFOSAA		129.6	50.0	150.0
MHFPO-DA		89.3	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220929W1

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

Blank (BLK)

Lab Sample ID: AK220930B.BLK220929

Run in Batch: AK220930B, Run Date: 09/30/2022 18:32, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFMPA		ND	2	ng/l
FPrPA (3:3 FTCA)		ND	5.0	ng/l
PFPPrS		ND	2	ng/l
PFPpA		ND	4	ng/l
PFMBA		ND	2	ng/l
4:2 FTSA		ND	2	ng/l
NFDHA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
HFPO-DA		ND	10	ng/l
FPePA (5:3 FTCA)		ND	5.0	ng/l
PFEESA		ND	2	ng/l
PFHpA		ND	2	ng/l
ADONA		ND	2	ng/l
PFPpS		ND	2	ng/l
PFBSA		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
FHpPA (7:3 FTCA)		ND	5.0	ng/l
PFNA		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFECHS		ND	2	ng/l
PFHpS		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
PFDA		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS-BR		ND	2	ng/l
PFOS		ND	2	ng/l
PFHxSA		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFUnDA		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
PFNS		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFDS		ND	2	ng/l
FOSA		ND	2	ng/l
PFTTrDA		ND	2	ng/l
11CL-PF3OUdS		ND	2	ng/l
PFTeDA		ND	4	ng/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220929W1 (continued)

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

Laboratory Control Sample (LCS)

Lab Sample ID: AK220930B.LCS220929

Run in Batch: AK220930B, Run Date: 09/30/2022 17:34, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		104.6	70.0	130.0
PFMPA		95.2	70.0	130.0
FPrPA (3:3 FTCA)		100.4	70.0	130.0
PFPPrS		96.4	70.0	130.0
PFPeA		97.8	70.0	130.0
PFMBA		98.0	70.0	130.0
4:2 FTSA		112.2	70.0	130.0
NFDHA		100.8	70.0	130.0
PFHxA		106.4	70.0	130.0
PFBS		107.0	70.0	130.0
HFPO-DA		100.0	70.0	130.0
FPePA (5:3 FTCA)		118.6	70.0	130.0
PFEESA		102.8	70.0	130.0
PFHpA		110.2	70.0	130.0
ADONA		115.8	70.0	130.0
PFPeS		102.0	70.0	130.0
PFBSA		86.6	70.0	130.0
6:2 FTSA		98.4	70.0	130.0
PFOA		106.0	70.0	130.0
PFHxS		111.2	70.0	130.0
FHpPA (7:3 FTCA)	*	141.2	70.0	130.0
PFNA		109.0	70.0	130.0
8:2 FTSA		111.8	70.0	130.0
PFECHS		95.4	70.0	130.0
PFHpS		113.0	70.0	130.0
N-MeFOSAA		101.6	70.0	130.0
PFDA		118.0	70.0	130.0
EtFOSAA		103.8	70.0	130.0
PFOS		105.6	70.0	130.0
PFHxSA		97.0	70.0	130.0
PFUnDA		89.4	70.0	130.0
9CL-PF3ONS		102.8	70.0	130.0
PFNS		110.8	70.0	130.0
PFDoDA		109.6	70.0	130.0
PFDS		116.8	70.0	130.0
FOSA		102.8	70.0	130.0
PFTTrDA		99.0	70.0	130.0
11CL-PF3OUdS		103.2	70.0	130.0
PFTeDA		107.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220930B.LCSD220929, Parent Sample ID: AK220930B.LCS220929

Run in Batch: AK220930B, Run Date: 09/30/2022 17:53, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		108.6	70.0	130.0	3.8	30.0
PFMPA		111.0	70.0	130.0	15.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220929W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK220930B.LCSD220929, Parent Sample ID: AK220930B.LCS220929

Run in Batch: AK220930B, Run Date: 09/30/2022 17:53, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
FPrPA (3:3 FTCA)		112.6	70.0	130.0	11.5	30.0
PFPPrS	*	70.2	70.0	130.0	31.5	30.0
PFPeA		104.2	70.0	130.0	6.3	30.0
PFMBA		118.4	70.0	130.0	18.9	30.0
4:2 FTSA		119.8	70.0	130.0	6.6	30.0
NFDHA	*	133.8	70.0	130.0	28.1	30.0
PFHxA		105.8	70.0	130.0	0.6	30.0
PFBS		98.8	70.0	130.0	8.0	30.0
HFPO-DA		113.8	70.0	130.0	12.9	30.0
FPePA (5:3 FTCA)		127.6	70.0	130.0	7.3	30.0
PFEESA		113.4	70.0	130.0	9.8	30.0
PFHpA		100.8	70.0	130.0	8.9	30.0
ADONA		118.4	70.0	130.0	2.2	30.0
PFPeS		105.2	70.0	130.0	3.1	30.0
PFBSA		101.4	70.0	130.0	15.7	30.0
6:2 FTSA		90.6	70.0	130.0	8.3	30.0
PFOA		113.6	70.0	130.0	6.9	30.0
PFHxS		102.6	70.0	130.0	8.0	30.0
FHpPA (7:3 FTCA)		110.6	70.0	130.0	24.3	30.0
PFNA		99.4	70.0	130.0	9.2	30.0
8:2 FTSA		107.0	70.0	130.0	4.4	30.0
PFECHS		108.0	70.0	130.0	12.4	30.0
PFHpS		103.4	70.0	130.0	8.9	30.0
N-MeFOSAA		115.2	70.0	130.0	12.5	30.0
PFDA		118.2	70.0	130.0	0.2	30.0
EtFOSAA		105.8	70.0	130.0	1.9	30.0
PFOS		121.2	70.0	130.0	13.8	30.0
PFHxSA		99.0	70.0	130.0	2.0	30.0
PFUnDA		101.2	70.0	130.0	12.4	30.0
9CL-PF3ONS		110.8	70.0	130.0	7.5	30.0
PFNS		119.0	70.0	130.0	7.1	30.0
PFDoDA		110.8	70.0	130.0	1.1	30.0
PFDS		118.4	70.0	130.0	1.4	30.0
FOSA		101.0	70.0	130.0	1.8	30.0
PFTTrDA		92.6	70.0	130.0	6.7	30.0
11CL-PF3OUdS		115.0	70.0	130.0	10.8	30.0
PFTeDA		111.2	70.0	130.0	3.8	30.0

Matrix Spike (MS)

Lab Sample ID: AK220930B.4027103M, Parent Sample ID: S40271.02

Run in Batch: AK220930B, Run Date: 09/30/2022 22:07, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.91

Analyte	Flags	% Rec	LCL	UCL
PFBA	*	345.5	70.0	130.0
PFPeA		115.2	70.0	130.0
4:2 FTSA		125.7	70.0	130.0
PFHxA		115.2	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220929W1 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: AK220930B.4027103M, Parent Sample ID: S40271.02

Run in Batch: AK220930B, Run Date: 09/30/2022 22:07, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.91

Analyte	Flags	% Rec	LCL	UCL
PFBS		115.2	70.0	130.0
PFHpA		98.4	70.0	130.0
PFPeS		104.7	70.0	130.0
6:2 FTSA		96.3	70.0	130.0
PFOA		93.7	70.0	130.0
PFHxS		125.7	70.0	130.0
PFNA		103.7	70.0	130.0
8:2 FTSA		115.2	70.0	130.0
PFHpS		125.7	70.0	130.0
PFDA	*	136.1	70.0	130.0
N-MeFOSAA		104.7	70.0	130.0
EtFOSAA		109.8	70.0	130.0
PFOS	*	133.0	70.0	130.0
PFOA		99.5	70.0	130.0
PFNS		115.2	70.0	130.0
PFDoDA		103.7	70.0	130.0
PFDS		115.2	70.0	130.0
PFTTrDA		88.0	70.0	130.0
FOSA		103.7	70.0	130.0
PFTeDA		100.5	70.0	130.0
11CL-PF3OUdS		94.2	70.0	130.0
9CL-PF3ONS		100.5	70.0	130.0
ADONA		115.2	70.0	130.0
HFPO-DA		115.2	70.0	130.0
PFECHS		112.0	70.0	130.0
PFBSA		104.7	70.0	130.0
PFHxSA		104.7	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: AK220930B.4027104N, Parent Sample ID: AK220930B.4027103M

Run in Batch: AK220930B, Run Date: 09/30/2022 22:26, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.8

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA	*	333.3	70.0	130.0	9.5	30.0
PFPeA		122.2	70.0	130.0	0.0	30.0
4:2 FTSA	*	133.3	70.0	130.0	0.0	30.0
PFHxA		100.0	70.0	130.0	20.0	30.0
PFBS		111.1	70.0	130.0	9.5	30.0
PFHpA		122.2	70.0	130.0	15.7	30.0
PFPeS		110.0	70.0	130.0	1.0	30.0
6:2 FTSA		111.1	70.0	130.0	8.3	30.0
PFOA		108.3	70.0	130.0	8.3	30.0
PFHxS		122.2	70.0	130.0	8.7	30.0
PFNA		111.1	70.0	130.0	1.0	30.0
8:2 FTSA		122.2	70.0	130.0	0.0	30.0
PFHpS		110.0	70.0	130.0	19.2	30.0
PFDA		110.0	70.0	130.0	27.1	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220929W1 (continued)

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

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: AK220930B.4027104N, Parent Sample ID: AK220930B.4027103M

Run in Batch: AK220930B, Run Date: 09/30/2022 22:26, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.8

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
N-MeFOSAA		106.7	70.0	130.0	4.1	30.0
EtFOSAA		116.6	70.0	130.0	0.0	30.0
PFOS		130.0	70.0	130.0	5.1	30.0
PFUnDA		97.8	70.0	130.0	7.7	30.0
PFNS		111.1	70.0	130.0	9.5	30.0
PFDoDA		103.3	70.0	130.0	6.3	30.0
PFDS		101.1	70.0	130.0	18.9	30.0
PFTTrDA		95.6	70.0	130.0	2.4	30.0
FOSA		97.8	70.0	130.0	11.8	30.0
PFTeDA		122.2	70.0	130.0	13.6	30.0
11CL-PF3OUdS		90.0	70.0	130.0	10.5	30.0
9CL-PF3ONS		101.1	70.0	130.0	5.3	30.0
ADONA		122.2	70.0	130.0	0.0	30.0
HFPO-DA		97.8	70.0	130.0	22.2	30.0
PFECHS		107.8	70.0	130.0	7.4	30.0
PFBSA		98.9	70.0	130.0	11.6	30.0
PFHxSA		101.1	70.0	130.0	9.4	30.0

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Rodney Abke
COMPANY Applied EcoSystems
ADDRESS G-4300 South Saginaw Street
CITY Burton STATE MI ZIP CODE 48529
PHONE NO. 810-715-2525 FAX NO. 810-715-2526 P.O. NO. PO795930
E-MAIL ADDRESS rabke@appliedecosystems.com QUOTE NO.

CONTACT NAME Monica Wallingford ☐ SAME
COMPANY Revitalizing Auto Communities Environmental Response (RACER) Trust
ADDRESS
CITY STATE ZIP CODE
PHONE NO. 313.486.2978 E-MAIL ADDRESS mwallingford@racertrust.org

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME RACER Flint West #12990 SAMPLER(S) - PLEASE PRINT/SIGN NAME
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☒ OTHER report to MDLs

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

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	PFAS/PFOS **
	DATE	TIME											
40240.01	9-13-22	950	MW-104s, 22913	dw	3								
02.03	9/13/2022	1058	~~MW-106SR, 22913~~										
03.04		1200	MW-112s, 22913										
04.05		1258	MW-110s, 22913										
05.06		9:27	Field Blank										
06.07		1333	MW-114s 22913										
07.08			Dupel 22913										

Certifications

☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York
☐ Other

Special Instructions

**** - 28 Compound List**

report down to MDLs

RELINQUISHED BY: CLS/AE ☐ Sampler DATE 9/13/22 TIME 14:45
SIGNATURE/ORGANIZATION
RECEIVED BY: [Signature] DATE 9/13/22 TIME 19:41
SIGNATURE/ORGANIZATION
RELINQUISHED BY: [Signature] DATE 9/13/22 TIME 15:15
SIGNATURE/ORGANIZATION

RELINQUISHED BY: DATE TIME
SIGNATURE/ORGANIZATION
RECEIVED BY: [Signature] DATE 9/13/22 TIME 15:35
SIGNATURE/ORGANIZATION
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS
NOTES: TEMP. ON ARRIVAL 4.4



Quality Control Report

Report ID: QC-S40270-01
Generated on 09/21/2022

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Report Summary

Lab Sample ID(s): S40270.01-S40270.06
Project: RACER Flint West #12990
Submitted Date/Time: 09/14/2022 12:50
Sampled by: Unknown
P.O. #: 795930

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-7)
Prep Batch Summary (Pages 8-10)
Surrogates per Lab Sample (Pages 11-14)
Surrogates per QC Sample (Page 15)
Batch QC Results (Pages 16-27)

Report Flag Descriptions

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

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

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S40270.01

Sample Tag: MW-117s - 22913

Collected Date/Time: 09/13/2022 14:30

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	09/14/22 13:30	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	09/14/22 13:20	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
<i>Metals</i>						
Arsenic, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 12:44	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 12:44	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 12:44	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 12:44	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 12:44	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 12:44	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 16:03	220919A9	VF220919W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40270.02

Sample Tag: MW-103s - 22913

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Chromium VI, Dissolved	SM3500-Cr B	09/14/22 14:00	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	09/14/22 13:35	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
Metals						
Arsenic, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 12:20	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 12:20	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 12:20	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 12:20	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 12:20	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 12:20	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 15:44	220919A9	VF220919W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40270.03

Sample Tag: MW-103s - 22913 (MS)

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	09/14/22 14:05	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	09/14/22 13:40	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
<i>Metals</i>						
Arsenic, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 12:21	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 12:21	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 12:21	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 12:21	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 12:21	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 12:21	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 12:06	220919A9	VF220919W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40270.04

Sample Tag: MW-103s - 22913 (MSD)

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	09/14/22 14:10	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	09/14/22 13:45	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
<i>Metals</i>						
Arsenic, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 12:22	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 12:22	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 12:22	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 12:22	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 12:22	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 12:22	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 12:26	220919A9	VF220919W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40270.05

Sample Tag: MW-106sr - 22913

Collected Date/Time: 09/13/2022 15:40

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	09/14/22 14:15	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	09/14/22 13:50	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
<i>Metals</i>						
Arsenic, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 13:00	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 13:00	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 13:00	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 13:00	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 13:00	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 13:00	MT4-22-0915A	MTD-091522-2	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 16:23	220919A9	VF220919W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40270.06

Sample Tag: Equip Blank (EB)

Collected Date/Time: 09/13/2022 15:45

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Chromium VI, Dissolved	SM3500-Cr B	09/14/22 14:20	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
Chromium VI	SM3500-Cr B	09/14/22 13:55	CHR220914-W1	CHR220914-W1	No	BLK/LCS/MS/MSD/DU
<i>Metals</i>						
Arsenic, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Arsenic	E200.8	09/15/22 11:52	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Chromium	E200.8	09/15/22 11:52	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Copper	E200.8	09/15/22 11:52	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Lead	E200.8	09/15/22 11:52	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Selenium	E200.8	09/15/22 11:52	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
Zinc	E200.8	09/15/22 11:52	MT4-22-0915A	MTD-091522-1	No	BLK/LCS/MS/MSD
<i>Organics - Volatiles</i>						
Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 15:25	220919A9	VF220919W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: CHR220914-W1

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40270.01	Chromium VI, Dissolved	SM3500-Cr B	09/14/22 13:30	CHR220914-W1
S40270.01	Chromium VI	SM3500-Cr B	09/14/22 13:20	CHR220914-W1
S40270.02	Chromium VI, Dissolved	SM3500-Cr B	09/14/22 14:00	CHR220914-W1
S40270.02	Chromium VI	SM3500-Cr B	09/14/22 13:35	CHR220914-W1
S40270.03	Chromium VI, Dissolved	SM3500-Cr B	09/14/22 14:05	CHR220914-W1
S40270.03	Chromium VI	SM3500-Cr B	09/14/22 13:40	CHR220914-W1
S40270.04	Chromium VI, Dissolved	SM3500-Cr B	09/14/22 14:10	CHR220914-W1
S40270.04	Chromium VI	SM3500-Cr B	09/14/22 13:45	CHR220914-W1
S40270.05	Chromium VI, Dissolved	SM3500-Cr B	09/14/22 14:15	CHR220914-W1
S40270.05	Chromium VI	SM3500-Cr B	09/14/22 13:50	CHR220914-W1
S40270.06	Chromium VI, Dissolved	SM3500-Cr B	09/14/22 14:20	CHR220914-W1
S40270.06	Chromium VI	SM3500-Cr B	09/14/22 13:55	CHR220914-W1

Metals, Prep Batch ID: MTD-091522-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40270.01	Arsenic, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A
S40270.01	Arsenic	E200.8	09/15/22 12:44	MT4-22-0915A
S40270.01	Chromium, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A
S40270.01	Chromium	E200.8	09/15/22 12:44	MT4-22-0915A
S40270.01	Copper, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A
S40270.01	Copper	E200.8	09/15/22 12:44	MT4-22-0915A
S40270.01	Lead, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A
S40270.01	Lead	E200.8	09/15/22 12:44	MT4-22-0915A
S40270.01	Selenium, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A
S40270.01	Selenium	E200.8	09/15/22 12:44	MT4-22-0915A
S40270.01	Zinc, Dissolved	E200.8	09/15/22 12:46	MT4-22-0915A
S40270.01	Zinc	E200.8	09/15/22 12:44	MT4-22-0915A
S40270.02	Arsenic, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A
S40270.02	Arsenic	E200.8	09/15/22 12:20	MT4-22-0915A
S40270.02	Chromium, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A
S40270.02	Chromium	E200.8	09/15/22 12:20	MT4-22-0915A
S40270.02	Copper, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A
S40270.02	Copper	E200.8	09/15/22 12:20	MT4-22-0915A
S40270.02	Lead, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A
S40270.02	Lead	E200.8	09/15/22 12:20	MT4-22-0915A
S40270.02	Selenium, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A
S40270.02	Selenium	E200.8	09/15/22 12:20	MT4-22-0915A
S40270.02	Zinc, Dissolved	E200.8	09/15/22 12:48	MT4-22-0915A
S40270.02	Zinc	E200.8	09/15/22 12:20	MT4-22-0915A
S40270.03	Arsenic, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A
S40270.03	Arsenic	E200.8	09/15/22 12:21	MT4-22-0915A
S40270.03	Chromium, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A
S40270.03	Chromium	E200.8	09/15/22 12:21	MT4-22-0915A
S40270.03	Copper, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A
S40270.03	Copper	E200.8	09/15/22 12:21	MT4-22-0915A
S40270.03	Lead, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A
S40270.03	Lead	E200.8	09/15/22 12:21	MT4-22-0915A
S40270.03	Selenium, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A
S40270.03	Selenium	E200.8	09/15/22 12:21	MT4-22-0915A

QC Report - Prep Batch Summary

Metals, Prep Batch ID: MTD-091522-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40270.03	Zinc, Dissolved	E200.8	09/15/22 12:50	MT4-22-0915A
S40270.03	Zinc	E200.8	09/15/22 12:21	MT4-22-0915A
S40270.04	Arsenic, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A
S40270.04	Arsenic	E200.8	09/15/22 12:22	MT4-22-0915A
S40270.04	Chromium, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A
S40270.04	Chromium	E200.8	09/15/22 12:22	MT4-22-0915A
S40270.04	Copper, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A
S40270.04	Copper	E200.8	09/15/22 12:22	MT4-22-0915A
S40270.04	Lead, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A
S40270.04	Lead	E200.8	09/15/22 12:22	MT4-22-0915A
S40270.04	Selenium, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A
S40270.04	Selenium	E200.8	09/15/22 12:22	MT4-22-0915A
S40270.04	Zinc, Dissolved	E200.8	09/15/22 12:51	MT4-22-0915A
S40270.04	Zinc	E200.8	09/15/22 12:22	MT4-22-0915A
S40270.06	Arsenic, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A
S40270.06	Arsenic	E200.8	09/15/22 11:52	MT4-22-0915A
S40270.06	Chromium, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A
S40270.06	Chromium	E200.8	09/15/22 11:52	MT4-22-0915A
S40270.06	Copper, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A
S40270.06	Copper	E200.8	09/15/22 11:52	MT4-22-0915A
S40270.06	Lead, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A
S40270.06	Lead	E200.8	09/15/22 11:52	MT4-22-0915A
S40270.06	Selenium, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A
S40270.06	Selenium	E200.8	09/15/22 11:52	MT4-22-0915A
S40270.06	Zinc, Dissolved	E200.8	09/15/22 11:53	MT4-22-0915A
S40270.06	Zinc	E200.8	09/15/22 11:52	MT4-22-0915A

Metals, Prep Batch ID: MTD-091522-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40270.05	Arsenic, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A
S40270.05	Arsenic	E200.8	09/15/22 13:00	MT4-22-0915A
S40270.05	Chromium, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A
S40270.05	Chromium	E200.8	09/15/22 13:00	MT4-22-0915A
S40270.05	Copper, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A
S40270.05	Copper	E200.8	09/15/22 13:00	MT4-22-0915A
S40270.05	Lead, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A
S40270.05	Lead	E200.8	09/15/22 13:00	MT4-22-0915A
S40270.05	Selenium, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A
S40270.05	Selenium	E200.8	09/15/22 13:00	MT4-22-0915A
S40270.05	Zinc, Dissolved	E200.8	09/15/22 13:03	MT4-22-0915A
S40270.05	Zinc	E200.8	09/15/22 13:00	MT4-22-0915A

Organics - Volatiles, Prep Batch ID: VF220919W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40270.01	Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 16:03	220919A9
S40270.02	Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 15:44	220919A9
S40270.03	Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 12:06	220919A9

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40270.04	Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 12:26	220919A9
S40270.05	Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 16:23	220919A9
S40270.06	Volatile Organics - DEQ List	SW5030C/8260C	09/19/22 15:25	220919A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40270.01

Sample Tag: MW-117s - 22913

Collected Date/Time: 09/13/2022 14:30

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220919A9, Run Date: 09/19/2022 16:03, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		104.4	80.0	124.0
1,2-Dichloroethane-D4		109.3	72.0	125.0
Toluene-D8		101.4	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40270.02

Sample Tag: MW-103s - 22913

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220919A9, Run Date: 09/19/2022 15:44, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		103.2	80.0	124.0
1,2-Dichloroethane-D4		104.3	72.0	125.0
Toluene-D8		100.7	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40270.05

Sample Tag: MW-106sr - 22913

Collected Date/Time: 09/13/2022 15:40

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220919A9, Run Date: 09/19/2022 16:23, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.7	80.0	124.0
1,2-Dichloroethane-D4		107.7	72.0	125.0
Toluene-D8		101.5	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40270.06

Sample Tag: Equip Blank (EB)

Collected Date/Time: 09/13/2022 15:45

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220919A9, Run Date: 09/19/2022 15:25, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.8	80.0	124.0
1,2-Dichloroethane-D4		104.6	72.0	125.0
Toluene-D8		100.6	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220919W1

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

Blank (BLK)

Lab Sample ID: 220919A9.BLKW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 13:24, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.2	80.0	124.0
1,2-Dichloroethane-D4		101.4	72.0	125.0
Toluene-D8		101.6	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.4	80.0	124.0
1,2-Dichloroethane-D4		101.2	72.0	125.0
Toluene-D8		101.4	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220919A9.LCSDW19A, Parent Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:46, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.6	80.0	124.0
1,2-Dichloroethane-D4		101.0	72.0	125.0
Toluene-D8		101.5	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 220919A9.4027003M, Parent Sample ID: S40270.02

Run in Batch: 220919A9, Run Date: 09/19/2022 12:06, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.1	80.0	124.0
1,2-Dichloroethane-D4		97.2	72.0	125.0
Toluene-D8		101.4	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220919A9.4027004N, Parent Sample ID: 220919A9.4027003M

Run in Batch: 220919A9, Run Date: 09/19/2022 12:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		104.3	80.0	124.0
1,2-Dichloroethane-D4		96.8	72.0	125.0
Toluene-D8		101.5	89.0	112.0

QC Report - Batch QC Results

Inorganics, Prep Batch ID: CHR220914-W1

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: CHR220914-W1.LRB1

Run in Batch: CHR220914-W1, Run Date: 09/14/2022 13:00, Prep Date: 09/14/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Chromium VI		ND	0.01	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: CHR220914-W1.LCS1

Run in Batch: CHR220914-W1, Run Date: 09/14/2022 13:15, Prep Date: 09/14/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI		105	90	110

Matrix Spike (MS)

Lab Sample ID: CHR220914-W1.MS1, Parent Sample ID: S40270.02

Run in Batch: CHR220914-W1, Run Date: 09/14/2022 13:40, Prep Date: 09/14/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI		98	80	120

Matrix Spike (MS)

Lab Sample ID: CHR220914-W1.MS2, Parent Sample ID: S40270.03

Run in Batch: CHR220914-W1, Run Date: 09/14/2022 14:05, Prep Date: 09/14/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Chromium VI	*	7	80	120

Matrix Spike Duplicate (MSD)

Lab Sample ID: CHR220914-W1.MSD1, Parent Sample ID: CHR220914-W1.MS1

Run in Batch: CHR220914-W1, Run Date: 09/14/2022 13:45, Prep Date: 09/14/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chromium VI		96	80	120	2	15

Matrix Spike Duplicate (MSD)

Lab Sample ID: CHR220914-W1.MSD2, Parent Sample ID: CHR220914-W1.MS2

Run in Batch: CHR220914-W1, Run Date: 09/14/2022 14:10, Prep Date: 09/14/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Chromium VI	*	12	80	120	34	15

Duplicate (DUP)

Lab Sample ID: CHR220914-W1.DP1, Parent Sample ID: S40270.01

Run in Batch: CHR220914-W1, Run Date: 09/14/2022 13:25, Prep Date: 09/14/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Chromium VI		<1	15

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-091522-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-22-0915A.019.LRB

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 11:45, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Selenium		ND	0.001	mg/L
Zinc		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-0915A.018.LCS

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 11:43, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		101	85	115
Chromium		99	85	115
Copper		101	85	115
Lead		97	85	115
Selenium		101	85	115
Zinc		102	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-22-0915A.038.MS, Parent Sample ID: S40270.02

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:21, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		106	75	125
Chromium		101	75	125
Copper		98	75	125
Lead		96	75	125
Selenium		97	75	125
Zinc		105	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-22-0915A.061.MS, Parent Sample ID: S40270.02

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:50, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		106	75	125
Chromium		102	75	125
Copper		100	75	125
Lead		101	75	125
Selenium		100	75	125
Zinc		105	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0915A.039.MSD, Parent Sample ID: MT4-22-0915A.038.MS

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:22, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		104	75	125	2	20
Chromium		100	75	125	0	20

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-091522-1 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: MT4-22-0915A.039.MSD, Parent Sample ID: MT4-22-0915A.038.MS

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:22, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Copper		99	75	125	1	20
Lead		101	75	125	4	20
Selenium		100	75	125	3	20
Zinc		104	75	125	2	20

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0915A.062.MSD, Parent Sample ID: MT4-22-0915A.061.MS

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:51, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		108	75	125	2	20
Chromium		104	75	125	2	20
Copper		101	75	125	1	20
Lead		99	75	125	2	20
Selenium		107	75	125	7	20
Zinc		105	75	125	0	20

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-091522-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-22-0915A.066.LRB

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:56, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Chromium		ND	0.001	mg/L
Copper		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Selenium		ND	0.001	mg/L
Zinc		ND	0.001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-22-0915A.065.LCS

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 12:55, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		101	85	115
Chromium		95	85	115
Copper		99	85	115
Lead		97	85	115
Selenium		99	85	115
Zinc		102	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-22-0915A.071.MS, Parent Sample ID: S40270.05

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 13:05, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		112	75	125
Chromium		104	75	125
Copper		100	75	125
Lead		97	75	125
Selenium		114	75	125
Zinc		110	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-22-0915A.072.MSD, Parent Sample ID: MT4-22-0915A.071.MS

Run in Batch: MT4-22-0915A, Run Date: 09/15/2022 13:06, Prep Date: 09/15/2022, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		114	75	125	2	20
Chromium		102	75	125	2	20
Copper		101	75	125	0	20
Lead		97	75	125	0	20
Selenium		114	75	125	0	20
Zinc		110	75	125	0	20

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220919W1

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

Blank (BLK)

Lab Sample ID: 220919A9.BLKW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 13:24, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Blank (BLK) (continued)

Lab Sample ID: 220919A9.BLKW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 13:24, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		101.1	67.4	121.2
Acetone		93.6	29.9	161.5
Methyl iodide		98.0	68.8	116.4
Carbon disulfide		91.6	63.8	137.4
tert-Methyl butyl ether (MTBE)		102.6	73.2	122.4
Acrylonitrile		108.3	69.9	128.9
2-Butanone (MEK)		100.7	44.0	134.4
Dichlorodifluoromethane		96.6	10.0	222.8
Chloromethane		101.7	23.8	166.5
Vinyl chloride		97.2	43.5	149.1
Bromomethane		100.2	56.8	151.3
Chloroethane		90.1	53.4	149.4
Trichlorofluoromethane		94.6	59.7	151.8
1,1-Dichloroethene		89.6	69.6	139.4
Methylene chloride		100.1	73.3	121.1
trans-1,2-Dichloroethene		93.9	73.6	129.3
1,1-Dichloroethane		96.7	71.5	126.2
cis-1,2-Dichloroethene		97.2	76.6	122.1
Tetrahydrofuran		99.0	59.0	117.9
Chloroform		97.8	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		100.1	78.2	120.8
1,1,1-Trichloroethane		91.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		106.2	71.6	125.2
2-Hexanone		108.5	55.4	136.9
Carbon tetrachloride		92.4	72.6	133.0
Benzene		97.5	79.9	124.9
1,2-Dichloroethane		98.2	76.0	126.3
Trichloroethene		95.4	79.7	124.2
1,2-Dichloropropane		100.2	78.6	126.4
Bromodichloromethane		103.7	80.4	128.2
Dibromomethane		103.7	76.9	122.1
cis-1,3-Dichloropropene		105.6	79.8	129.9
Toluene		97.1	79.8	124.5
trans-1,3-Dichloropropene		106.9	74.0	131.3
1,1,2-Trichloroethane		101.8	78.7	123.1
Tetrachloroethene		94.1	74.5	124.5
trans-1,4-Dichloro-2-butene		120.8	68.6	135.4
Dibromochloromethane		110.6	74.6	127.2
1,2-Dibromoethane		107.6	70.3	133.7
Chlorobenzene		102.2	79.2	122.7
1,1,1,2-Tetrachloroethane		105.3	80.3	128.2
Ethylbenzene		100.5	79.5	129.1
p,m-Xylene		100.8	79.4	132.2
o-Xylene		101.9	80.2	131.0
Styrene		104.4	69.5	126.7
Isopropylbenzene		98.0	74.4	121.5
Bromoform		112.8	69.4	128.0
1,1,2,2-Tetrachloroethane		107.3	79.8	126.3
1,2,3-Trichloropropane		107.3	78.3	138.8
n-Propylbenzene		100.5	82.0	130.7
Bromobenzene		106.1	78.7	124.6
1,3,5-Trimethylbenzene		100.6	81.3	128.9
tert-Butylbenzene		98.7	80.7	128.9
1,2,4-Trimethylbenzene		102.7	81.4	130.8
sec-Butylbenzene		97.8	77.4	129.8
p-Isopropyltoluene		100.1	79.8	137.5
1,3-Dichlorobenzene		103.8	77.0	131.3
1,4-Dichlorobenzene		102.2	20.7	137.7
1,2-Dichlorobenzene		104.7	10.0	166.2
1,2,3-Trimethylbenzene		104.9	76.3	124.2
n-Butylbenzene		99.6	80.0	133.3
Hexachloroethane		112.1	23.8	138.1
1,2-Dibromo-3-chloropropane		114.9	21.2	189.4
1,2,4-Trichlorobenzene		104.5	27.4	143.4
1,2,3-Trichlorobenzene		106.0	75.4	131.4
Naphthalene		109.8	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		119.3	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220919A9.LCSDW19A, Parent Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:46, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		98.6	67.4	121.2	2.5	30.0
Acetone		89.3	29.9	161.5	4.7	30.0
Methyl iodide		95.1	68.8	116.4	3.0	30.0
Carbon disulfide		88.8	63.8	137.4	3.1	30.0
tert-Methyl butyl ether (MTBE)		101.2	73.2	122.4	1.4	30.0
Acrylonitrile		101.2	69.9	128.9	6.8	30.0
2-Butanone (MEK)		94.6	44.0	134.4	6.2	30.0
Dichlorodifluoromethane		97.2	10.0	222.8	0.6	30.0
Chloromethane		96.2	23.8	166.5	5.6	30.0
Vinyl chloride		94.9	43.5	149.1	2.4	30.0
Bromomethane		98.1	56.8	151.3	2.1	30.0
Chloroethane		90.1	53.4	149.4	0.0	30.0
Trichlorofluoromethane		90.7	59.7	151.8	4.2	30.0
1,1-Dichloroethene		86.7	69.6	139.4	3.3	30.0
Methylene chloride		96.5	73.3	121.1	3.7	30.0
trans-1,2-Dichloroethene		91.2	73.6	129.3	2.9	30.0
1,1-Dichloroethane		92.9	71.5	126.2	4.1	30.0
cis-1,2-Dichloroethene		93.9	76.6	122.1	3.5	30.0
Tetrahydrofuran		89.1	59.0	117.9	10.6	30.0
Chloroform		94.0	78.4	124.0	4.0	30.0
Bromochloromethane		97.6	78.2	120.8	2.5	30.0
1,1,1-Trichloroethane		88.4	79.4	130.9	3.7	30.0
4-Methyl-2-pentanone (MIBK)		102.0	71.6	125.2	4.0	30.0
2-Hexanone		102.6	55.4	136.9	5.5	30.0
Carbon tetrachloride		90.4	72.6	133.0	2.1	30.0
Benzene		95.4	79.9	124.9	2.2	30.0
1,2-Dichloroethane		98.1	76.0	126.3	0.1	30.0
Trichloroethene		93.5	79.7	124.2	2.0	30.0
1,2-Dichloropropane		98.0	78.6	126.4	2.2	30.0
Bromodichloromethane		101.8	80.4	128.2	1.8	30.0
Dibromomethane		103.4	76.9	122.1	0.3	30.0
cis-1,3-Dichloropropene		103.9	79.8	129.9	1.6	30.0
Toluene		95.9	79.8	124.5	1.3	30.0
trans-1,3-Dichloropropene		105.4	74.0	131.3	1.5	30.0
1,1,2-Trichloroethane		102.0	78.7	123.1	0.2	30.0
Tetrachloroethene		92.5	74.5	124.5	1.7	30.0
trans-1,4-Dichloro-2-butene		118.6	68.6	135.4	1.9	30.0
Dibromochloromethane		109.5	74.6	127.2	1.0	30.0
1,2-Dibromoethane		108.0	70.3	133.7	0.4	30.0
Chlorobenzene		101.9	79.2	122.7	0.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220919A9.LCSDW19A, Parent Sample ID: 220919A9.LCSW19A

Run in Batch: 220919A9, Run Date: 09/19/2022 11:46, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		105.3	80.3	128.2	0.0	30.0
Ethylbenzene		99.6	79.5	129.1	1.0	30.0
p,m-Xylene		100.2	79.4	132.2	0.6	30.0
o-Xylene		101.9	80.2	131.0	0.0	30.0
Styrene		102.4	69.5	126.7	2.0	30.0
Isopropylbenzene		98.3	74.4	121.5	0.3	30.0
Bromoform		112.9	69.4	128.0	0.1	30.0
1,1,2,2-Tetrachloroethane		106.8	79.8	126.3	0.5	30.0
1,2,3-Trichloropropane		107.7	78.3	138.8	0.4	30.0
n-Propylbenzene		100.0	82.0	130.7	0.5	30.0
Bromobenzene		105.6	78.7	124.6	0.5	30.0
1,3,5-Trimethylbenzene		100.9	81.3	128.9	0.3	30.0
tert-Butylbenzene		99.2	80.7	128.9	0.5	30.0
1,2,4-Trimethylbenzene		102.0	81.4	130.8	0.7	30.0
sec-Butylbenzene		97.8	77.4	129.8	0.0	30.0
p-Isopropyltoluene		99.9	79.8	137.5	0.2	30.0
1,3-Dichlorobenzene		101.6	77.0	131.3	2.1	30.0
1,4-Dichlorobenzene		103.6	20.7	137.7	1.3	30.0
1,2-Dichlorobenzene		102.9	10.0	166.2	1.8	30.0
1,2,3-Trimethylbenzene		104.0	76.3	124.2	0.9	30.0
n-Butylbenzene		100.3	80.0	133.3	0.8	30.0
Hexachloroethane		109.2	23.8	138.1	2.6	30.0
1,2-Dibromo-3-chloropropane		112.1	21.2	189.4	2.4	30.0
1,2,4-Trichlorobenzene		107.7	27.4	143.4	3.0	30.0
1,2,3-Trichlorobenzene		109.2	75.4	131.4	3.0	30.0
Naphthalene		111.1	32.9	135.8	1.2	30.0
2-Methylnaphthalene		126.6	25.5	165.5	6.0	30.0

Matrix Spike (MS)

Lab Sample ID: 220919A9.4027003M, Parent Sample ID: S40270.02

Run in Batch: 220919A9, Run Date: 09/19/2022 12:06, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		101.7	67.4	121.2
Acetone		94.3	29.9	161.5
Methyl iodide		103.1	68.8	116.4
Carbon disulfide		99.5	63.8	137.4
tert-Methyl butyl ether (MTBE)		105.4	73.2	122.4
Acrylonitrile		109.0	69.9	128.9
2-Butanone (MEK)		103.3	44.0	134.4
Dichlorodifluoromethane		103.6	10.0	222.8
Chloromethane		104.2	23.8	166.5
Vinyl chloride		106.7	43.5	149.1
Bromomethane		102.6	56.8	151.3
Chloroethane		97.2	53.4	149.4
Trichlorofluoromethane		105.6	59.7	151.8
1,1-Dichloroethene		98.5	69.6	139.4

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: 220919A9.4027003M, Parent Sample ID: S40270.02

Run in Batch: 220919A9, Run Date: 09/19/2022 12:06, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		104.1	73.3	121.1
trans-1,2-Dichloroethene		100.4	73.6	129.3
1,1-Dichloroethane		102.2	71.5	126.2
cis-1,2-Dichloroethene		101.7	76.6	122.1
Tetrahydrofuran		98.2	59.0	117.9
Chloroform		102.4	78.4	124.0
Bromochloromethane		103.3	78.2	120.8
1,1,1-Trichloroethane		100.1	79.4	130.9
4-Methyl-2-pentanone (MIBK)		118.0	71.6	125.2
2-Hexanone		122.6	55.4	136.9
Carbon tetrachloride		103.7	72.6	133.0
Benzene		104.1	79.9	124.9
1,2-Dichloroethane		102.0	76.0	126.3
Trichloroethene		106.4	79.7	124.2
1,2-Dichloropropane		104.3	78.6	126.4
Bromodichloromethane		106.4	80.4	128.2
Dibromomethane		107.9	76.9	122.1
cis-1,3-Dichloropropene		109.2	79.8	129.9
Toluene		104.2	79.8	124.5
trans-1,3-Dichloropropene		109.2	74.0	131.3
1,1,2-Trichloroethane		99.8	78.7	123.1
Tetrachloroethene		103.3	74.5	124.5
trans-1,4-Dichloro-2-butene		130.6	68.6	135.4
Dibromochloromethane		115.6	74.6	127.2
1,2-Dibromoethane		113.7	70.3	133.7
Chlorobenzene		110.9	79.2	122.7
1,1,1,2-Tetrachloroethane		112.7	80.3	128.2
Ethylbenzene		110.0	79.5	129.1
p,m-Xylene		109.1	79.4	132.2
o-Xylene		110.6	80.2	131.0
Styrene		110.4	69.5	126.7
Isopropylbenzene		109.3	74.4	121.5
Bromoform		117.1	69.4	128.0
1,1,2,2-Tetrachloroethane		114.4	79.8	126.3
1,2,3-Trichloropropane		115.8	78.3	138.8
n-Propylbenzene		110.1	82.0	130.7
Bromobenzene		112.3	78.7	124.6
1,3,5-Trimethylbenzene		109.5	81.3	128.9
tert-Butylbenzene		109.7	80.7	128.9
1,2,4-Trimethylbenzene		111.6	81.4	130.8
sec-Butylbenzene		107.6	77.4	129.8
p-Isopropyltoluene		108.9	79.8	137.5
1,3-Dichlorobenzene		109.1	77.0	131.3
1,4-Dichlorobenzene		110.6	20.7	137.7
1,2-Dichlorobenzene		111.7	10.0	166.2
1,2,3-Trimethylbenzene		111.5	76.3	124.2

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: 220919A9.4027003M, Parent Sample ID: S40270.02

Run in Batch: 220919A9, Run Date: 09/19/2022 12:06, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		109.6	80.0	133.3
Hexachloroethane		119.5	23.8	138.1
1,2-Dibromo-3-chloropropane		127.6	21.2	189.4
1,2,4-Trichlorobenzene		114.8	27.4	143.4
1,2,3-Trichlorobenzene		116.3	75.4	131.4
Naphthalene		125.2	32.9	135.8
2-Methylnaphthalene		154.3	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220919A9.4027004N, Parent Sample ID: 220919A9.4027003M

Run in Batch: 220919A9, Run Date: 09/19/2022 12:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		100.6	67.4	121.2	1.0	30.0
Acetone		88.1	29.9	161.5	6.2	30.0
Methyl iodide		102.5	68.8	116.4	0.6	30.0
Carbon disulfide		99.1	63.8	137.4	0.4	30.0
tert-Methyl butyl ether (MTBE)		105.2	73.2	122.4	0.2	30.0
Acrylonitrile		105.3	69.9	128.9	3.5	30.0
2-Butanone (MEK)		98.4	44.0	134.4	4.8	30.0
Dichlorodifluoromethane		101.6	10.0	222.8	1.9	30.0
Chloromethane		103.3	23.8	166.5	0.9	30.0
Vinyl chloride		107.2	43.5	149.1	0.4	30.0
Bromomethane		103.0	56.8	151.3	0.4	30.0
Chloroethane		97.5	53.4	149.4	0.3	30.0
Trichlorofluoromethane		104.0	59.7	151.8	1.5	30.0
1,1-Dichloroethene		96.6	69.6	139.4	2.0	30.0
Methylene chloride		103.7	73.3	121.1	0.3	30.0
trans-1,2-Dichloroethene		98.7	73.6	129.3	1.7	30.0
1,1-Dichloroethane		100.2	71.5	126.2	2.0	30.0
cis-1,2-Dichloroethene		100.1	76.6	122.1	1.6	30.0
Tetrahydrofuran		95.6	59.0	117.9	2.7	30.0
Chloroform		101.2	78.4	124.0	1.2	30.0
Bromochloromethane		101.9	78.2	120.8	1.4	30.0
1,1,1-Trichloroethane		98.0	79.4	130.9	2.2	30.0
4-Methyl-2-pentanone (MIBK)		112.9	71.6	125.2	4.5	30.0
2-Hexanone		114.5	55.4	136.9	6.9	30.0
Carbon tetrachloride		101.2	72.6	133.0	2.4	30.0
Benzene		102.5	79.9	124.9	1.5	30.0
1,2-Dichloroethane		101.8	76.0	126.3	0.2	30.0
Trichloroethene		105.8	79.7	124.2	0.6	30.0
1,2-Dichloropropane		102.8	78.6	126.4	1.4	30.0
Bromodichloromethane		106.8	80.4	128.2	0.3	30.0
Dibromomethane		107.5	76.9	122.1	0.3	30.0
cis-1,3-Dichloropropene		108.2	79.8	129.9	0.9	30.0
Toluene		102.1	79.8	124.5	2.0	30.0
trans-1,3-Dichloropropene		109.0	74.0	131.3	0.2	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220919W1 (continued)

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

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220919A9.4027004N, Parent Sample ID: 220919A9.4027003M

Run in Batch: 220919A9, Run Date: 09/19/2022 12:26, Prep Date: 09/19/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		105.4	78.7	123.1	5.5	30.0
Tetrachloroethene		101.8	74.5	124.5	1.5	30.0
trans-1,4-Dichloro-2-butene		124.3	68.6	135.4	5.0	30.0
Dibromochloromethane		111.8	74.6	127.2	3.3	30.0
1,2-Dibromoethane		110.1	70.3	133.7	3.3	30.0
Chlorobenzene		107.4	79.2	122.7	3.1	30.0
1,1,1,2-Tetrachloroethane		110.6	80.3	128.2	1.9	30.0
Ethylbenzene		106.5	79.5	129.1	3.2	30.0
p,m-Xylene		107.0	79.4	132.2	2.0	30.0
o-Xylene		108.5	80.2	131.0	1.9	30.0
Styrene		108.8	69.5	126.7	1.4	30.0
Isopropylbenzene		106.3	74.4	121.5	2.8	30.0
Bromoform		115.8	69.4	128.0	1.1	30.0
1,1,2,2-Tetrachloroethane		111.7	79.8	126.3	2.5	30.0
1,2,3-Trichloropropane		112.2	78.3	138.8	3.2	30.0
n-Propylbenzene		107.1	82.0	130.7	2.8	30.0
Bromobenzene		110.6	78.7	124.6	1.5	30.0
1,3,5-Trimethylbenzene		106.3	81.3	128.9	3.0	30.0
tert-Butylbenzene		105.4	80.7	128.9	4.0	30.0
1,2,4-Trimethylbenzene		108.6	81.4	130.8	2.7	30.0
sec-Butylbenzene		106.3	77.4	129.8	1.2	30.0
p-Isopropyltoluene		107.1	79.8	137.5	1.7	30.0
1,3-Dichlorobenzene		109.0	77.0	131.3	0.1	30.0
1,4-Dichlorobenzene		109.5	20.7	137.7	1.0	30.0
1,2-Dichlorobenzene		110.9	10.0	166.2	0.7	30.0
1,2,3-Trimethylbenzene		110.6	76.3	124.2	0.7	30.0
n-Butylbenzene		108.4	80.0	133.3	1.1	30.0
Hexachloroethane		116.0	23.8	138.1	2.9	30.0
1,2-Dibromo-3-chloropropane		124.7	21.2	189.4	2.3	30.0
1,2,4-Trichlorobenzene		117.4	27.4	143.4	2.2	30.0
1,2,3-Trichlorobenzene		123.4	75.4	131.4	5.9	30.0
Naphthalene		127.5	32.9	135.8	1.8	30.0
2-Methylnaphthalene	*	167.6	25.5	165.5	8.2	30.0



C.O.C. PAGE # 1 OF 2

INVOICE TO

CONTACT NAME		Monica Wallingford		☐ SAME	
COMPANY					
Revitalizing Auto Communities Environmental Response (RACER) Trust					
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Quality Control Report

Report ID: QC-S40271-01
Generated on 10/11/2022

Report to

Attention: Rodney Abke
Applied Ecosystems
G4300 S. Saginaw Street
Burton, MI 48529

Phone: 810-715-2525 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Report Summary

Lab Sample ID(s): S40271.01-S40271.07
Project: RACER Flint West #12990
Submitted Date/Time: 09/14/2022 12:50
Sampled by: Unknown
P.O. #: 795930

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-8)
Prep Batch Summary (Page 9)
Internal Standards per Lab Sample (Pages 10-14)
Internal Standards per QC Sample (Pages 15-19)
Batch QC Results (Pages 20-24)

Report Flag Descriptions

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

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

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S40271.01

Sample Tag: MW-117s, 22913

Collected Date/Time: 09/13/2022 14:30

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 21:28	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40271.02

Sample Tag: MW-103s, 22913

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 21:47	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40271.03

Sample Tag: MW-103s, 22913 (MS)

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 22:07	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40271.04

Sample Tag: MW-103s, 22913 (MSD)

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 22:26	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40271.05

Sample Tag: MW-106sr, 22913

Collected Date/Time: 09/13/2022 15:40

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 22:46	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40271.06

Sample Tag: Equip Blank (EB)

Collected Date/Time: 09/13/2022 15:45

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 23:05	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40271.07

Sample Tag: Trip Blank

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	09/30/22 23:25	AK220930B	PF220929W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF220929W1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40271.01	28 PFAs	ASTMD7979-19M	09/30/22 21:28	AK220930B
S40271.02	28 PFAs	ASTMD7979-19M	09/30/22 21:47	AK220930B
S40271.03	28 PFAs	ASTMD7979-19M	09/30/22 22:07	AK220930B
S40271.04	28 PFAs	ASTMD7979-19M	09/30/22 22:26	AK220930B
S40271.05	28 PFAs	ASTMD7979-19M	09/30/22 22:46	AK220930B
S40271.06	28 PFAs	ASTMD7979-19M	09/30/22 23:05	AK220930B
S40271.07	28 PFAs	ASTMD7979-19M	09/30/22 23:25	AK220930B

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40271.01

Sample Tag: MW-117s, 22913

Collected Date/Time: 09/13/2022 14:30

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 21:28, Matrix: WW, Dilution: 2.02

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		141.6	50.0	150.0
M2-6:2FTSA		123.2	50.0	150.0
M2-8:2FTSA		106.6	50.0	150.0
M2PFTeDA		105.3	12.0	218.0
M3PFBS		109.1	50.0	150.0
M3PFHxS		109.9	50.0	150.0
M4PFHpA		110.0	50.0	150.0
M5PFHxA		110.3	50.0	150.0
M5PFPeA		110.7	50.0	150.0
M6PFDA		130.9	50.0	150.0
M7PFUnDA		111.8	50.0	150.0
M8FOSA		100.4	50.0	150.0
M8PFOA		104.5	50.0	150.0
M8PFOS		115.9	50.0	150.0
M9-PFNA		102.4	50.0	150.0
MPFBA		112.3	50.0	150.0
MPFDoDA		102.0	50.0	150.0
d3N-MeFOSAA		109.4	50.0	150.0
d5EtFOSAA		109.8	50.0	150.0
MHFPO-DA		114.6	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40271.02

Sample Tag: MW-103s, 22913

Collected Date/Time: 09/13/2022 15:10

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 21:47, Matrix: WW, Dilution: 1.91

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	481.2	50.0	150.0
M2-6:2FTSA	*	297.5	50.0	150.0
M2-8:2FTSA	*	186.6	50.0	150.0
M2PFTeDA		118.3	12.0	218.0
M3PFBS		115.6	50.0	150.0
M3PFHxS		109.4	50.0	150.0
M4PFHpA		138.6	50.0	150.0
M5PFHxA		111.2	50.0	150.0
M5PFPeA		112.9	50.0	150.0
M6PFDA		137.2	50.0	150.0
M7PFUnDA		108.1	50.0	150.0
M8FOSA		113.6	50.0	150.0
M8PFOA		113.5	50.0	150.0
M8PFOS		127.4	50.0	150.0
M9-PFNA		113.4	50.0	150.0
MPFBA		95.6	50.0	150.0
MPFDoDA		137.3	50.0	150.0
d3N-MeFOSAA	*	169.9	50.0	150.0
d5EtFOSAA	*	162.2	50.0	150.0
MHFPO-DA		98.2	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40271.05

Sample Tag: MW-106sr, 22913

Collected Date/Time: 09/13/2022 15:40

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 22:46, Matrix: WW, Dilution: 1.89

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		118.5	50.0	150.0
M2-6:2FTSA		132.9	50.0	150.0
M2-8:2FTSA		100.6	50.0	150.0
M2PFTeDA		84.2	12.0	218.0
M3PFBS		121.2	50.0	150.0
M3PFHxS		114.6	50.0	150.0
M4PFHpA		114.1	50.0	150.0
M5PFHxA		119.8	50.0	150.0
M5PFPeA		115.1	50.0	150.0
M6PFDA		121.9	50.0	150.0
M7PFUnDA		108.9	50.0	150.0
M8FOSA		106.3	50.0	150.0
M8PFOA		112.8	50.0	150.0
M8PFOS		121.2	50.0	150.0
M9-PFNA		115.9	50.0	150.0
MPFBA		120.8	50.0	150.0
MPFDoDA		94.3	50.0	150.0
d3N-MeFOSAA		114.6	50.0	150.0
d5EtFOSAA		107.0	50.0	150.0
MHFPO-DA		112.5	50.0	150.0

Lab Sample ID: S40271.06

Sample Tag: Equip Blank (EB)

Collected Date/Time: 09/13/2022 15:45

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 23:05, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		111.6	50.0	150.0
M2-6:2FTSA		111.7	50.0	150.0
M2-8:2FTSA		92.5	50.0	150.0
M2PFTeDA		105.6	12.0	218.0
M3PFBS		106.4	50.0	150.0
M3PFHxS		107.8	50.0	150.0
M4PFHpA		98.5	50.0	150.0
M5PFHxA		100.9	50.0	150.0
M5PFPeA		102.2	50.0	150.0
M6PFDA		103.6	50.0	150.0
M7PFUnDA		103.9	50.0	150.0
M8FOSA		96.3	50.0	150.0
M8PFOA		93.7	50.0	150.0
M8PFOS		111.5	50.0	150.0
M9-PFNA		101.7	50.0	150.0
MPFBA		104.4	50.0	150.0
MPFDoDA		102.4	50.0	150.0
d3N-MeFOSAA		111.2	50.0	150.0
d5EtFOSAA		105.1	50.0	150.0
MHFPO-DA		92.4	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40271.07

Sample Tag: Trip Blank

Collected Date/Time: 09/13/2022 00:01

Matrix: Groundwater

COC Reference:

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK220930B, Run Date: 09/30/2022 23:25, Matrix: WW, Dilution: 2.04

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		97.5	50.0	150.0
M2-6:2FTSA		101.0	50.0	150.0
M2-8:2FTSA		69.9	50.0	150.0
M2PFTeDA		79.7	12.0	218.0
M3PFBS		100.9	50.0	150.0
M3PFHxS		102.5	50.0	150.0
M4PFHpA		99.2	50.0	150.0
M5PFHxA		98.1	50.0	150.0
M5PFPeA		94.4	50.0	150.0
M6PFDA		101.5	50.0	150.0
M7PFUnDA		100.1	50.0	150.0
M8FOSA		91.3	50.0	150.0
M8PFOA		86.7	50.0	150.0
M8PFOS		116.3	50.0	150.0
M9-PFNA		88.2	50.0	150.0
MPFBA		101.5	50.0	150.0
MPFDoDA		88.5	50.0	150.0
d3N-MeFOSAA		107.6	50.0	150.0
d5EtFOSAA		99.5	50.0	150.0
MHFPO-DA		86.4	50.0	150.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: PF220929W1

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

Blank (BLK)

Lab Sample ID: AK220930B.BLK220929

Run in Batch: AK220930B, Run Date: 09/30/2022 18:32, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		110.4	50.0	150.0
M2-6:2FTSA		102.1	50.0	150.0
M2-8:2FTSA		106.7	50.0	150.0
M2PFTeDA		117.5	12.0	218.0
M3PFBS		104.9	50.0	150.0
M3PFHxS		100.1	50.0	150.0
M4PFHpA		108.9	50.0	150.0
M5PFHxA		103.9	50.0	150.0
M5PFPeA		100.1	50.0	150.0
M6PFDA		105.3	50.0	150.0
M7PFUnDA		98.4	50.0	150.0
M8FOSA		91.6	50.0	150.0
M8PFOA		95.6	50.0	150.0
M8PFOS		101.0	50.0	150.0
M9-PFNA		104.2	50.0	150.0
MPFBA		101.5	50.0	150.0
MPFDoDA		104.7	50.0	150.0
d3N-MeFOSAA		110.0	50.0	150.0
d5EtFOSAA		95.6	50.0	150.0
MHFPO-DA		100.3	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample (LCS)

Lab Sample ID: AK220930B.LCS220929

Run in Batch: AK220930B, Run Date: 09/30/2022 17:34, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		106.6	50.0	150.0
M2-6:2FTSA		112.3	50.0	150.0
M2-8:2FTSA		96.2	50.0	150.0
M2PFTeDA		127.7	12.0	218.0
M3PFBS		103.2	50.0	150.0
M3PFHxS		93.5	50.0	150.0
M4PFHpA		98.2	50.0	150.0
M5PFHxA		99.6	50.0	150.0
M5PFPeA		100.1	50.0	150.0
M6PFDA		104.5	50.0	150.0
M7PFUnDA		107.5	50.0	150.0
M8FOSA		94.0	50.0	150.0
M8PFOA		93.8	50.0	150.0
M8PFOS		112.6	50.0	150.0
M9-PFNA		103.1	50.0	150.0
MPFBA		99.6	50.0	150.0
MPFDoDA		105.9	50.0	150.0
d3N-MeFOSAA		111.8	50.0	150.0
d5EtFOSAA		107.1	50.0	150.0
MHFPO-DA		101.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220930B.LCSD220929, Parent Sample ID: AK220930B.LCS220929

Run in Batch: AK220930B, Run Date: 09/30/2022 17:53, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		103.1	50.0	150.0
M2-6:2FTSA		114.7	50.0	150.0
M2-8:2FTSA		95.0	50.0	150.0
M2PFTeDA		97.2	12.0	218.0
M3PFBS		108.2	50.0	150.0
M3PFHxS		103.7	50.0	150.0
M4PFHpA		105.3	50.0	150.0
M5PFHxA		97.8	50.0	150.0
M5PFPeA		99.0	50.0	150.0
M6PFDA		94.5	50.0	150.0
M7PFUnDA		97.6	50.0	150.0
M8FOSA		93.1	50.0	150.0
M8PFOA		87.1	50.0	150.0
M8PFOS		99.1	50.0	150.0
M9-PFNA		103.1	50.0	150.0
MPFBA		97.5	50.0	150.0
MPFDoDA		92.0	50.0	150.0
d3N-MeFOSAA		102.2	50.0	150.0
d5EtFOSAA		103.8	50.0	150.0
MHFPO-DA		98.2	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike (MS)

Lab Sample ID: AK220930B.4027103M, Parent Sample ID: S40271.02

Run in Batch: AK220930B, Run Date: 09/30/2022 22:07, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.91

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	453.9	50.0	150.0
M2-6:2FTSA	*	298.7	50.0	150.0
M2-8:2FTSA	*	169.7	50.0	150.0
M2PFTeDA		92.2	12.0	218.0
M3PFBS		106.7	50.0	150.0
M3PFHxS		99.2	50.0	150.0
M4PFHpA		126.2	50.0	150.0
M5PFHxA		108.8	50.0	150.0
M5PFPeA		104.1	50.0	150.0
M6PFDA		121.5	50.0	150.0
M7PFUnDA		98.4	50.0	150.0
M8FOSA		100.2	50.0	150.0
M8PFOA		113.4	50.0	150.0
M8PFOS		111.9	50.0	150.0
M9-PFNA		99.1	50.0	150.0
MPFBA		85.7	50.0	150.0
MPFDoDA		116.5	50.0	150.0
d3N-MeFOSAA		148.8	50.0	150.0
d5EtFOSAA		137.8	50.0	150.0
MHFPO-DA		96.8	50.0	150.0

QC Report - Internal Standards per QC Sample

Matrix Spike Duplicate (MSD)

Lab Sample ID: AK220930B.4027104N, Parent Sample ID: AK220930B.4027103M

Run in Batch: AK220930B, Run Date: 09/30/2022 22:26, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.8

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA	*	422.4	50.0	150.0
M2-6:2FTSA	*	250.7	50.0	150.0
M2-8:2FTSA	*	173.5	50.0	150.0
M2PFTeDA		66.1	12.0	218.0
M3PFBS		103.2	50.0	150.0
M3PFHxS		95.1	50.0	150.0
M4PFHpA		103.7	50.0	150.0
M5PFHxA		100.3	50.0	150.0
M5PFPeA		94.7	50.0	150.0
M6PFDA		126.5	50.0	150.0
M7PFUnDA		94.0	50.0	150.0
M8FOSA		97.1	50.0	150.0
M8PFOA		99.2	50.0	150.0
M8PFOS		109.4	50.0	150.0
M9-PFNA		87.7	50.0	150.0
MPFBA		84.2	50.0	150.0
MPFDoDA		96.5	50.0	150.0
d3N-MeFOSAA	*	157.9	50.0	150.0
d5EtFOSAA		129.6	50.0	150.0
MHFPO-DA		89.3	50.0	150.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220929W1

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

Blank (BLK)

Lab Sample ID: AK220930B.BLK220929

Run in Batch: AK220930B, Run Date: 09/30/2022 18:32, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFMPA		ND	2	ng/l
FPrPA (3:3 FTCA)		ND	5.0	ng/l
PFPPrS		ND	2	ng/l
PFPpA		ND	4	ng/l
PFMBA		ND	2	ng/l
4:2 FTSA		ND	2	ng/l
NFDHA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
HFPO-DA		ND	10	ng/l
FPePA (5:3 FTCA)		ND	5.0	ng/l
PFEESA		ND	2	ng/l
PFHpA		ND	2	ng/l
ADONA		ND	2	ng/l
PFPpS		ND	2	ng/l
PFBSA		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
FHpPA (7:3 FTCA)		ND	5.0	ng/l
PFNA		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFECHS		ND	2	ng/l
PFHpS		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
PFDA		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS-BR		ND	2	ng/l
PFOS		ND	2	ng/l
PFHxSA		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFUnDA		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
PFNS		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFDS		ND	2	ng/l
FOSA		ND	2	ng/l
PFTTrDA		ND	2	ng/l
11CL-PF3OUdS		ND	2	ng/l
PFTeDA		ND	4	ng/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220929W1 (continued)

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

Laboratory Control Sample (LCS)

Lab Sample ID: AK220930B.LCS220929

Run in Batch: AK220930B, Run Date: 09/30/2022 17:34, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		104.6	70.0	130.0
PFMPA		95.2	70.0	130.0
FPrPA (3:3 FTCA)		100.4	70.0	130.0
PFPPrS		96.4	70.0	130.0
PFPeA		97.8	70.0	130.0
PFMBA		98.0	70.0	130.0
4:2 FTSA		112.2	70.0	130.0
NFDHA		100.8	70.0	130.0
PFHxA		106.4	70.0	130.0
PFBS		107.0	70.0	130.0
HFPO-DA		100.0	70.0	130.0
FPePA (5:3 FTCA)		118.6	70.0	130.0
PFEESA		102.8	70.0	130.0
PFHpA		110.2	70.0	130.0
ADONA		115.8	70.0	130.0
PFPeS		102.0	70.0	130.0
PFBSA		86.6	70.0	130.0
6:2 FTSA		98.4	70.0	130.0
PFOA		106.0	70.0	130.0
PFHxS		111.2	70.0	130.0
FHpPA (7:3 FTCA)	*	141.2	70.0	130.0
PFNA		109.0	70.0	130.0
8:2 FTSA		111.8	70.0	130.0
PFECHS		95.4	70.0	130.0
PFHpS		113.0	70.0	130.0
N-MeFOSAA		101.6	70.0	130.0
PFDA		118.0	70.0	130.0
EtFOSAA		103.8	70.0	130.0
PFOS		105.6	70.0	130.0
PFHxSA		97.0	70.0	130.0
PFUnDA		89.4	70.0	130.0
9CL-PF3ONS		102.8	70.0	130.0
PFNS		110.8	70.0	130.0
PFDoDA		109.6	70.0	130.0
PFDS		116.8	70.0	130.0
FOSA		102.8	70.0	130.0
PFTTrDA		99.0	70.0	130.0
11CL-PF3OUdS		103.2	70.0	130.0
PFTeDA		107.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK220930B.LCSD220929, Parent Sample ID: AK220930B.LCS220929

Run in Batch: AK220930B, Run Date: 09/30/2022 17:53, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		108.6	70.0	130.0	3.8	30.0
PFMPA		111.0	70.0	130.0	15.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220929W1 (continued)

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

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK220930B.LCSD220929, Parent Sample ID: AK220930B.LCS220929

Run in Batch: AK220930B, Run Date: 09/30/2022 17:53, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
FPrPA (3:3 FTCA)		112.6	70.0	130.0	11.5	30.0
PFPPrS	*	70.2	70.0	130.0	31.5	30.0
PFPeA		104.2	70.0	130.0	6.3	30.0
PFMBA		118.4	70.0	130.0	18.9	30.0
4:2 FTSA		119.8	70.0	130.0	6.6	30.0
NFDHA	*	133.8	70.0	130.0	28.1	30.0
PFHxA		105.8	70.0	130.0	0.6	30.0
PFBS		98.8	70.0	130.0	8.0	30.0
HFPO-DA		113.8	70.0	130.0	12.9	30.0
FPePA (5:3 FTCA)		127.6	70.0	130.0	7.3	30.0
PFEESA		113.4	70.0	130.0	9.8	30.0
PFHpA		100.8	70.0	130.0	8.9	30.0
ADONA		118.4	70.0	130.0	2.2	30.0
PFPeS		105.2	70.0	130.0	3.1	30.0
PFBSA		101.4	70.0	130.0	15.7	30.0
6:2 FTSA		90.6	70.0	130.0	8.3	30.0
PFOA		113.6	70.0	130.0	6.9	30.0
PFHxS		102.6	70.0	130.0	8.0	30.0
FHpPA (7:3 FTCA)		110.6	70.0	130.0	24.3	30.0
PFNA		99.4	70.0	130.0	9.2	30.0
8:2 FTSA		107.0	70.0	130.0	4.4	30.0
PFECHS		108.0	70.0	130.0	12.4	30.0
PFHpS		103.4	70.0	130.0	8.9	30.0
N-MeFOSAA		115.2	70.0	130.0	12.5	30.0
PFDA		118.2	70.0	130.0	0.2	30.0
EtFOSAA		105.8	70.0	130.0	1.9	30.0
PFOS		121.2	70.0	130.0	13.8	30.0
PFHxSA		99.0	70.0	130.0	2.0	30.0
PFUnDA		101.2	70.0	130.0	12.4	30.0
9CL-PF3ONS		110.8	70.0	130.0	7.5	30.0
PFNS		119.0	70.0	130.0	7.1	30.0
PFDoDA		110.8	70.0	130.0	1.1	30.0
PFDS		118.4	70.0	130.0	1.4	30.0
FOSA		101.0	70.0	130.0	1.8	30.0
PFTTrDA		92.6	70.0	130.0	6.7	30.0
11CL-PF3OUdS		115.0	70.0	130.0	10.8	30.0
PFTeDA		111.2	70.0	130.0	3.8	30.0

Matrix Spike (MS)

Lab Sample ID: AK220930B.4027103M, Parent Sample ID: S40271.02

Run in Batch: AK220930B, Run Date: 09/30/2022 22:07, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.91

Analyte	Flags	% Rec	LCL	UCL
PFBA	*	345.5	70.0	130.0
PFPeA		115.2	70.0	130.0
4:2 FTSA		125.7	70.0	130.0
PFHxA		115.2	70.0	130.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220929W1 (continued)

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

Matrix Spike (MS) (continued)

Lab Sample ID: AK220930B.4027103M, Parent Sample ID: S40271.02

Run in Batch: AK220930B, Run Date: 09/30/2022 22:07, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.91

Analyte	Flags	% Rec	LCL	UCL
PFBS		115.2	70.0	130.0
PFHpA		98.4	70.0	130.0
PFPeS		104.7	70.0	130.0
6:2 FTSA		96.3	70.0	130.0
PFOA		93.7	70.0	130.0
PFHxS		125.7	70.0	130.0
PFNA		103.7	70.0	130.0
8:2 FTSA		115.2	70.0	130.0
PFHpS		125.7	70.0	130.0
PFDA	*	136.1	70.0	130.0
N-MeFOSAA		104.7	70.0	130.0
EtFOSAA		109.8	70.0	130.0
PFOS	*	133.0	70.0	130.0
PFUnDA		99.5	70.0	130.0
PFNS		115.2	70.0	130.0
PFDoDA		103.7	70.0	130.0
PFDS		115.2	70.0	130.0
PFTTrDA		88.0	70.0	130.0
FOSA		103.7	70.0	130.0
PFTeDA		100.5	70.0	130.0
11CL-PF3OUdS		94.2	70.0	130.0
9CL-PF3ONS		100.5	70.0	130.0
ADONA		115.2	70.0	130.0
HFPO-DA		115.2	70.0	130.0
PFECHS		112.0	70.0	130.0
PFBSA		104.7	70.0	130.0
PFHxSA		104.7	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: AK220930B.4027104N, Parent Sample ID: AK220930B.4027103M

Run in Batch: AK220930B, Run Date: 09/30/2022 22:26, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.8

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA	*	333.3	70.0	130.0	9.5	30.0
PFPeA		122.2	70.0	130.0	0.0	30.0
4:2 FTSA	*	133.3	70.0	130.0	0.0	30.0
PFHxA		100.0	70.0	130.0	20.0	30.0
PFBS		111.1	70.0	130.0	9.5	30.0
PFHpA		122.2	70.0	130.0	15.7	30.0
PFPeS		110.0	70.0	130.0	1.0	30.0
6:2 FTSA		111.1	70.0	130.0	8.3	30.0
PFOA		108.3	70.0	130.0	8.3	30.0
PFHxS		122.2	70.0	130.0	8.7	30.0
PFNA		111.1	70.0	130.0	1.0	30.0
8:2 FTSA		122.2	70.0	130.0	0.0	30.0
PFHpS		110.0	70.0	130.0	19.2	30.0
PFDA		110.0	70.0	130.0	27.1	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: PF220929W1 (continued)

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

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: AK220930B.4027104N, Parent Sample ID: AK220930B.4027103M

Run in Batch: AK220930B, Run Date: 09/30/2022 22:26, Prep Date: 09/29/2022, Matrix: WW, Dilution: 1.8

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
N-MeFOSAA		106.7	70.0	130.0	4.1	30.0
EtFOSAA		116.6	70.0	130.0	0.0	30.0
PFOS		130.0	70.0	130.0	5.1	30.0
PFUnDA		97.8	70.0	130.0	7.7	30.0
PFNS		111.1	70.0	130.0	9.5	30.0
PFDoDA		103.3	70.0	130.0	6.3	30.0
PFDS		101.1	70.0	130.0	18.9	30.0
PFTTrDA		95.6	70.0	130.0	2.4	30.0
FOSA		97.8	70.0	130.0	11.8	30.0
PFTeDA		122.2	70.0	130.0	13.6	30.0
11CL-PF3OUdS		90.0	70.0	130.0	10.5	30.0
9CL-PF3ONS		101.1	70.0	130.0	5.3	30.0
ADONA		122.2	70.0	130.0	0.0	30.0
HFPO-DA		97.8	70.0	130.0	22.2	30.0
PFECHS		107.8	70.0	130.0	7.4	30.0
PFBSA		98.9	70.0	130.0	11.6	30.0
PFHxSA		101.1	70.0	130.0	9.4	30.0

REPORT TO

CONTACT NAME				Rodney Abke											
COMPANY				Applied EcoSystems											
ADDRESS								G-4300 South Saginaw Street							
CITY						STATE		MI		ZIP CODE		48529			
PHONE NO.				810-715-2525				FAX NO.				810-715-2526			
E-MAIL ADDRESS						rabke@appliedecosystems.com						P.O. NO.		PO795930	
												QUOTE NO.			

PROJECT NO./NAME RACER Flint West #12990	SAMPLER(S) - PLEASE PRINT/SIGN NAME
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☒ OTHER <u>report to MDLs</u>	

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

[illegible]

RELINQUISHED BY:	<i>AD</i>	☐ Sampler	DATE	TIME
SIGNATURE/ORGANIZATION			9/14/88	12:04
RECEIVED BY:	<i>H. J. Smith</i>		DATE	TIME
SIGNATURE/ORGANIZATION			9/14/88	12:04
RELINQUISHED BY:	<i>J. Smith</i>		DATE	TIME
SIGNATURE/ORGANIZATION			9/14/88	12:50
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				

RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME
 SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS		9/14/2022	1250
SEAL NO. SEAL INTACT YES ☐ NO ☐ INITIALS		NOTES:	TEMP. ON ARRIVAL 4.7

TABLE 2
SOIL ANALYTICAL DATA (Metals and Detected VOCs)
RACER - Flint West #12990

Sample ID:				SB-122	SB-123	SB124-4	SB124-10	SB124-21	SB125-4	SB125-13	SB125-19	SB126-4	SB126-11	SB126-15	SB127-4	SB127-8	SB127-15	SB127-20	SB128-3	SB128-7	SB128-10
Date Collected:				4/30/2013	4/30/2013	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14	4/21/14
Depth:				15-16	5-6	4	10	21	4	13	19	4	11	15	4	8	15	20	3	7	10
ANALYTE (ug/kg)		DW	GSI																		
Arsenic	5,800	5,800	D&G=B			1,130	1,100	1,830	570	1,440	1,410	1,300	1,250	1,180	410	1,630	2,060	1,780	500	1,550	1,150
Chromium	18,000	18,000	D&G=B			1,220	1,460	3,350	2,050	3,260	4,240	1,220	2,920	2,870	1,980	2,560	4,540	610	1,460	2,860	5,890
Copper	5,800,000	120,000	GX			1,700	2,300	8,200	7,400	6,100	11,400	3,400	3,100	5,600	1,600	3,000	5,800	1,200	3,900	5,600	5,300
Lead	700,000	5,000,000	GX			2,510	3,120	7,580	13,800	5,100	8,590	2,280	3,790	5,470	4,710	5,740	7,330	950	6,250	11,400	6,950
Selenium	4,000	410	G=B					210			210			160							
Zinc	2,400,000	2,600,000	G=B			4,600	5,100	19,000	11,400	12,200	20,800	5,900	8,600	14,700	3,700	10,300	20,300	2,400	6,000	13,200	9,900
ANALYTE (ug/kg)		DW	GSI																		
2 Butanone (MEK)	260,000	44,000				45	71	56		165	79	82	150	75	46	66	148	126	44	123	127
Acetone	15,000	NC																			
Vinyl Chloride	40	260									23										
1,1-Dichloroethene	140	2,600																			
trans-1,2-Dichloroethene	2,000	30,000																			
1,1-Dichloroethane	18,000	15,000																			
Methylene chloride	5	1,500		100	18																
cis-1,2-Dichloroethene	1,400	12,000		1,600				58			350										
Tetrahydrofuran	1,900	220,000				170	190	190	150	180	180	140	190	210	190	190	170	190	150	150	140
Chloroform	1,600	7,000									16										
1,1,1-Trichloroethane	4,000	1,800									11										
Benzene	100	4,000																			
Trichloroethene	100	4,000		14,400	41			1,420			3,650										
Tetrachloroethene	100	1,200			18																
Toluene	16,000	5,400				11															
Ethylbenzene	1,500	360																			
Total Xylenes	5,600	820			39																
Isopropylbenzene	91,000	3,200			65															16	
n-Propylbenzene	1,600	NC																			
1,2 -Dichlorobenzene	14,000	280																		21	
1,2,4-Trimethylbenzene	2,100	570			37																
1,2,3-Trimethylbenzene	NC	NC			42.1															13.5	
1,3,5-Trimethylbenzene	72	45			29																
p-isopropyltoluene	NC	NC			93																
1,2,3-Trichlorobenzene	NC	NC																			
Naphthalene	35,000	730			210	10.8			14.4	17		13.7			12.9		14.3			345.7	46.9
2-Methylnaphthalene	57,000	4,200			345	10.2			14	39		13	19				30		10	820	46

NOTES:

	Blank cells indicate no detectable concentration
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated groundwater
NC	Insufficient data to develop criterion
GX	Interface Criteria - calculated based on 257ppm total hardness

TABLE 2
SOIL ANALYTICAL DATA (Metals and Detected VOCs)
RACER - Flint West #12990

Sample ID:				SB129-4	SB129-8	SB129-18	SB130-4	SB130-10	SB130-18	SB131-4	SB131-10	SB131-18	SB132-12	SB132-15	SB133-17	SB133-19	SB133-20	SB134-18	SB134-20	SB135-19	SB135-21
Date Collected:				4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	4/22/14	7/10/14	7/10/14	7/10/14	7/10/14	7/10/14	12/22/14	12/22/14	12/22/14	12/22/14
Depth:				4	8	18	4	10	18	4	10	18	12	15	17	19	20	18	20	19	21
ANALYTE (ug/kg)		DW	GSI																		
Arsenic	5,800	5,800	D&G=B	2,790	1,740	1,460	3,580	1,700	1,980	1,630	1,300	2,080						380	1,690	1,900	2,080
Chromium	18,000	18,000	D&G=B	2,550	4,080	4,730	3,090	1,150	2,770	1,640	2,800	2,620									
Copper	5,800,000	120,000	GX	13,000	3,600	7,200	17,700	1,700	9,800	8,500	3,100	7,900						4,500	3,000	4,000	3,900
Lead	700,000	5,000,000	GX	104,000	6,100	7,420	123,000	2,110	6,510	36,400	4,740	6,020						5,690	3,380	2,850	2,890
Selenium	4,000	410	G=B	130		150	140														
Zinc	2,400,000	2,600,000	G=B	21,300	13,100	19,200	51,800	5,800	18,000	16,800	13,600	18,600						5,900	19,500	17,500	15,300
ANALYTE (ug/kg)		DW	GSI																		
2 Butanone (MEK)	260,000	44,000		40	53	82	69	68	70	79	65	164									
Acetone	15,000	NC																			
Vinyl Chloride	40	260							73			90	180	89	46					14	
1,1-Dichloroethene	140	2,600							34			18									
trans-1,2-Dichloroethene	2,000	30,000							100			62			18					11	
1,1-Dichloroethane	18,000	15,000							69			35			13						
Methylene chloride	5	1,500																			
cis-1,2-Dichloroethene	1,400	12,000				300			6,380			2,820	2,200	1,200	1,990	530	270		120	1,100	800
Tetrahydrofuran	1,900	220,000		150	180	180	180	170	160	150	180	160	1,500	300	150	160	117				
Chloroform	1,600	7,000																			
1,1,1-Trichloroethane	4,000	1,800				33.40										25	35	18			8.7
Benzene	100	4,000							36												
Trichloroethene	100	4,000				6,170			6,080	28		12,160	29,500	13,700	11,680	10,860	7,520		2,040	7,890	6,540
Tetrachloroethene	100	1,200														17					
Toluene	16,000	5,400		13		19	31			45								70			
Ethylbenzene	1,500	360					15											16			
Total Xylenes	5,600	820		21			92			91								85			
Isopropylbenzene	91,000	3,200					13														
n-Propylbenzene	1,600	NC					16											14			
1,2 -Dichlorobenzene	14,000	280																			
1,2,4-Trimethylbenzene	2,100	570		14			24			22											
1,2,3-Trimethylbenzene	NC	NC					13.4			11.8											
1,3,5-Trimethylbenzene	72	45																			
p-isopropyltoluene	NC	NC																			
1,2,3-Trichlorobenzene	NC	NC																			
Naphthalene	35,000	730		39.5	12.5		51.5			100.3								36.6			
2-Methylnaphthalene	57,000	4,200		43			54.1			71.8					15	12	9.2	29			

NOTES:	
	Blank cells indicate no detectable concentration
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated groundwater
NC	Insufficient data to develop criterion
GX	Interface Criteria - calculated based on 257ppm total hardness

TABLE 2
SOIL ANALYTICAL DATA (Metals and Detected VOCs)
RACER - Flint West #12990

Sample ID:				SB136-19	SB136-21	SB137-18	SB137-20.5	SB138-15	SB138-18	SB139-16	DUP-1	SB139-18	SB140-16	SB140-19	SB141-16	SB141-18	SB141-19
Date Collected:				12/22/14	12/22/14	12/22/14	12/22/14	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019
Depth:				19	21	18	20.5	15	18	16	(SB139-16)	18	16	19	16	18	19
ANALYTE (ug/kg)	DW	GSI															
Arsenic	5,800	5,800	D&G=B	1,870	3,350	1,660	3,040										
Chromium	18,000	18,000	D&G=B														
Copper	5,800,000	120,000	GX	4,600	4,300	4,200	4,500										
Lead	700,000	5,000,000	GX	3,060	3,740	2,810	3,240										
Selenium	4,000	410	G=B														
Zinc	2,400,000	2,600,000	G=B	13,600	18,800	13,500	27,300										
ANALYTE (ug/kg)	DW	GSI															
2 Butanone (MEK)	260,000	44,000											2,300				
Acetone	15,000	NC										430					360
Vinyl Chloride	40	260					56					42					
1,1-Dichloroethene	140	2,600										63					
trans-1,2-Dichloroethene	2,000	30,000				14			13			200					
1,1-Dichloroethane	18,000	15,000										90					
Methylene chloride	5	1,500						22	25.7	230	210	32	260	30	27	25	26
cis-1,2-Dichloroethene	1,400	12,000		340	450	670	290	470	550	1,800	1000	8,850	3,500	150	15	2,900	860
Tetrahydrofuran	1,900	220,000						174	121	1,800	1750	180	1,800	155	161	170	155
Chloroform	1,600	7,000															
1,1,1-Trichloroethane	4,000	1,800		12.5		20.5			7.4					14.8			
Benzene	100	4,000										20					
Trichloroethene	100	4,000		8,760	9,390	4,250		2,880	2,300	21,000	16,300	3,440	13,100	2,870	180	6,150	3,370
Tetrachloroethene	100	1,200												11.9			
Toluene	16,000	5,400															
Ethylbenzene	1,500	360															
Total Xylenes	5,600	820															
Isopropylbenzene	91,000	3,200															
n-Propylbenzene	1,600	NC															
1,2 -Dichlorobenzene	14,000	280								136							
1,2,4-Trimethylbenzene	2,100	570															
1,2,3-Trimethylbenzene	NC	NC															
1,3,5-Trimethylbenzene	72	45															
p-isopropyltoluene	NC	NC															
1,2,3-Trichlorobenzene	NC	NC											130				
Naphthalene	35,000	730															
2-Methylnaphthalene	57,000	4,200															

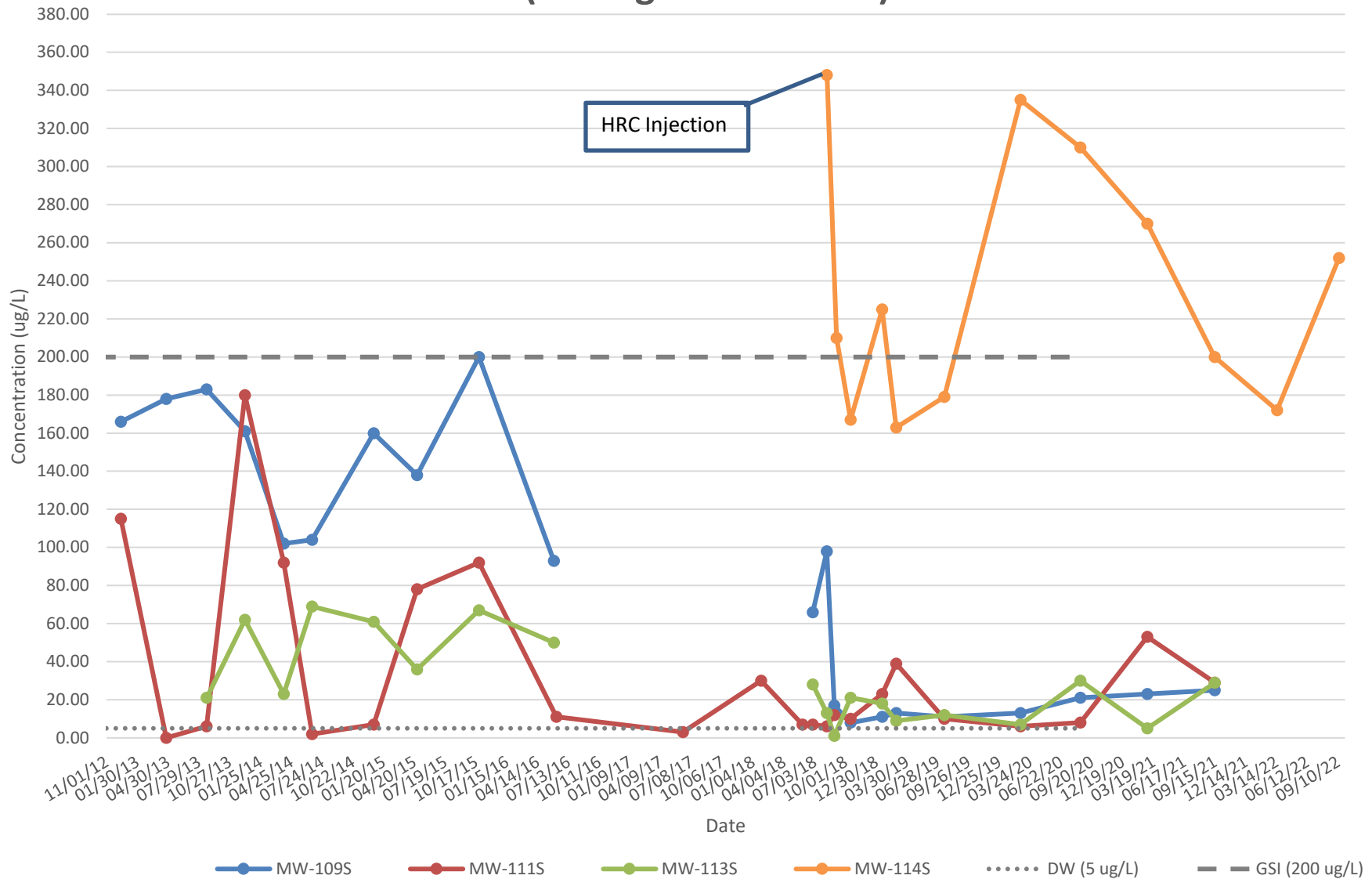
NOTES:	
	Blank cells indicate no detectable concentration
X	Exceeds DW criteria
X	Exceeds GSI criteria
X	Exceeds both DW and GSI criteria
X	Compound also found in associated groundwater
NC	Insufficient data to develop criterion
GX	Interface Criteria - calculated based on 257ppm total hardness



Applied *Eco*Systems, Inc.

Environmental Management, Consulting & Field Services

TCE in MW-109S, MW-111S, MW-113S, MW-114S (downgradient wells)





Applied *Eco*Systems, Inc.

Environmental Management, Consulting & Field Services

**LABORATORY DATA VALIDATION
SEPTEMBER 2022 BIENNIAL GROUNDWATER
SAMPLING EVENT**

**RACER Trust
Flint West Industrial Land (#12990)
Glenwood Avenue and Stevenson Street
Flint, Michigan**

December 13, 2022
Project # 11-4317-102

Applied EcoSystems, Inc.
G-4300 South Saginaw Street, Burton, Michigan 48529
Phone: (810) 715-2525 Fax: (810) 715-2526
www.AppliedEcoSystems.com

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Appendix A.....Figures

Figure 1: Site Location Map

Figure 2: Site Map with Sample Locations

Appendix B.....Tables

Table 1: Sample Collection and Analysis Summary

Table 2: Sample Analytical Results

Table 3: Analytical Methods and Holding Time Criteria

Table 4: Qualified Sample Results Due to Outlying MS/MSD Results

Table 5: Field Sample Duplicate Results and Relative Percent Differences (RPD)

Appendix C.....Laboratory Reports

Laboratory Analytical Reports

Laboratory Quality Control Reports

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Acronyms and Abbreviations

Æ	Applied EcoSystems, Inc.
ASTM International (ASTM)	
AAI	All Appropriate Inquiry
BER	Business Environmental Risk
CREC	Controlled Recognized Environmental Condition
DMC	De Minimis Condition(s)
ESA	Environmental Site Assessment
HREC	Historical Recognized Environmental Condition
PEC	Potential Environmental Concern
REC	Recognized Environmental Condition
VEC	Vapor Encroachment Condition
Buildings, Structures, and Materials	
ACBM	Asbestos Containing Building Material
ACM	Asbestos Containing Materials
AST	Aboveground Storage Tank
HVAC	Heating, Ventilation, and Air Conditioning Systems
LUST	Leaking Underground Storage Tank
ROW	Right-of-Way
UST	Underground Storage Tank
Federal Agencies	
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
NRCS	Natural Resources Conservation Service
OSHA	Occupational Health and Safety Administration
SBA	Small Business Administration
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
Federal Environmental Regulations, Programs, and Databases	
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	CERCLA Information System
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
CORRACTS	Resource Conservation and Recovery Act Corrective Action
CWA	Clean Water Act
ERNS	Emergency Response Notification System
FOIA	Freedom of Information Act
LQG	Large Quantity Generator
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFRAP	No Further Remedial Action Planned
NPL	National Priority List
NRCS	Natural Resources Conservation Service
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
SEMS	Superfund Enterprise Management System
SQG	Small Quantity Generator
TSCA	Toxic Substances Control Act
TSD	Treatment, Storage and Disposal Facility

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Hazardous Substances and Petroleum Products	
BTEX	Benzene, Toluene, Ethyl Benzene, Xylenes
CVOCs	Chlorinated Volatile Organic Compounds
MTBE	Methyl Tertiary Butyl Ether
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene, Tetrachloroethylene, Perchloroethene, Perchloroethylene, PERC
PFAS	Per- and Polyfluoroalkyl Substances, including PFOS, PFOA, and GenX
PNAs	Polynuclear Aromatics - also known as Polycyclic Aromatic Hydrocarbons (PAHs)
SVOCs	Semi-Volatile Organic Compounds
TCE	Trichloroethene, Trichloroethylene
TMBs	Trimethylbenzenes
VOCs	Volatile Organic Compounds
Mapping, Instruments and Units of Measurement	
bgs	Below Ground Surface
GIS	Geographic Information System
msl	Mean Sea Level
PID	Photoionization Detector
ppb	Parts Per Billion
ppb(v)	Parts Per Billion by Volume
ppm	Parts Per Million
ppm(v)	Parts Per Million by Volume
T/R/S	Township, Range, Section
µg/Kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
ng/Kg	Nanograms per Kilogram
ng/L	Nanograms per Liter
Michigan-Specific	
BEA	Baseline Environmental Assessment
NREPA	Natural Resources and Environmental Protection Act
EGLE	Michigan Department of Environment, Great Lakes and Energy and its predecessors below:
MDEQ	Michigan Department of Environmental Quality
MDNRE	Michigan Department of Natural Resources and Environment
MDNR	Michigan Department of Natural Resources
LARA	Michigan Department of Licensing and Regulatory Affairs
GRCC	Generic Residential Cleanup Criteria (or Criterion)
DW/DWP	Drinking Water/Drinking Water Protection
DC	Direct Contact
F/E	Flammability/Explosivity Limit
GS/SSIP	Groundwater to Surface Water Interface/Groundwater to Surface Water Interface Protection
PI	Particulate Inhalation
VIA	Volatilization to Indoor Air
VOA	Volatilization to Outdoor Air
MI 10 Metals	Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Selenium, Silver, and Zinc
LGP	Leaded Gasoline Indicator Parameters (includes BTEX, TMBs and other compounds)
ULGP	Unleaded Gasoline Indicator Parameters (includes BTEX, MTBE, TMBs and other compounds)

1. INTRODUCTION

Applied EcoSystems, Inc. (Æ) was retained to conduct a validation review of the laboratory analytical data collected in support of the 2022 September bi-annual groundwater sampling event at the RACER Flint West #12990 Site. The sampling was performed in accordance with the requirements of the September 29, 2011 RCRA Administrative Order on Consent between the U.S. Environmental Protection Agency (USEPA) and RACER for the Flint West Site, and the Laboratory Data Validation was performed as part of the requirements of the April 1, 2021 project Quality Assurance Project Plan (QAPP).

Groundwater samples were submitted to Merit Laboratories, Inc. of East Lansing, Michigan. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. Samples were prepared at the laboratory in accordance with their standard operating procedures for groundwater processing. A summary of the analytical methodology is presented in Table 3.

Standard report deliverables were submitted by the laboratory to Æ. The final results and supporting quality assurance/quality control (QA/QC) data were assessed by Æ, as documented herein. Data evaluation was based on information obtained from the chain of custody forms, field notes, finished report forms, method blank data, duplicate data, and recovery data from surrogate spikes and laboratory control spikes (LCS) and matrix spikes (MS)/matrix spike duplicates (MSD).

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods reference in Table 3, in the April 1, 2021 project QAPP, and in applicable guidance documents (hereafter identified as “Guidelines”), including:

- Michigan Department of Environment, Great Lakes, and Energy (EGLE) Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Minimum Laboratory Analyte List, updated March 8, 2021;
- Michigan Department of Environmental Quality (MDEQ), now EGLE, Application of Target Detection Limits and Designated Analytical Methods, dated March 2016;
- MDEQ, General PFAS Sampling Guidance, revised October 16, 2018;
- USEPA, Superfund Contract Laboratory Program, National Functional Guidelines for Organic Superfund Methods Data Review (SOM02.4), EPA-540-R-2017-002, dated January 2017;
- USEPA, Superfund Contract Laboratory Program, National Functional Guidelines for Inorganic Superfund Methods Data Review (ISM02.4), EPA-540-R-2017-001, January 2017;
- USEPA, PFAS Methods and Guidance for Sampling and Analyzing Water and Other Environmental Media-Technical Brief, EPA/600/F-17-022h; and
- USEPA, Region 9, Laboratory Data Review for the Non-Chemist, dated October 2014.

1.1 Property Location and Description

Property Address:	Glenwood Avenue and Stephenson Street	
Municipality:	City of Flint, Michigan	
County:	Genesee	
T/R/S	T7N, R6E, S12	
Parcel ID:	40-13-177-002	
Land Area:	3.17 acres, per tax records.	

2. LABORATORY DELIVERABLES

Four (4) laboratory reports were received from Merit Laboratories for chains-of-custody prepared for groundwater samples collected by AË on September 13, 2022 – two for analysis of VOCs and dissolved and total metals (arsenic, chromium, chromium-hexavalent, copper, lead, selenium, and zinc). All laboratory reports were identified as Merit Laboratories' Level II deliverables, appropriate under USEPA guidelines for desktop review. Raw laboratory data, including GC/MS scans, instrument calibration data, etc., were not included in the deliverables.

Deliverables included the Merit Laboratories Analytical Laboratory Reports and Quality Control Reports IDs listed following and included in Appendix B:

S40239.01,
S40240.01,
S40270.01, and
S40271.01.

3. DESKTOP LABORATORY DATA REVIEW

Deliverables were reviewed to verify that the following reporting information was documented fully. Where problems were identified, limitations on data validity were evaluated based on the identified concerns.

All Analytical Laboratory Report cover sheets were signed by Maya Murshak, Technical Director of Merit Laboratories, Inc.

All Quality Control Report cover sheets were signed by Barbara Ball, Quality Assurance Manager of Merit Laboratories, Inc.

3.1 Case Narratives

The case narrative typically is a short summary statement about the analyses that commonly documents any significant concerns with the condition of received samples, analytical problems, or QA/QC concerns. All deliverables identified no conditions warranting narrative beyond general laboratory reporting information.

3.2 Laboratory Accreditation/Certification Information

The following laboratory certifications were identified on each Analytical Laboratory Report:

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

Details of laboratory certifications and accreditations are appended to the Project QAPP.

3.3 Laboratory Contact Information

Each Analytical Laboratory Report identifies the following laboratory contact information:

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

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

Contacts for Report questions:

John Laverty (johnlaverty@meritlabs.com)

Barbara Ball (bball@meritlabs.com)

3.4 Time Samples Collected, Received, Prepared, and Analyzed

Sample collection dates and times were tabulated in the Sample Summary of each Analytical Laboratory Report, identified in the header of each sample data report, and on the chain of custody appended to each Report.

Times and dates of sample receipt were documented on the chain of custody appended to each Report but were not documented in the Sample Container/Preservation/Temperature summary for each sample data report.

Times and dates of sample extraction and preparation were documented in the Extraction/Prep. Summary for each sample data report.

Dates and times of sample analyses for each analytical method were documented in each sample data report.

No deviations from Guidelines were identified.

3.5 Laboratory Analytical Methods

Laboratory analytical methods were summarized in the Method Summary of each Analytical Laboratory Report and for each analyte group documented in each sample data report. Analytical methods used for this project were as follows:

Method	Version	Analytes
E200.8	EPA Method 200.8 Revision 5.4	Arsenic, chromium, copper, lead, selenium, zinc
SM3500-Cr B	Standard Method 3500 Cr B 2011	Chromium VI
SW3015A	SW 846 Method 3015A Revision 1 February 2007	Metals digestion
SW5030C/8260C	SW 846 8260C Revision 3 August 2006 5030C Revision 3 May 2003	VOCs
ASTMD7979-19M	ASTM Method D7979-19 Modified (Isotopic Dilution)	PFAs, EGLE 28 Parameters

3.6 Analyte Reporting

Analytes were reported to significant figures established by Method Detection Limits (MDLs).

Results not detected at or above the laboratory's MDL and Reporting Limit (RL) were identified as "Not Detected."

The laboratory reported detected results down to the laboratory's MDL for each analyte adjusted for specific sample dilutions, weights, and volumes. For metals, positive analyte detections less than the RL but greater than the MDL were indicated by "b" in Merit Analytical Laboratory Reports. For organic analytes, positive analyte detections less than the RL but greater than the MDL were qualified as estimates, indicated by "J" in Merit Analytical Laboratory Reports unless qualified otherwise in this report.

3.7 Holding Times and Sample Preservation

The sample holding time criteria for the analyses are summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times, except PFAS extractions and sample preparations for all PFAS samples exceeded their holding times. All analyses, including PFAS analyses, were performed within specified analytical holding times; and no associated qualifiers (F) were identified on the analytical reports.

The samples were properly preserved, delivered on ice, and received and stored at the laboratory at the required temperature (0-6° Celsius). Acid-preserved samples for total metals analysis were received at pH levels less than 2. Samples for dissolved metals analysis (including chromium VI) were filtered and preserved in the laboratory immediately upon receipt at the laboratory to limit potential for metals to be deposited to or leached from suspended solids in the samples; however, laboratory filtration was not documented on Analytical Laboratory Reports.

3.8 Units of Measurement

Units of measurement are identified on each sample report of the Analytical Laboratory Reports. Units for each analyte group are as follow:

Analyte Group	Units
Metals (including Cr VI)	milligrams per liter (mg/L)
VOCs	micrograms per liter (µg/L)
PFAS	nanograms per liter (ng/L)

Individual tables in project reports may identify concentrations equivalently in different units of measurement. Table 2 of this report identifies metals concentrations (including Cr VI) in micrograms per liter (µg/L), except PFAS compounds that are identified in nanograms per liter (ng/L).

3.9 Detection/Reporting Limits

Each sample report of the Analytical Laboratory Reports individually tabulates the sample analytical result, Reporting Limit (RL), Method Detection Limit (MDL), and dilution factor. On Table 2, analytical results less than MDLs are identified as less than (<) the specified RL. Concentrations detected less than the RL but greater than the MDL are identified as the detected concentration qualified with a "b" flag, and estimated concentrations less than RL but greater than MDEL are qualified with a "J" flag in the Merit Laboratory Analytical Reports.

3.10 Data Qualifiers

The Analytical Laboratory Reports tabulate the following qualifying flags:

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

Of these qualifiers, the following were determined to be applicable to one or more sample laboratory results in Table 2:

Qualifier/Flag	Applicable Samples
b	MW-103S – Total Cr; dissolved Cr, Zn MW-104S – Total Pb; dissolved As, Cu, Se MW-106SR – Total Pb; dissolved As, Cr, Cu, Se, Zn MW-108S – Total As, Cr, Cu, Se, Zn; dissolved As, Cr, Cu, Se, Zn MW-110S – Total Cr, Cu, Zn; dissolved As, Cr, Cu, Zn MW-112S – Dissolved Cr MW-114S – Total Cr; dissolved Cr, Cu, Zn-

Qualifier/Flag	Applicable Samples
	Dupe 122913 – Total Cr; dissolved Cr, Cu, Zn 117S – Total Cu, Pb, Zn; dissolved As, Cr, Cu, Zn Equipment Blank – Dissolved Cu Field Blank – Total Cr, Cu; dissolved As, Cr
B	MW-103S – 2-methylnaphthalene MW-104S – carbon disulfide MW-106SR – carbon disulfide MW-112S – carbon disulfide MW-114S – tetrahydrofuran, naphthalene, 2-methylnaphthalene Equipment Blank – carbon disulfide, tetrahydrofuran, 2-methylnaphthalene
E	MW-114S – trichloroethene Dupe 122913 -- trichloroethene
I	MW-103S – 4:2 FTSA, 6:2 FTSA, 8:2 FTSA, N-MeFOSAA, EtFOSAA MW-103S (MS) -- dissolved Cr VI MW-103S (MSD) – dissolved Cr VI MW-112S – 4:2 FTSA, 6:2 FTSA Dupe 122913 – 4:2 FTSA
J	MW-103S – vinyl chloride, cis-1,2-dichloroethene, toluene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, 2-methylnaphthalene MW-103S (MS) – tetrahydrofuran MW-103S (MSD) – acetone, tetrahydrofuran MW-104S – PFBS, PFHxS, carbon disulfide, chloroform, bromodichloromethane MW-106SR – PFPeA, PFHxS-LN, carbon disulfide MW-108S – PFBS, PFHxS-LN MW-110S – PFBS, PFHxS-LN MW-112S – PFBS, acetone, carbon disulfide, 1,1-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethane MW-114S – PFBS, trans-1,2-dichloroethene, 1,1-dichloroethene, 1,1-dichloroethane, tetrahydrofuran, naphthalene, 2-methylnaphthalene Dupe 122913 – PFBS, acetone, trans-1,2-dichloroethene MW-117S – chloromethane, chloroform, tetrachloroethene Equipment Blank – carbon disulfide, chloromethane, methylene chloride, tetrahydrofuran, 2-methylnaphthalene MW-117S – PFBS, Field Blank – methylene chloride
X	MW-103S – PFBA, PFHxA MW-112S – PFBA
Y	MW-114S – all VOCs

The qualifiers should be used by all data users to understand and appropriately apply the data.

3.11 Surrogate Recoveries

Surrogates are chemicals similar to the target analyte(s) in chemical composition and behavior that are not expected to be present in the sample(s). Surrogates are added to all environmental samples, blanks, and other QC samples in an analytical batch during the preparation stage for some organic analyses (including VOCs and PFAS in the subject laboratory analytical reports). Surrogates monitor analytical performance, especially extraction efficiency, purging efficiency (for volatiles), and possible matrix effects that MS/MSD spikes, which are added only to one sample per batch, cannot.

All surrogate recoveries identified in the laboratory analytical reports were within the percent recovery and allowable range listed for each surrogate compound., except the following:

Sample / Batch	Analyte	Recovery of Internal Standard
MW-103S / AK220930B	M2-4:2FTSA, M2-6:2FTSA, M2-8:2FTSA, d3N-MeFOSAA, d5EtFOSAA	Elevated
MW-103S (MS) / AK220930B	M2-4:2FTSA, M2-6:2FTSA, M2-8:2FTSA	Elevated
MW-103S (MSD) / AK220930B	M2-4:2FTSA, M2-6:2FTSA, M2-8:2FTSA, d3N-MeFOSAA	Elevated
MW-112S / AK220930B	M2-4:2FTSA, M2-6:2FTSA	Elevated
Dupe1.22913 / AK220930B	Ms-4:2FTSA	Elevated
Laboratory Control Sample (LCS) / 220920A3	Tetrahydrofuran	Elevated
Laboratory Control Sample Duplicate (LCSD) / 220920A3	Tetrahydrofuran	Elevated
LCS / KA220930B	FHpPA (7:3 FTCA	Elevated
LCSD / AK220930B	NFDHA	Elevated
LCS / 220914B3	Tetrahydrofuran, bromoform	Elevated
LCSD / 220914B3	Tetrahydrofuran, bromoform	Elevated
Matrix Spike (MS) / AK220930B	PFBA, PFDA, PFOS	Elevated
Matrix Spike Duplicate (MSD) / AK220930B	PFBA, 4:2 FTSA	Elevated
MS-2 / AK220930B	M2-4:2FTSA, M2-6:2FTSA, M2-8:2FTSA	Elevated
MSD-2 / AK220930B	M2-4:2FTSA, M2-6:2FTSA, M2-8:2FTSA, d3N-MeFOSAA	Elevated
MSD-3 / 220919A9	2-methylnaphthalene	Elevated

3.12 Blank Analyses

Blanks are designated to measure cross-contamination in different parts of the sampling and analytical process.

3.12.1 Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect.

3.12.2 Equipment Blank Analyses

Equipment blanks are designed to monitor the cleanliness of field equipment and the effectiveness of decontamination procedures if equipment is used for multiple sample collections.

For this study, laboratory equipment blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per batch.

All equipment blank analyses were non-detect, except as noted in Table 2 and summarized following:

Laboratory Report	Equipment Blank	Detected Analytes
S40270.01	Equip Blank (EB) (09/13/2022 15:45)	Dissolved Cu >RL & MDL Carbon disulfide <RL but >MDL Chloromethane <RL but >MDL Methylene chloride <RL but >MDL Tetrahydrofuran <RL but >MDL Chloroform = RL but >MDL 2-Methylnaphthalene <RL but >MDL
S40271.01	Equip Blank (EB) (09/13/2022 15:45)	PFAS not detected

Based on the equipment blanks, equipment was not considered to result in significant contributions to contaminants of concern at the RACER site. Detectable concentrations greater than MDLs and not likely to affect sample result comparisons to cleanup criteria.

Detection of low levels of copper in equipment blanks commonly indicates contributions from stainless steel equipment. Because carbon disulfide, chloromethane, methylene chloride, 2-methylnaphthalene, and tetrahydrofuran were detected at low concentrations in the equipment blank on September 19 and not in the laboratory method blank on September 19, those detections likely were a result of decontamination residuals on the equipment.

3.12.3 Trip/Field Blank Analyses

Trip/Field Blanks are designated to measure cross-contamination that may occur during sample handling and transport, such as from a broken bottle in the sample ice chest.

All trip/field blank analyses were non-detect, except as noted following:

Laboratory Report	Trip/Field Blank	Detected Analytes
S40239.01	Field Blank (09/13/2022 09:27)	Total Cr & Cu <RL but >MDL Dissolved As & Cr <RL but >MDL Methylene chloride <RL but >MDL Chloroform >MDL and >RL
S40240.01	Field Blank (09/13/2022 09:27)	PFAS not detected
S40239.01	Trip Blank (09/13/2022)	Total metals not detected Dissolved metals not detected VOCs not detected
S40271.01	Trip Blank (09/13/2022 00:01)	PFAS not detected

Based on the trip/field blanks, sample handling was not considered to result in detectable concentrations greater than RLs and not likely to affect sample result comparisons to cleanup criteria.

3.13 Laboratory Control Sample Spike Analyses

Laboratory Control Samples (LCS) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all analytes of interest. LCS recoveries were assessed per the “Guidelines.” All LCS recoveries were within the control limits demonstrating acceptable analytical accuracy, except as discussed following:

LCS in Batch 220914B3 in Merit Report QC-S40239.01 identified tetrahydrofuran, bromoform elevated relative to acceptable recovery limits, indicating a potential for reported concentrations for those VOCs to be reported high. LCSD in that batch also identified tetrahydrofuran elevated relative to acceptable recovery limits. Only tetrahydrofuran was detected in groundwater samples collected. Potentially affected field samples included:

MW-104S
MW-108S
MW-110S
MW-112S

MW-114S
Dupe122913
Field Blank

However, none of these samples were determined to contain detectable concentrations of tetrahydrofuran.

The LCS and LCSD in Batch 220919A9 identified no VOC determinations outside acceptable recovery limits. Potentially affected field samples included:

Trip Blank

The LCS and LCSD in Batch 220920A3 in Merit Report QC-S40239.01 identified tetrahydrofuran elevated relative to acceptable recovery limits, indicating a potential for reported concentrations for that VOC to be reported high. Potentially affected field samples included:

Trip Blank

However, a detectable concentration of tetrahydrofuran was not identified in the Trip Blank.

The LCS in Batch AK220930B in Merit Report QC-S40240.01 identified PFAS constituent FHpPA (7:3FTCA) elevated relative to acceptable recovery limits, indicating a potential for FHpPA concentrations to be reported high. The LCSD in Batch AK220930B identified PFAS constituent NFDHA elevated relative to acceptable recovery limits, also indicating a potential for NFDHA concentrations to be reported high. Potentially affected field samples included:

MW-103S
MW-103S (MS)
MW-103S (MSD)
MW-104S
MW-106SR
MW-108S
MW-110S
MW-112S
MW-114S
Dupe1 22913 (MW-114S)
MW-117S
Field Blank
Equipment Blank (EB)
Trip Blank

Because FHpPA was detected in the LCS but not in the LCSD and because NFDHA was detected in the LCSD but not in the LCS, these LCSD exceedances are not considered to have affected

report results significantly. Neither of the identified PFAS compounds was detected in the analyzed groundwater samples.

3.14 Matrix Spike and Matrix Spike Duplicate Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, selected field samples are spiked with a known concentration of the analyte of concern and analyzed as Matrix Spike (MS)/Matrix Spike Duplicate (MSD) samples. The Relative Percent Difference (RPD) between the MS and MSD is used to assess analytical precision.

If the original sample concentration is significantly greater than the spike concentration, or if sample is diluted five times or greater, the recovery is not assessed.

If only the MS or MSD recovery was outside of control limits, no qualification of the data was performed based on the acceptable recovery of the companion spike and the acceptable RPD.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with analytes of interest, and the results were evaluated using the “Guidelines.” Table 4 presents the outlying matrix spike results. The associated sample data were qualified as estimated in the Merit Laboratory Analytical Reports. The remaining percent recoveries and RPD values were within the control limits criteria.

All of the matrix spikes and matrix spike duplicates were identified as falling within Control Limits except for Chromium VI, VOC 2-methylnaphthalene, and PFAS compounds PFBA, 4:2FTSA, PFDA, and PFOS. Chromium VI was identified only in the MS and MSD for MW-103S and was not identified in the unadulterated groundwater sample for MW-103S. VOC 2-methylnaphthalene was detected in the equipment blank (EB) and in MS-103S (and its MS and MSD) and MW-114S but was not detected in other groundwater samples and potentially could have been cross-contamination from the equipment. All PFAS identified PFAS compounds were detected only in the MS and MSD samples, except PFOS. The inferred associated matrix interferences were not considered to affect report conclusions.

3.15 Interferences

Interference is bias that is introduced because something in the sample interferes with the analytical system’s ability to provide an accurate measurement. The interference may be physical (such as turbidity that could block light transmission in an analysis based on UV absorbance), chemical (a chemical similar to the analyte of interest may react with that analyte affect instrument response), or spectroscopic (with the detector receiving an enhanced or suppressed signal due to an emission or absorbance by some other chemical or material in the matrix). Interferences can be possible or negative. Significant analytical interferences and their effects on the data are identified in the laboratory’s case narrative.

No significant interferences were reported in the laboratory’s case narratives; however, elevated PFAS detection limits for selected compounds were identified due to matrix interference in MW-

103S (4:2FTSA,6:2FTSA, 8:2FTSA, N-MeFOSAA, and EtFOSAA) and MW-112S (4:2FTSA and 6:2FTSA).

Additionally, high target concentrations necessitating 10-times dilutions were identified associated with MW-114 and its duplicate (Dupe-2).

3.16 Field Duplicate Sample Analyses

One field duplicate sample, one of each day of groundwater sampling, was collected for purposes of evaluating field QA/QC. The field duplicate sample was submitted “blind” to the laboratory, as specified in Table 1 and chains of custody. The RPDs associated with the duplicate sample must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value for water samples.

The field duplicate results shown in Table 5 were within acceptable agreement less than 50%, demonstrating acceptable sampling and analytical precision, except as discussed following:

RPDs for the determined concentrations of total arsenic, total chromium, total copper, total lead, and total zinc identified in the duplicate set evaluated exceeded the 50% RPD Control Limit. Such variability is typical for total metals due to variations in suspended sediment contribution.

3.18 Chain-of-Custody Forms

Each Merit Analytical Laboratory Report and Quality Control Report was accompanied by a copy of the appropriately executed chain of custody.

3.19 Laboratory Sample Receipt Checklist

Each Merit Analytical Laboratory Report is accompanied by a Merit Laboratories Login Checklist that documented sample conditions on receipt, chain of custody, preservation, and bottle conditions.

All samples were identified as received via courier pickup on ice at temperatures within 2-4 degrees Celsius and transferred to appropriate refrigeration.

All chains of custody were reported to be adequately filled out, signed, and matched sample labels provided.

No requirement for subcontract laboratory analyses was identified.

All bottles were identified as appropriate and supplied by Merit, intact, filled appropriately, and submitted within holding times.

All samples were received with appropriate preservation, except:

Samples submitted for dissolved metals (including chromium VI) analyses on chains of custody for Merit Analytical Laboratory Reports S40239.01 and S40270.01 required laboratory filtration and preservation; however, the Login Checklists for those analytical reports failed to note those requirements.

4. FINDINGS, CONCLUSIONS, AND DATA LIMITATIONS

On September 13, 2022, Æ collected groundwater samples from eight monitoring wells at the RACER Flint West Industrial Land site using USEPA low-stress sampling protocols. One duplicate sample, one field blank, and one matrix spike and duplicate were collected. Samples were collected in appropriate laboratory-provided bottles with laboratory-provided preservatives and were maintained on ice until delivery under complete chain-of-custody protocols to Merit Laboratories within appropriate holding times. No sample conditions issues were identified in the field or upon laboratory receipt. Samples were analyzed by specified standard methods for VOCs, EGLE 28 PFAS, six total and dissolved metals, and total and dissolved chromium VI. Filtration and preservation for dissolved metals and for total and dissolved chromium VI reportedly were performed immediately upon laboratory receipt instead of during field collection.

Laboratory deliverables include four laboratory reports, quality control reports, and chains-of-custody, two each for PFAS and for VOCs and metals. Each laboratory report contained a case narrative, laboratory accreditation/certification information, laboratory contact information, analytical methods, and analyte reporting relative to method detection limits (MDLs) and reporting limits (RLs). Data qualifiers were identified and evaluated in this Laboratory Data Validation report. No samples were analyzed beyond their holding times; however, PFAS extraction dates identified in the laboratory reports occurred beyond their approved timeframes.

All surrogate recoveries were within their allowable ranges for each surrogate compound, except PFBA, 4:2FTSA, PFDA, and PFOS, VOC 2-methylnaphthalene, and chromium VI, of which only PFOS was commonly present in groundwater at the site – indicating satisfactory laboratory performance overall. Analysis of blank samples identified no indications of significant cross-contamination. The equipment blank identified only a low concentration of dissolved copper exceeding its reporting limit. The field blank was determined to contain detectable concentrations exceeding RLs, and no detectable concentrations were identified in the trip blank. Accordingly, no significant indications of cross-contamination were identified. Laboratory Control Spike (LCS) and LCS Duplicate analyses indicated potential for PFAS analytes PFPrS, HFPHA, and FHpPA and for VOCs tetrahydrofuran and bromoform to be reported high. Similarly, matrix spikes and their duplicates indicate potential for PFBA, FTSA, PFDA, PFOS, and N-MeFOSAA and VOC 2-methylnaphthalene to be reported high. Of these potentially elevated analytes, only PFOS and 2-methylnaphthalene were detected in groundwater samples analyzed. No significant data qualifiers were identified in relation to the detected analyte concentrations.

Based on the assessment detailed in the foregoing QA/QC summary, the laboratory data summarized in Table 2 are considered acceptable with the specific qualifications noted herein.

5. SIGNATURES

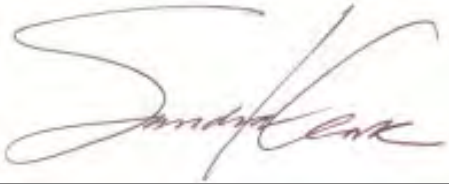
This report was prepared under the supervision of the following Environmental Professionals as defined in §312.10 of 40 CFR 312.



Michael D. Smith, Environmental Professional
Senior Technical Manager of Æ.

December 13, 2022

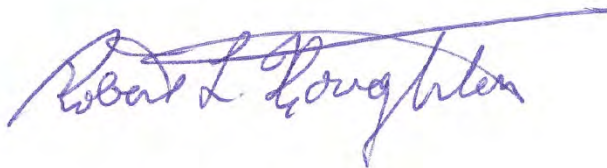
Date



Sandra K. Clark, Environmental Professional
President of Æ.

December 13, 2022

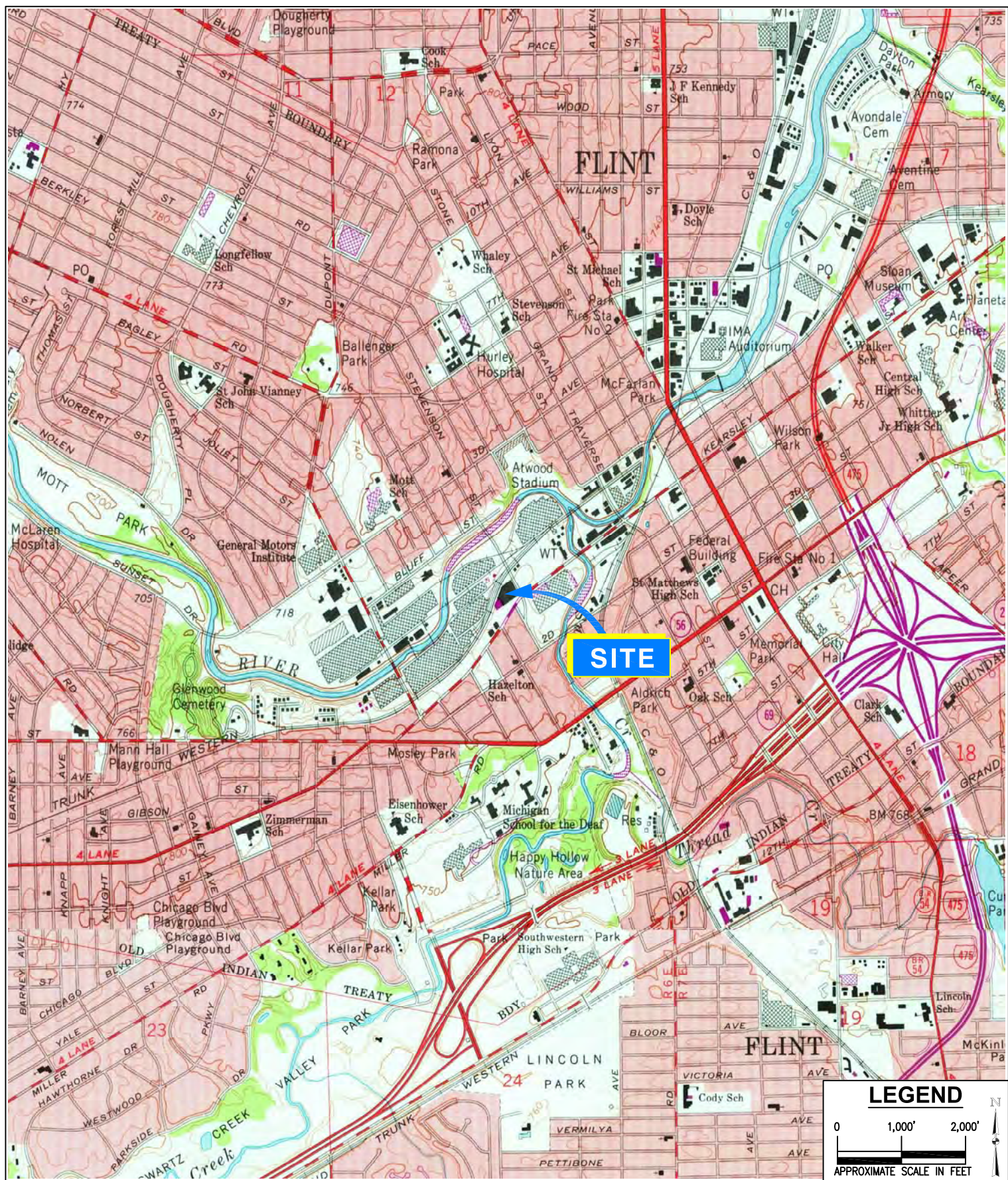
Date



Robert L. Houghton, Environmental Professional,
Æ Senior Technical Advisor,
Æ Quality Assurance Officer

December 13, 2022

Date



Applied EcoSystems, Inc.

Environmental Management, Consulting & Field Services
G-4300 South Saginaw Street, Burton, Michigan 48529
Phone: 810.715.2525; Fax: 810.715.2526

Site Location Map

RACER Flint West #12990

Glenwood Avenue & Stevenson Street
Flint, Michigan

SOURCE: USGS FLINT SOUTH QUADRANGLE
(PROVISIONAL EDITION 1975)

DRAWING DATE:

04/06/2020

CHECKED BY:

MDS

PROJECT:

11-4317-102

FIGURE:

1



Table 1
Sample Collection and Analysis Summary
September 2022 Biannual Groundwater Sampling Event

Lab Sample ID	Field Sample ID (Location)	Matrix	Collection		Analytical Parameters			
			Date (mm/dd/yyyy)	Time (hr:min)	PFAS	VOCs	Total Metals	Dissolved Metals
S40230.01	MW-104S	Groundwater	09/13/2022	09:50		X	X	X
S40239.04	MW-108S	Groundwater	08/13/2022	12:58		X	X	X
S40239.03	MW-110S	Groundwater	09/13/2022	12:00		X	X	X
S40239.02	MW-112S	Groundwater	09/13/2022	10:58		X	X	X
S40239.06	MW-114S	Groundwater	09/13/2022	13:33		X	X	X
S40239.07	DUPE 22913	Groundwater	09/13/2022	09:27		X	X	X
S40239.05	Field Blank	Groundwater	09/13/2022	00:01		X	X	X
S40239.08	Trip Blank	Groundwater	09/13/2022	00:01		X	X	X
S40240.01	MW-104S	Groundwater	09/13/2022	09:42	X			
S40240.04	MW-108S	Groundwater	09/13/2022	12:58	X			
S40240.03	MW-110S	Groundwater	09/13/2022	12:00	X			
S40240.02	MW-112S	Groundwater	09/13/2022	10:50	X			
S40240.06	MW-114S	Groundwater	09/13/2022	13:33	X			
S40240.07	Dupe1.22913	Groundwater	09/13/2022	00:01	X			
S40240.05	Field Blank	Groundwater	09/13/2022	09:27	X			
S40270.02	MW-103S-22913	Groundwater	09/13/2022	15:10		X	X	X
S40270.03	MW-103S-22913 (MS)	Groundwater	09/13/2022	15:10		X	X	X
S40270.04	MW-103S-22913 (MSD)	Groundwater	09/13/2022	15:10		X	X	X
S40270.05	MW-106SR-22913	Groundwater	09/13/2022	15:40		X	X	X
S40270.01	MW-117S-22913	Groundwater	09/13/2022	14:30		X	X	X
S40270.06	Equip Blank (EB)	Groundwater	09/13/2022	15:45		X	X	X
S40271.02	MW-103S, 22913	Groundwater	09/13/2022	15:10	X			
S40271.03	MW-103S, 22913 (MS)	Groundwater	09/13/2022	15:10	X			
S40271.04	MW-103S, 22913 (MSD)	Groundwater	09/13/2022	15:10	X			
S40271.05	MW-106SR, 22913	Groundwater	09/13/2022	15:40	X			
S40271.01	MW-117S, 22913	Groundwater	09/13/2022	14:30	X			
S40271.06	Equip Blank (EB)	Groundwater	09/13/2022	15:45	X			
S40271.07	Trip Blank	Groundwater	09/13/2022	00:01	X			

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected			09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	
METALS ANALYTE (ug/L)	DW	GSI									MW-114S						
Arsenic, Dissolved	10	10		20	1.779 b	1.625	0.565 b	0.968 b	45	45	0.716 b	48	0.282 b	<2	NA	285	290
Arsenic	10	10		57	4	2	0.332 b	2	97	127	2	176	<2	<2	NA	321	316
Chromium VI, Dissolved	100	11		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	NA	22 l	31 l
Chromium VI	100	11		<250	<50	<50	<10	<10	<10	<10	<10	<50	<10	<10	NA	200	196
Chromium, Dissolved	100	160	G	0.2 b	10	1.056 b	0.428 b	1.952 b	0.728 b	0.437 b	0.285 b	0.254 b	0.255 b	<5	NA	255	259
Chromium	100	160	G	0.969 b	17100	278	1.308 b	1.516 b	8	1.219 b	45	3.597 b	0.405 b	<5	NA	252	251
Copper, Dissolved	1000	20	G	<5	1.252 b	1.60 b	0.853 b	0.626 b	<5	0.459 b	3.762 b	0.529 b	<5	0.591 b	NA	251	253
Copper	1000	20	G	<5	129	7	0.747 b	0.914 b	<5	8	3.6 b	22	0.392 b	<5	NA	245	248
Lead, Dissolved	4	44	G	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	NA	252	248
Lead	4	44	G	<3	0.297 b	0.271 b	<3	<3	<3	6	0.407 b	17	<3	<3	NA	241	252
Selenium, Dissolved	50	5		<5	3.904 b	4.346 b	2.48 b	<5	<5	<5	<5	<5	<5	<5	NA	249	267
Selenium	50	5		<5	6	7	3.116 b	<5	<5	<5	<5	<5	<5	<5	NA	243	251
Zinc, Dissolved	2400	260	G	0.823 b	<5	2.639 b	2.316 b	1.812 b	<5	3.777 b	2.006 b	3.372 b	<5	<5	NA	263	262
Zinc	2400	260	G	<5	7	6	2.116 b	1.038 b	<5	32	1.893 b	100	<5	<5	NA	263	259
VOC ANALYTE (ug/L)	DW	GSI															
Acetone	730	1700		<50	<50	<50	<50	<50	6.5 J	<50	<50	4.7 J	<50	<50	<50	52	48.7 J
Acrylonitrile	2.6	2.0 (M); 1.2		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	55	53
2-Butanone (MEK)	13000	2,200		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	52	49
Benzene	5	200		1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	53	53
n-Butylbenzene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54
Bromobenzene	18	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55
Bromochloromethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51
Bromodichloromethane	80	NC		<1	0.28 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	53	53
Bromoform	80 (A,W)	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	59	58
Bromomethane	10	4.2; [5(M)]		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	51	51
sec-Butylbenzene	230	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	54	53
tert-Butylbenzene	80	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	53
Carbon disulfide	800	NC		<5	0.13 JB	0.15 JB	<5	<5	0.15 JB	<5	<5	<5	<5	0.24 JB	<5	50	50
Carbon tetrachloride	5	38	X	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	52	51
Chlorobenzene	100	25		2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	56
Chloroethane	430	1,100		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	49	49
Chloroform	80	350		<1	0.47 J	<1	2	<1	<1	<1	0.26 J	<1	2	1	<1	51	51
Chloromethane	260	NC		<5	<5	<5	<5	<5	<5	<5	0.12 J	<5	<5	0.32 J	<5	52	52
1,1-Dichloroethane	880	740		<1	<1	<1	<1	<1	0.69 J	2	<1	2	<1	<1	<1	51	50
1,1-Dichloroethene	7	130		<1	<1	<1	<1	<1	0.39 J	2	<1	2	<1	<1	<1	49	48
1,2-Dibromo-3-chloropropane	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	64	62
1,2-Dibromoethane	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	57	55
1,2-Dichlorobenzene	600	13		0.17 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55
1,2-Dichloroethane	5.0 (A)	360 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	51	51
1,2-Dichloropropane	5.0 (A)	230 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51
1,3-Dichlorobenzene	6.6	28		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	55
1,4-Dichlorobenzene	75	17		0.13 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	55

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD	
Date Collected			09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	
VOC ANALYTE (ug/L)	DW	GSI															
cis-1,2-Dichloroethene	70	620		0.16 J	<1	<1	<1	<1	3	142	<1	136	<1	<1	<1	51	50
cis-1,3-Dichloropropene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54
Dibromochloromethane	80 (A,W)	ID		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	58	56
Dibromomethane	230	NA		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	54	54
Dichlorodifluoromethane	1700	ID		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	52	51
Diethyl ether	10 (E)	ID		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	51	50
trans-1,2-Dichloroethene	100	1500		<1	<1	<1	<1	<1	0.17 J	0.95 J	<1	0.82 J	<1	<1	<1	50	49
trans-1,3-Dichloropropene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	55
trans-1,4-Dichloro-2-butene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	65	62
Ethylbenzene	74	18		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	53
2-Hexanone	1000	ID		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	61	57
Hexachloroethane	21	6.7		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	60	58
p-Isopropyltoluene	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	54	54
Isopropylbenzene	800	28		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	55	53
VOC ANALYTE (ug/L) {cont}	DW	GSI															
2-Methylnaphthalene	260	19		0.24 JB	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.16 JB	<5	77	84
4-Methyl-2-pentanone (MIBK)	1800	ID		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	59	56
tert-Methyl butyl ether (MTBE)	40 (E)	7,100 (X)		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	53	53
Methyl iodide	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51
Methylene chloride	5	1500		<5	<5	<5	<5	<5	<5	<5	<5	0.64 J	0.61 J	<5	<5	52	52
Naphthalene	520	11		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	63	64
n-Propylbenzene	80	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54
Styrene	100	80		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54
1,1,1,2-Tetrachloroethane	77	ID		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55
1,1,1-Trichloroethane	200	89		<1	<1	<1	<1	<1	<1	1	<1	1	<1	<1	<1	50	49
1,1,2,2-Tetrachloroethane	8.5	78 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	57	56
1,1,2-Trichloroethane	5.0 (A)	330 (X)		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	50	53
1,2,3-Trichlorobenzene	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	58	62
1,2,3-Trichloropropane	42	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	56
1,2,3-Trimethylbenzene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	55
1,2,4-Trichlorobenzene	NC	NC		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	57	59
1,2,4-Trimethylbenzene	63 (E)	17		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	56	54
1,3,5-Trimethylbenzene	72 (E)	45		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	53
Tetrachloroethene	5	60		<1	<1	<1	<1	<1	<1	0.21 J	<1	<1	<1	<1	<1	52	51
Tetrahydrofuran	95	11000		<90	<90	<90	<90	<90	<90	<90	<90	<90	0.33 JB	<90	49.11 J	47.82 J	
Toluene	790	270		0.16 J	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	52	51
Trichloroethene	5	200		<1	<1	<1	<1	<1	7	252 E	1	219 E	<1	<1	<1	53	53
Trichlorofluoromethane	2600	NA		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	53	52
Vinyl chloride	2	13		0.74 J	<1	<1	<1	<1	2	14	<1	13	<1	<1	<1	53	54
o-Xylene	NC	NC		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	55	54
p,m-Xylene	NC	NC		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	109	107
Xylenes, Total	280	49		<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	164	161

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID			MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected			09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022
PFA ANALYTE (ng/L)	DW	GSI														
Perfluorobutanoic acid (PFBA)	NC	NC	<190 X	<9.5 X	<9.5	<9.1	<9.6	<28 X	<9.2	<10	<9.5	<9.7	<9.8	<10	330	300
Perfluoropentanoic acid (PFPeA)	NC	NC	<3.8	<3.8	1.8 J	<3.6	<3.8	<3.7	<3.7	<4.0	<3.8	<3.9	<3.9	<4.1	110	110
Fluorotelomer sulfonic acid (4:2 FTS)	NC	NC	<1.9 I	<1.9 I	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9 I	<1.9	<2.0	<2.0	120	120
Perfluorohexanoic acid (PFHxA)	400,000	NC	<5.7 X	<1.9	2.5	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	90
Perfluorobutane sulfonic acid (PFBS)	420	NC	<1.9	1.6 J	4.3	1.5 J	1.7 J	1.4 J	1.7 J	1.5 J	1.5 J	<1.9	<2.0	<2.0	110	100
Perfluoroheptanoic acid (PFHpA)	NC	NC	<1.9	<1.9	2.1	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	94	110
Perfluoropentane sulfonic acid (PFPeS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	100	99
Fluorotelomer sulfonic acid (6:2 FTS)	NC	NC	<1.9 I	<1.9	<1.9	<1.8	<1.9	<1.8 I	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	92	100
Perfluorooctanoic acid (PFOA)	8	12,000	2.5	<1.9	13	<1.8	2.5	<1.8	2.2	<2.0	<1.9	<1.9	<2.0	<2.0	92	100
Perfluorohexane sulfonic acid (PFHxS)	51	NC	<1.9	1.7 J	1.9	2.3	2.5	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	120	110
Perfluorohexane Sulfonic Acid - LN (PFHxS-LN)	NC	NC	<1.9	<1.9	1.6 J	1.5 J	1.6	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	97	94
Perfluorohexane Sulfonic Acid - BR (PFHxS-BR)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	17	15
Perfluorononanoic acid (PFNA)	6	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	99	100
Fluorotelomer sulfonic acid (8:2 FTS)	NC	NC	<1.9 I	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	110
Perfluoroheptane sulfonic acid (PFHpS)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	120	99
Perfluorodecanoic acid (PFDA)	NC	NC	<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	130	99
N-Methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	NC	NC	<1.9 I	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	100	96
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	NC	NC	5.1 I	<3.8	<3.8	<3.6	<3.8	<3.7	<3.7	<4.0	<3.8	<3.9	<3.9	<4.1	110	110
Perfluorooctane sulfonic acid (PFOS)	16	12	73	<1.9	16	8.8	5.6	5.8	30	<2.0	23	<1.9	<2.0	<2.0	200	190
Perfluorooctane Sulfonic Acid - LN (PFOS-LN)	NC	NC	49	<1.9	4.3	2.5	<1.9 J	2.8	18	<2.0	14	<1.9	<2.0	<2.0	140	130
Perfluorooctane Sulfonic Acid - BR (PFOS-BR)	NC	NC	20	<1.9	11	6.3	4.6	3	12	<2.0	9	<1.9	<2.0	<2.0	62	58

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

Sample ID				MW-103S	MW-104S	MW-106SR	MW-108S	MW-110S	MW-112S	MW-114S	MW-117S	Dupe1	FB-1	EB-1	Trip Blank	MW-103S MS	MW-103S MSD
Date Collected				09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022	09/13/2022
PFA ANALYTE (ng/L)	DW	GSI															
Perfluoroundecanoic acid (PFUnDA)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	95	88
Perfluorononane sulfonic acid (PFNS)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	100
Perfluorododecanoic acid (PFDoDA)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	99	93
Perfluorodecane sulfonic acid (PFDS)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	91
Perfluorotridecanoic acid (PFTrDA)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	84	86
Perfluorooctane sulfonamide (FOSA)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	99	88
Perfluorotetradecanoic acid (PFTeDA)	NC	NC		<3.8	<3.8	<3.8	<3.6	<3.8	<3.7	<3.7	<4.0	<3.8	<3.9	<3.9	<4.1	96	110
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	90	81
9-chlorohexadecafluoro-3-oxanone1-sulfonic acid (9Cl-PF3ONS)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	96	91
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NC	NC		<1.9	<1.9	<1.9	<1.8	<1.9	<1.8	<1.8	<2.0	<1.9	<1.9	<2.0	<2.0	110	110
Hexafluoropropylene oxide dimer (HFPO-DA)	NC	NC		<9.6	<9.5	<9.5	<9.1	<9.6	<9.2	<9.2	<10	<9.5	<9.7	<9.8	<10	110	88

Table 2
Groundwater Analytical Results
RACER - Flint West # 12990

NOTES:

DW - Drinking Water Residential Generic Criteria.
GSI - Groundwater Surface Water Interface Generic Criteria per
MDEQ Surface Water Division Rule 57.

Blank cells indicate no detectable concentrations	
Exceeds DW criteria	X
Exceeds GSI criteria	X
Exceeds both DW and GSI criteria	X
Compound also found in associated method blank, suggesting a laboratory artifact.	X
Insufficient data to develop criterion/no criterion	NC
Groundwater to Surface Water Interface Criteria - calculated based on 257ppm total hardness in the Flint River	G
Not Sampled	NS
Filtered in lab	1
Filtered and preserved in lab	2
Not analyzed	NA

PFAS criteria based on EGLE proposed drinking water criteria for selected PFAS compounds.

Table 3
Analytical Methods and Holding Time Criteria
September 2022 Biannual Groundwater Sampling Event
RACER Flint West #12990, Flint, Michigan

Parameter	Analytical Method	Matrix	Sample ID	Holding Time (days)				Approved Holding Time
				Collection Date/Time	Extraction Date/Time	Latest Analytical Date/Time	Actual Holding Time (days)	
VOCs	SW5030C /8260C	Groundwater	MW-104S	09/13/22 09:50	NA	09/14/22 23:30	1.57	14 Days
		Groundwater	MW-108S	09/13/22 12:58		09/15/22 00:40	1.49	
		Groundwater	MW-110S	09/13/22 12:00		09/15/22 00:17	1.51	
		Groundwater	MW-112S	09/13/22 10:58		09/14/22 23:53	1.54	
		Groundwater	MW-114S	09/13/22 13:33		09/15/22 01:27	1.63	
		Groundwater	Dupe 122913	09/13/22 13:33		09/15/22 01:51	1.51	
		Water	Field Blank	09/13/22 09:27		09/15/22 01:04	1.65	
		Water	Trip Blank	09/13/22 00:01		09/20/22 13:31	7.56	
		Groundwater	MW-103S	09/13/22 15:10		09/19/22 15:44	7.02	
		Groundwater	MW-103S (MS)	09/13/22 15:10		09/19/22 12:06	5.87	
		Groundwater	MW-103S (MSD)	09/13/22 15:10		09/19/22 12:26	5.89	
		Groundwater	MW-106SR	09/13/22 15:40		09/19/22 16:23	6.03	
		Groundwater	MW-117S	09/13/22 14:30		09/19/22 16:03	6.06	
		Water	Equip Blank (EB)	09/13/22 15:45		09/19/22 15:25	5.58	
Metals, Total	E200.8	Groundwater	MW-104S	09/13/22 09:50	09/15/22 10:30	09/15/22 11:57	2.10	180 Days
		Groundwater	MW-108S	09/13/22 12:58	09/15/22 10:30	09/15/22 12:14	1.97	
		Groundwater	MW-110S	09/13/22 12:00	09/15/22 10:30	09/15/22 12:09	2.01	
		Groundwater	MW-112S	09/13/22 10:58	09/15/22 10:30	09/15/22 12:05	2.09	
		Groundwater	MW-114S	09/13/22 13:33	09/15/22 10:30	09/15/22 12:34	1.96	
		Groundwater	Dupe 122913	09/13/22 00:01	09/15/22 10:30	09/15/22 12:38	2.53	
		Water	Field Blank	09/13/22 09:27	09/15/22 10:30	09/15/22 12:28	2.13	
		Water	Trip Blank	09/13/22 00:01	NA	NA	NA	
		Groundwater	MW-103S	09/13/22 15:10	09/15/22 10:30	09/15/22 12:20	1.88	
		Groundwater	MW-103S (MS)	09/13/22 15:10	09/15/22 10:30	09/15/22 12:21	1.88	
		Groundwater	MW-103S (MSD)	09/13/22 15:10	09/15/22 10:30	09/15/22 12:22	1.88	
		Groundwater	MW-106S	09/13/22 15:40	09/15/22 10:30	09/15/22 13:00	1.88	
		Groundwater	MW-117S	09/13/22 14:30	09/15/22 10:30	09/15/22 12:44	1.93	
		Water	Equip Blank (EB)	09/13/22 15:45	09/15/22 10:30	09/15/22 11:52	1.84	

Parameter	Analytical Method	Matrix	Sample ID	Holding Time (days)				Approved Holding Time
				Collection Date/Time	Extraction Date/Time	Latest Analytical Date/Time	Actual Holding Time (days)	
Chromium VI, Total	SM3500-Cr	Groundwater	MW-104S	09/13/22 09:50		09/13/22 16:20	0.27	24 Hours (1 Day)
		Groundwater	MW-108S	09/13/22 12:58		09/13/22 16:45	0.16	
		Groundwater	MW-110S	09/13/22 12:00		09/13/22 16:35	0.19	
		Groundwater	MW-112S	09/13/22 10:58		09/13/22 16:30	0.23	
		Groundwater	MW-114S	09/13/22 13:33		09/13/22 17:00	0.14	
		Groundwater	Dupe 122913	09/13/22 13:33		09/13/22 17:05	0.16	
		Water	Field Blank	09/13/22 09:27		09/13/22 16:50	0.31	
		Water	Trip Blank	09/13/22 00:01		NA	N/A	
		Groundwater	MW-103S	09/13/22 15:10		09/14/22 13:35	0.93	
		Groundwater	MW-103S (MS)	09/13/22 15:10		09/14/22 13:40	0.93	
		Groundwater	MW-103S (MSD)	09/13/22 15:10		09/14/22 13:45	0.94	
		Groundwater	MW-106RS	09/13/22 15:40		09/14/22 13:50	0.93	
		Groundwater	MW-117S	09/13/22 14:30		09/14/22 13:20	0.95	
		Water	Equip Blank (EB)	09/13/22 15:45		09/14/22 13:55	0.92	
Metals, Dissolved (As, Cr, Cu, Pb, Se, Zn)	E200.8	Groundwater	MW-104S	09/13/22 09:50	09/15/22 10:30	09/15/22 12:03	2.09	180 Days
		Groundwater	MW-108S	09/13/22 12:58	09/15/22 10:30	09/15/22 12:26	1.98	
		Groundwater	MW-110S	09/13/22 12:00	09/15/22 10:30	09/15/22 12:11	2.01	
		Groundwater	MW-112S	09/13/22 10:58	09/15/22 10:30	09/15/22 12:07	2.09	
		Groundwater	MW-114S	09/13/22 13:33	09/15/22 10:30	09/15/22 12:35	1.96	
		Groundwater	Dupe 122913	09/13/22 13:33	09/15/22 10:30	09/15/22 12:40	1.96	
		Water	Field Blank	09/13/22 09:27	09/15/22 10:30	09/15/22 12:30	2.13	
		Water	Trip Blank	09/13/22 00:01	NA	NA	NA	
		Groundwater	MW-103S	09/13/22 15:10	09/15/22 10:30	09/15/22 12:48	1.90	
		Groundwater	MW-103S (MS)	09/13/22 15:10	09/15/22 10:30	09/15/22 12:50	1.90	
		Groundwater	MW-103S (MSD)	09/13/22 15:10	09/15/22 10:30	09/15/22 12:51	1.90	
		Groundwater	MW-106S	09/13/22 15:40	09/15/22 10:30	09/15/22 13:03	1.89	
		Groundwater	MW-117S	09/13/22 14:30	09/15/22 10:30	09/15/22 12:46	1.93	
		Water	Equip Blank (EB)	09/13/22/15:45	09/15/22 10:30	09/15/22 11:53	1.81	
Chromium VI, Dissolved	SM3500-Cr	Groundwater	MW-104S	09/13/22 09:50		09/13/22 17:10	0.31	24 Hours (1 Day)
		Groundwater	MW-108S	09/13/22 12:58		09/13/22 17:25	0.19	
		Groundwater	MW-110S	09/13/22 12:00		09/13/22 17:20	0.22	
		Groundwater	MW-112S	09/13/22 10:58		09/13/22 17:15	0.26	
		Groundwater	MW-114S	09/13/22 13:33		09/13/22 17:35	0.17	
		Groundwater	Dupe 122913	09/13/22 13:33		09/13/22 17:40	0.17	

Parameter	Analytical Method	Matrix	Sample ID	Holding Time (days)				Approved Holding Time
				Collection Date/Time	Extraction Date/Time	Latest Analytical Date/Time	Actual Holding Time (days)	
		Water	Field Blank	09/13/22 09:27		09/13/22 17:30	0.34	
		Water	Trip Blank	09/13/22 00:01		NA	NA	
		Groundwater	MW-103S	09/13/22 15:10		09/14/22 14:00	0.92	
		Groundwater	MW-103S (MS)	09/13/22 15:10		09/14/22 14:05	0.95	
		Groundwater	MW-103S (MSD)	09/13/22 15:10		09/14/22 14:10	0.96	
		Groundwater	MW-106S	09/13/22 15:40		09/14/22 14:15	0.94	
		Groundwater	MW-117S	09/13/22 14:30		09/14/22 13:30	0.96	
		Water	Equip Blank (EB)	09/13/22 15:45		09/14/22 14:20	0.94	
PFAS	ASTM D7979-19M	Groundwater	MW-104S	09/13/22 09:50	09/29/22 15:00	09/30/22 19:11	16.25 /17.26	14 Days to Extract
		Groundwater	MW-108S	09/13/22 12:58	09/29/22 15:00	09/30/22 20:10	16.13 /17.30	
		Groundwater	MW-110S	09/13/22 12:00	09/29/22 15:00	09/30/22 19:50	16.13 /17.33	28 Days to Analyze
		Groundwater	MW-112S	09/13/22 10:50	09/29/22 15:00	09/30/22 19:31	16.17 /17.36	
		Groundwater	MW-114S	09/13/22 13:33	09/29/22 15:00	09/30/22 20:49	16.06 /17.30	
		Groundwater	Dupe1.22913	09/13/22 13:33	09/30/22 15:00	09/30/22 21:08	17.06 /17.32	
		Water	Field Blank	09/13/22 09:27	09/29/22 15:00	09/30/22 20:29	16.23 /17.46	
		Groundwater	MW-103S	09/13/22 15:10	09/29/22 15:00	09/30/22 21:47	15.99 /17.28	
		Groundwater	MW-103S (MS)	09/13/22 15:10	09/29/22 15:00	09/30/22 22:07	15.99 /17.29	
		Groundwater	MW-103S (MSD)	09/13/22 15:10	09/29/22 15:00	09/30/22 22:26	15.99 /17.30	
		Groundwater	MW-106SR	09/13/22 15:40	09/29/22 15:00	09/30/22 22:46	15.97 /17.30	
		Groundwater	MW-117S	09/13/22 14:30	09/29/22 15:00	09/30/22 21:28	16.02 /17.27	
		Water	Equip Blank (EB)	09/13/22 15:45	09/29/22 15:00	09/30/22 23:05	15.99 /17.34	
		Water	Trip Blank	09/13/22 00:01	09/29/22 15:00	09/30/22 23:25	N/A	

Table 4
Qualified Sample Results Due to Outlying MS/MSD Results
September 2022 Biannual Groundwater Sampling Event
RACER Flint West #12990, Flint, Michigan

Analyte	Batch or Sample ID	MS % Recovery	MSD/MSD Replicate % Recovery	RPD (percent)	Control Limits		Associated Samples	Qualified Result(s)
					% Recovery	RPD		
Rept. QC-S40239.01								
2-Methylnaphthalene	220919A9	154.3	167.6	8.2	25.5-165.5	30.0	MW-114S Dupe 122913	Analyte ND, except for replicate of MW-114S after a 10-times dilution. Potentially elevated if detected.
Rept. QC-S40240.01								
M2-4:2FTSA	AK220930 B	453.9	422.4	7.2	50.0-150.0	30.0	MW-104S	Analytes ND including PFOS in MW-104S and the Field Blank. PFOS detected in MW-108S, MW-110S, MW-112S, MW-114S and its duplicate. Potentially elevated if detected.
M2-6:2FTSA		298.7	250.7	17.5	50.0-150.0	30.0	MW-108S	
M2-8:2FTSA		169.7	173.5	2.2	50.0-150.0	30.0	MW-110S	
D3N-MeFOSAA		148.8	157.9	5.9	50.0-150.0	30.0	MW-112S	
PFBA	AK220930 B	345.5	333.3	9.5	70.0-130.0	30.0	MW-114S	
4:2FTSA		119.8	133.3	0.0	70.0-130.0	30.0	Dupe1,22913	
PFDA		136.1	110.0	27.1	70.0-130.0	30.0	Field Blank	
PFOS		133.0	130.0	5.1	70.0-130.0	30.0		
Rept. QC-S40270-01								
Chromium VI	CHR22091 4-W1	98	96	2	80-120	15	MW103S MW103S (MS) MW103S (MSD) MW-106SR Equipment Blank	Cr VI detected only in MW-103S (MS & MSD), total and dissolved. Potentially elevated if detected.
		7	12	34	80-120	15		
2-Methylnaphthalene	220919A9	154.3	167.6	8.2	25-165.5	30.0		

Analyte	Batch or Sample ID	MS % Recovery	MSD/MSD Replicate % Recovery	RPD (percent)	Control Limits		Associated Samples	Qualified Result(s)
					% Recovery	RPD		
Rept. QC-S40271-01								
PFBA	AK220930 B	345.5	333.3	9.5	70.0-130.0	30.0	MW-103S	4:2FTSA and PFDA detected only in MW-103S (MS) and (MSD). PFBA and PFOS also detected in MW-103S. PFOS also detected in MW-106SR. Potentially elevated if detected.
4:2 FTSA		125.7	133.3	0.0	70.0-130.0	30.0	MW-103S (MS)	
PFDA		136.1	110.0	27.1	70.0-130.0	30.0	MW-103S (MSD)	
PFOS		133.0	130.0	5.1	70.0-130.0	30.0	MW-106SR MW-117S Equip Blank (EB) Trip Blank	

Table 5
Field Sample Duplicate Results and Relative Percent Differences (RPD)
September 2022 Biannual Groundwater Sampling Event
RACER Flint West #12990, Flint, Michigan

Analyte	MW-114S (Groundwater)		
	09/13/22 13:33	Dupe-2	RPD (%)
Arsenic, total	0.127	0.176	32
Chromium, total	0.001219 b	0.003597 b	99
Copper, total	0.008	0.022	93
Chromium VI, total	<0.004	<0.02	-----
Lead, total	0.006	0.017	96
Selenium, total	<0.00209	<0.00209	-----
Zinc, total	0.032	0.100	103
Arsenic, dissolved	0.045	0.048	6.5
Chromium, dissolved	0.000437 b	0.000254 b	4.7
Chromium VI, dissolved	<0.004	<0.004	-----
Copper, dissolved	<0.000459 b	0.000529 b	-----
Lead, dissolved	<0.000190	<0.000190	-----
Selenium, dissolved	<0.00209	<0.00209	-----
Zinc, dissolved	0.003777 b	0.003372 b	11.3
Acetone	<4.0	4.7 J	----
Acrylonitrile	<0.38	<0.38	-----
2-Butanone	<3.3	<3.3	-----
Benzene	<0.11	<0.11	-----
n-Butylbenzene	<0.17	<0.17	-----
Bromobenzene	<0.15	<0.15	-----
Bromochloromethane	<0.36	<0.36	-----
Bromodichloromethane	<0.19	<0.19	-----
Bromoform	<0.35	<0.35	-----
Bromomethane	<0.18	<0.18	-----
sec-Butylbenzene	<0.16	<0.16	-----
tert-Butylbenzene	<0.14	<0.14	-----
Carbon disulfide	<0.13	<0.13	-----
Carbon tetrachloride	<0.19	<0.19	-----
Chlorobenzene	<0.16	<0.16	-----
Chloroethane	<0.21	<0.21	-----
Chloroform	<0.15	<0.15	-----
Chloromethane	<0.20	<0.20	-----
1,1-Dichloroethane	2	2	0
1,1-Dichloroethene	2	2	0
1,2-Dibromo-3-chloropropane	<0.48	<0.48	-----
1,2-Dibromomethane	<0.12	<0.12	-----
1,2-Dichlorobenzene	<0.13	<0.13	-----
1,2-Dichloroethane	<0.17	<0.17	-----
1,2-Dichloropropane	<0.18	<0.18	-----
1,3-Dichlorobenzene	<0.20	<0.20	-----
1,4-Dichlorobenzene	<0.18	<0.18	-----
cis-1,2-Dichloroethene	142	136	4.32
Cis-1,3-Dichloropropene	<0.17	<0.17	-----
Dibromochloromethane	<0.20	<0.20	-----
Dibromomethane	<0.45	<0.45	-----
Dichlorodifluoromethane	<0.57	<0.57	-----

Analyte	MW-114S (Groundwater)		
	09/13/22 13:33	Dupe-2	RPD (%)
Diethyl ether	<0.27	<0.27	-----
trans-1,2-Dichloroethene	0.95 J	0.82 J	-----
trans-1,3-Dichloropropene	<0.20	<0.20	-----
trans-1,4-Dichloro-2-butene	<0.26	<0.26	-----
Ethylbenzene	<0.10	<0.10	-----
2-Hexanone	<0.19	<0.19	-----
Hexachloroethane	<0.35	<0.35	-----
p-Isopropyltoluene	<0.19	<0.19	-----
Isopropylbenzene	<0.12	<0.12	-----
2-Methylnaphthalene	<0.21	<0.21	-----
4-Methyl-2-pentanone	<0.35	<0.35	-----
tert-Methyl butyl ether	<0.25	<0.25	-----
Methyl iodide	<0.24	<0.24	-----
Methylene chloride	<0.16	<0.16	-----
Naphthalene	<0.18	<0.18	-----
n-Propylbenzene	<0.12	<0.12	-----
Styrene	<0.13	<0.13	-----
1,1,1,2-Tetrachloroethane	<0.22	<0.22	-----
1,1,1-Trichloroethane	1	1	0
1,1,2,2-Tetrachloroethane	<0.27	<0.27	-----
1,1,2-Trichloroethane	<0.34	<0.34	-----
1,2,3-Trichlorobenzene	<0.25	<0.25	-----
1,2,3-Trichloropropane	<0.54	<0.54	-----
1,2,3-Trimethylbenzene	<0.14	<0.14	-----
1,2,4-Trichlorobenzene	<0.24	<0.24	-----
1,3,5-Trimethylbenzene	<0.18	<0.18	-----
Tetrachloroethene	<0.13	<0.13	-----
Tetrahydrofuran	<1.2	<1.2	-----
Toluene	<0.17	<0.17	-----
Trichloroethene	252 E	219 E	14.0
Trichlorofluoromethane	<0.28	<0.28	-----
Vinyl chloride	14	13	7.4
o-Xylene	<0.16	<0.16	-----
p,m-Xylene	<0.42	<0.42	-----

Analyte	MW-114S (Groundwater)		
	09/13/22 13:33	Dupe-2	RPD (%)
PFBA	<9.2	<9.5	--
PFPeA	<0.92	<0.95	--
4:2 FTSA	<1.5	<1.5 I	--
PFHxA	<1.3	<1.3	--
PFBS	1.7 J	1.5 J	12
PFHpA	<1.3	<1.3	--
PFPeS	<1.8	<1.7	--
6:2 FTSA	<2.0	<1.9	--
PFOA	1.5	<1.5	--
PFHxS	<1.5	<1.5	--
PFHxS-LN	<1.5	<1.5	--
PFHxS-BR	<1.5	<1.5	--
PFNA	<1.7	<1.7	--
8:2 FTSA	<0.92	<0.95	--
PFHpS	<1.8	<1.9	--
PFDA	<1.8	<1.9	--
N-MeFOSAA	<1.8	<1.9	--
EtFOSAA	<1.8	<1.9	--
PFOS	30	23	26
PFOS-LN	18	14	25
PFOS-BR	12	9.0	29
PFUnDA	<1.3	<1.3	--
PFNS	<1.3	<1.3	--
PFDoDA	<1.5	<1.5	--
PFDS	<1.3	<1.3	--
PFTTrDA	<1.1	<1.1	--
FOSA	<1.7	<1.7	--
PFTeDA	<1.7	<1.7	--
11CI-PF3OUdS	<1.7	<1.7	--
9CI-PF3ONS	<1.3	<1.3	--
ADONA	<1.8	<1.9	--
HFPO-DA	<1.8	<1.9	--

NOTE: Since this validation report is included as an Appendix to the September 2022 Data Report, Copies of the laboratory reports are included in the September 2022 Data Report as Appendix B, Attachment 3 and are not duplicated here.