Memorandum

June 30, 2021

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From	Chris Meincke/ds/MEM-278	**Tel**	+1 248 893 3400
Subject	Groundwater Characterization Activities and Review of Subsurface Conditions Eckles Road Site Livonia, Michigan	**Project no.**	012607-MEM-278

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1. Introduction

GHD Services Inc. (GHD) has prepared this memorandum to summarize groundwater characterization activities conducted from October 2020 through February 2021 and an evaluation of subsurface conditions in the southern right of way of Amrhein Road, located south of the Revitalizing Auto Communities Environmental Response Trust (RACER) site at 13000 Eckles Road in Livonia, Michigan (Site). This memorandum and corresponding figures review the geology, groundwater conditions, sewer infrastructure, and groundwater sampling results, including the right of way area south of Amrhein Road and east of Eckles Road. The additional characterization activities were conducted in general accordance with the Proposed Area 1 Groundwater Sampling Scope of Work (GHD, October 2020) approved by USEPA on October 15, 2020 and the Area 1 Redevelopment/Construction Groundwater Monitoring Plan (GHD, January 2021), and including comments received from USEPA on January 25, 2021.

2. Site Activities Summary

GHD mobilized to the Site on October 21, 2020 to begin field activities. The scope of work included collecting samples from the existing annual groundwater monitoring plan well network, collecting samples from additional existing shallow and deep monitoring wells, and installation of soil borings and collection of groundwater grab samples through direct-push drilling equipment tooling. Following receipt of a Right-of-Way (ROW) Permit from the City of Livonia, a portion of the additional sampling activities were initiated on January 13, 2021 to provide groundwater characterization data at locations south of the Area 1 Barrier Wall. Groundwater samples were collected and submitted to Test America for the analysis of Per- and Polyfluoroalkyl Substances (PFAS) by EPA Method 537 modified to further characterize PFAS within and downgradient of the Area 1 barrier wall. Groundwater samples were also collected for the analysis of select metals (chromium, hexavalent chromium, nickel, and boron) to characterize groundwater concentrations within and downgradient of the Area 1 barrier wall. The analysis and reporting of boron was included for select monitoring wells based on comments provided

by EGLE related to the long-term performance monitoring activities proposed in the Area 1 Interim Measures Work Plan (GHD, December 2020). A summary of samples collected for analysis of PFAS and/or metals, is presented in Table 1.

Activities described in the Area 1 Redevelopment/Construction Groundwater Monitoring Plan including routine groundwater elevation monitoring and baseline/pre-construction groundwater sample collection were also initiated in 2021.

2.1 Soil Boring Installation

Prior to installation of temporary groundwater sample locations, soil borings were installed to obtain information on the subsurface geology and determine the depth to groundwater. Soil was visually observed for signs of impact, scanned with a photoionization detector (PID) and logged per GHD standard operating procedure. Stratigraphic boring logs are presented in Attachment A.

2.2 Temporary Well Installation and Groundwater Grab Sample Collection

Temporary wells were advanced using the GeoProbe tooling to the targeted depth for groundwater sample collection. The tooling was then pulled up leaving the tip of the sampler in place and opening the 32-inch long stainless steel screen for sample collection. Consistent with previous characterization and monitoring related to Area 1, two intervals were sampled at each boring location as identified in Table 1. The stainless steel screen was decontaminated between sample intervals and boring locations. Shallow groundwater sample intervals were targeted to be within 5 feet of the water table. Deep groundwater sample intervals were targeted from approximately 20 to 25 feet below ground surface (bgs), or at depths similar to the mid-point of nearby existing deep monitoring wells. Groundwater samples were collected from the temporary stainless steel screen using low-flow sampling techniques with a peristaltic pump and dedicated tubing as described in the Quality Assurance Project Plan (GHD, June 2019). Field parameters collected during purging included pH, temperature, conductivity, oxidation/reduction potential (ORP), dissolved oxygen (DO), and turbidity. Groundwater samples were collected after the field parameters stabilize, if possible. Stabilization was considered in accordance with the tolerances listed below:

- pH = ±0.1 standard units (s.u.) of the average of three consecutive readings
- Specific Conductance = ±0.005 milliSiemen per centimeter (mS/cm) of the average of three consecutive readings less than 1 mS/cm, and ±0.010 mS/cm of the average of three consecutive readings for greater than 1 mS/cm
- Temperature = ±3 percent of the average of three consecutive readings (temperature recorded as degrees Celsius)
- DO = ±10 percent of the average of three consecutive readings
- ORP = ±10 millivolts (mV) of the average of three consecutive readings
- Turbidity = ±10 percent of the average value of the three readings (to a maximum of 20 nephelometric turbidity units (NTU)) or a final value of < 5 NTU

If turbidity did not stabilize at less than 10 NTU during purging of any temporary stainless steel screen or monitoring well, both unfiltered and field filtered samples were collected for analysis of nickel and chromium (and boron if applicable). Field filtered samples were collected from sample locations as identified in Table 1. A summary of field parameters recorded during sample collection is provided in Tables 2 and 3.\

2.3 Groundwater Sampling

GHD collected groundwater samples from existing monitoring wells for analysis of PFAS and metals. Prior to groundwater sample collection, static groundwater elevations were measured and recorded. Groundwater samples were collected from the monitoring wells using low flow sampling techniques with a peristaltic pump

and dedicated tubing. Field parameters collected during purging included pH, temperature, conductivity, oxidation/reduction potential (ORP), dissolved oxygen (DO), and turbidity. Groundwater samples were collected after the field parameters stabilized, if possible. Stabilization was considered in accordance with the tolerances listed below:

- pH = ±0.1 standard units (s.u.) of the average of three consecutive readings
- Specific Conductance = ±0.005 milliSiemen per centimeter (mS/cm) of the average of three consecutive readings less than 1 mS/cm, and ±0.010 mS/cm of the average of three consecutive readings for greater than 1 mS/cm
- Temperature = ±3 percent of the average of three consecutive readings (temperature recorded as degrees Celsius)
- DO = ±10 percent of the average of three consecutive readings
- ORP = ±10 millivolts (mV) of the average of three consecutive readings
- Turbidity = ±10 percent of the average value of the three readings [to a maximum of 20 nephelometric turbidity units [NTU]) or a final value of <5 NTU

If turbidity did not stabilize at less than 10 NTU during purging of any existing monitoring wells, both unfiltered and field filtered samples were collected for analysis of nickel and chromium (and boron in select monitoring wells). Field filtered samples were collected from sample locations as identified in Table 1. A summary of field parameters recorded during sample collection is provided in Tables 2 and 3.

2.4 Groundwater Elevation Monitoring

GHD collected routine groundwater elevation measurements as part of the activities described in the Area 1 Redevelopment/Construction Groundwater Monitoring Plan beginning in February 2021. Groundwater pump and treatment activities were initiated in February 2021. A summary of groundwater elevation monitoring activities and the volume of water pumped and treated in the on-site groundwater treatment plant (GWTP) are summarized in Attachment F.

3. Groundwater Sample Results

Groundwater sample analytical results were compared to EGLE Generic Cleanup Criteria for Residential and Nonresidential category, effective December 30, 2013 and as amended (December 21, 2020). Analytical results of groundwater samples analyzed for metals are presented on Figures 1 and 2 and in Table 2. Analytical results of groundwater samples analyzed for PFAS are presented on Figures 3 and 4 in Table 3.

Total chromium and nickel were detected in three of the five temporary well locations installed to delineate impacts in the north and western portion of Area 1 (TW83-20, TW84-20, TW86-20) at concentrations greater than the EGLE GSI criteria, however, hexavalent chromium and dissolved nickel were not detected above GSI criteria in these samples. Due to the collection of samples through direct push drilling equipment, turbidity levels were elevated and additional sample volume was field filtered and submitted for the analysis of dissolved metals.

Chromium, hexavalent chromium, and nickel were detected at concentrations similar to previous sample results in monitoring wells within the southern portion of the Area 1 Barrier Wall. Additionally, groundwater samples were analyzed for boron in groundwater samples collected from select locations to determine if there were potential impacts related to historical plating operations at the Site. Boron was detected at concentrations great than EGLE GSI criteria in monitoring wells located downgradient of the former plating area, primarily where nickel has historically been detected at the highest concentrations.

Nickel was detected in concentrations greater than EGLE GSI criteria in southern property boundary wells HA-14, MW-S-7S, MW-27, and HA-15. The detections of nickel immediately outside the southern Area 1

Barrier Wall are consistent with previous sample results in existing monitoring wells. Chromium was not detected at concentrations greater than EGLE GSI criteria in southern property boundary wells. Boron was detected at concentrations great than EGLE GSI criteria in southern property boundary monitoring wells HA-15 and MW-68D-16.

Neither chromium nor nickel were detected at concentrations greater than the EGLE GSI criteria in the 4 temporary well locations located south of the Site in the southern Amrhein Road ROW. Nickel was detected in off-site existing monitoring wells HA-MW-11, HA-16, MW-OS-4D, and MW-OS-4S, at concentrations greater than EGLE GSI criteria. Nickel concentrations in HA-MW-11, HA-16, MW-OS-4D and MW-OS-4S are similar to previous groundwater sample results. Boron was detected at concentrations greater than EGLE GSI criteria in HA-MW-11, HA-16, MW-OS-4D, and MW-OS-5D.

Chromium, chromium VI and nickel results in groundwater are generally consistent with previous post-injection performance monitoring results and the previously implemented ISCR injections have maintained a reduction in chromium VI and nickel concentrations.

PFOS was detected in three of the five temporary well locations installed to delineate impacts in the north and western portion of Area 1 (TW84-20, TW85-20, TW87-20) at concentrations greater than the EGLE GSI criteria of 12 ng/l. Concentrations of PFOS in the northern and western temporary well locations are generally less than at locations within the former plating area. In former plating area monitoring well pairs where PFOS was detected at concentrations greater than GSI, PFOS concentrations are generally greater in shallow monitoring wells compared to concentrations in deep monitoring wells.

PFOS was detected at concentrations similar to previous sample results in monitoring wells within the southern portion of the Area 1 Barrier Wall. Matrix interference was identified in three samples requiring dilution by the analytical laboratory prior to analysis. PFOS results for samples collected from MW-67D-16, MW-67S-19, and MW-70D-16 were reported as non-detect with elevated reporting limits.

PFOS was detected at concentrations greater than the EGLE GSI criteria in southern property boundary wells PZ-SW-10, MW-68D-16, and HA-15 and temporary well TW-68S-20. The detections of PFOS immediately outside the southern Area 1 Barrier Wall are consistent with previous sample results in existing monitoring wells.

PFOS was detected at concentrations slightly greater than the EGLE GSI criteria in 2 of the 4 temporary well locations located south of the Site in the southern Amrhein Road ROW. PFOS was detected at a concentration of 21 ng/L in the shallow groundwater sampled collected from TW-OS-13, 34 ng/L in the deep groundwater sampled collected from TW-OS-13, and the deep sample collected from TW-OS-14. PFOS was not detected in the temporary well locations west of TW-OS-13 or the permanent existing monitoring wells located east of TW-OS-14.

Analytical results of samples analyzed for PFAS are provided on Figures 3 and 4, and in Table 3.
A summary of analytical results for metals and PFAS for the years of 2015 to 2021 is provided in Attachment B.
Laboratory Analytical Reports from are presented in Attachment C.

The laboratory results were assessed by a GHD Chemist. Based on a review and assessment of the laboratory results and quality assurance/quality control information, the data are acceptable for use and comparison to criteria. A limited number of samples were reported with elevated report limits due to matrix interference. Specific qualifications for individual results with estimated values or laboratory identified method blank contamination are noted on the attached Table 2, Tables B.1 and B.2, and in the data validation memorandum provided in Attachment D.

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4. Cross-Section Development

To evaluate the right of way south of Amrhein Road, boring logs completed and previously recorded groundwater elevations in this area were utilized to create a geological cross-section. The cross-section location is presented on Figure 5 and the completed cross-section is provided on Figure 6. The geology for this area consists of an approximate 25-ft thick upper layer of sand overlaying clay. Groundwater elevations range from 693.31 to 695.26 ft above mean sea level (AMSL). The existing stormwater and sanitary sewer lines were also added to the cross-section to determine where the sewer system components are positioned relative to the groundwater table. The placement of the stormwater and sanitary sewer system on the cross-section was approximated based on the City of Livonia "Amrhein Road Reconstruction" plans, dated March 2017. A copy of the City of Livonia-provided information is provided in Attachment E.

5. Groundwater Analytical Results and Sewer Pathway Evaluation

Groundwater sampling completed south of the Area 1 barrier have displayed concentrations of boron, nickel, and PFOS at concentrations greater than the EGLE GSI criteria. The existing on-site 72" storm sewer located outside the Area 1 barrier wall was relined in 2018 and is not considered a potential GSI pathway. The metals and PFAS results from August 2016 through January 2021 for Area 1 South, including off-site locations, are presented on Figure 2 and 4. A summary of the results from the sampling locations displayed on the cross-section in the right of way on the south side of Amrhein Road is provided below:

– PFOS was detected at concentrations above EGLE GSI criteria at TW-OS-13S/D and TW-OS-14D.
– Boron was detected at concentrations above EGLE GSI criteria at HA-MW-11 and HA-16.
– Nickel was detected at concentrations above EGLE GSI criteria at HA-MW-11 and HA-16.

EGLE GSI criteria exceedances for PFOS are limited to sample locations TW-OS-13S/D and TW-OS-14D and are delineated to the east and west. EGLE GSI criteria exceedances for boron and nickel are limited to sample locations at HA-MW-11 and HA-16 and are delineated to the west but are not delineated to the east.

As shown on Figure 6, components of the stormwater system are positioned at elevations above and below the groundwater table located south of Amrhein Road. The existing 24-inch storm line that runs parallel to Amrhein Road with a gradual downward slope to the east is positioned below the recorded groundwater elevations. The two stormwater catch basins and connecting 12-inch line lies above the recorded groundwater elevations. The existing 72-inch stormwater line that exits the Eckles Road Site and continues to travel south from Amrhein Road is located approximately 100 feet west of TW-OS-11, which is west of any GSI exceedances in groundwater. The existing 12-inch sanitary line located in the south Amrhein Road ROW that runs parallel to Amrhein Road with a gradual downward slope to the east is positioned at very similar elevation to the groundwater table, portions of the line lie right above and below the observed groundwater elevations.

Since portions of the stormwater and sanitary system are below the groundwater table, the potential exists for the lines to be in contact with groundwater exceeding EGLE GSI criteria at locations east of TW-OS-12.

6. Construction Monitoring Activities

Groundwater elevation monitoring activities completed from February 2021 through June 17, 2021 revealed elevations consistent with previous periods of periodic GWTP operation. Groundwater elevations within the Area 1 Barrier Wall (GWTP sump, PZ-SW-9) show a decrease during periods of GWTP operation.

Groundwater elevations in monitoring wells outside the southern portion of the Area 1 Barrier Wall have historically been lower than elevations inside the Area 1 Barrier Wall and do not show a response to operation of the GWTP. Approximately 1.1 million gallons of groundwater was extracted, treated, and discharged during the February to May 2021 period. A system/control issue is currently preventing operation of the main pump within the GWTP, however a backup submersible pump has been maintaining water levels within the GWTP sump. Pumping capacity is currently restricted to less than 10 gallons per minute (GPM) within the GWTP. Alternatives are currently being evaluated to improve pumping capacity to the GWTP, although it is noted that the GWTP is scheduled to be relocated in August and the controls and pumps will be upgraded at that time.

7. Conclusions

Concentrations of PFOS and metals in groundwater samples collected from within the Area 1 Barrier Wall are generally consistent with previous results. Dissolved metals have been delineated to the north and west of the former plating operations. PFAS has generally been delineated to the north of the former plating operations, however, PFOS was detected at concentrations greater than GSI criteria TW84S-20 and TW85S/D-20, which are located northwest of the former plating operations.

Concentrations of metals and PFOS in groundwater at the southern property boundary are consistent with recent sample results. PFOS was detected in groundwater samples collected from temporary well locations in the southern Amrhein Road ROW at concentrations greater than EGLE GSI criteria at TW-OS-13 and TW-OS-14.

Off-site nickel concentrations remain consistent with recent sampling results and continue to be detected at concentrations significantly less than before the Area 1 Barrier Wall was installed. Nickel has not been detected in downgradient monitoring wells MW-OS-8D or MW-OS-5D at concentrations greater than EGLE GSI criteria.

Boron results were recently reported by the laboratory for select groundwater samples collected in October 2020 and analyzed for in additional groundwater samples collected in January 2021. Boron was detected in on-site, property boundary, and off-site groundwater samples at concentrations greater than EGLE GSI criteria. Concentrations of boron detected in groundwater samples vary with depth and location. Boron was detected at concentrations greater than GSI criteria in groundwater samples collected from wells that generally had current or historical detections of nickel, but boron is also present in groundwater samples collected from a downgradient monitoring well where nickel is not present, indicating there may be sources of boron contributing to groundwater in addition to the Site. Boron has not been delineated to below GSI criteria to the east and south of the Site.

Based on information obtained from the City of Livonia, the depth of the off-site storm and sanitary sewers are located at or beneath the groundwater surface. The eastern extent of groundwater with exceedances of boron and nickel above their GSI criteria adjacent to the sewers has not been delineated.

Additional investigation activities are proposed to evaluate off-site detections of PFOS, nickel, and boron at concentrations greater than EGLE GSI criteria. Two new monitoring well pairs are proposed to monitor off-site PFOS concentrations, one pair in the southern Amrhein Road ROW between temporary locations TW-OS-12 and TW-OS-13, and one pair south of TW-OS-13. One new monitoring well pair is proposed to monitor the eastern extent of nickel and boron concentrations, located in the southern Amrhein Road ROW southeast of MW79D-16. The monitoring wells will be screened at elevations similar to shallow and deep temporary groundwater sample collection locations described in the Proposed Area 1 Groundwater Sampling Scope of Work (GHD, October 2020). Locations and depths may be adjusted based on conditions encountered in the field.

Samples are also proposed to be collected from the southern Amrhein Road storm and sanitary sewers. Proposed locations for collection of storm sewer samples include: the manhole located east of temporary location TW-OS-14S/D; the manhole west (upstream) of TW-OS-12S/D to provide background concentrations;

and the storm sewer manhole east of former monitoring well MW-OS-3D. If an additional storm sewer manhole further downstream (near or east of proposed monitoring wells MW-OS-17S/D) is accessible, an additional storm sewer sample will be collected. Locations proposed for collection of sanitary sewer samples include: the manhole located west of TW-OS-14S/D; and the next accessible downstream sanitary sewer manhole. All sewer samples will be analyzed for nickel, boron, and PFAS. Proposed monitoring well and sewer sample locations are presented on Figure 7.

Regards

Chris Meincke
Associate

CSM/ds/MEM-278

Encl. Figure 1 - Cross-Section Location A-A' South Side of Amrhein Road
Figure 2 - Geological Cross-Section A-A'
Figure 3 - Metals Results Area 1 South
Figure 4 - PFAS Results Area 1 South
Figure 5 - Cross-Section Location A-A' South Side of Amrhein Road
Figure 6 - Geological Cross-Section A-A'
Figure 7 – Proposed Monitoring Well and Sewer Sample Locations

Table 1 – Field Sample Key
Table 2 – Summary of Metals and PFAS Results Area 1 – 2015-2021

Attachment A – Stratigraphic Boring Logs
Attachment B – Summary of Analytical Results – Metals & PFAS
Attachment C – Laboratory Analytical Reports
Attachment D – Data Validation Memorandum
Attachment E – City of Livonia "Amrhein Road Reconstruction" plans, dated March 2017
Attachment F – Construction Groundwater Monitoring Summary

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Figures

TW84D-20	10/22/2020
	mg/L
Metals	
Chromium	0.29 [abc]
Chromium (dissolved)	0.018
Chromium III (trivalent)	0.29 [abc]
Chromium VI (hexavalent)	0.050 U
Nickel	0.11 [abc]
Nickel (dissolved)	0.012 J

TW84S-20	10/22/2020
	mg/L
Metals	
Chromium	0.0011 J
Chromium III (trivalent)	0.010 U
Chromium VI (hexavalent)	0.010 U
Nickel	0.0031 J

MW-41D-13	07/24/2019
	mg/L
Metals	
Chromium	0.02
Chromium III (trivalent)	0.02
Chromium VI (hexavalent)	0.01 U
Nickel	0.04 U

MW-A1-4S	07/24/2019
	mg/L
Metals	
Chromium	23 [abc]\26 [abc]
Chromium III (trivalent)	0.01 U\2.1 J [abc]
Chromium VI (hexavalent)	24 [abc]\24 [abc]
Nickel	0.04 U\0.04 U

TW85D-20	10/21/2020
	mg/L
Metals	
Chromium	0.011
Chromium (dissolved)	0.0014 J
Chromium III (trivalent)	0.011
Chromium VI (hexavalent)	0.010 U
Nickel	0.0057 J
Nickel (dissolved)	0.0034 J

TW85S-20	10/21/2020
	mg/L
Metals	
Chromium	0.00086 J
Chromium III (trivalent)	0.010 U
Chromium VI (hexavalent)	0.010 U
Nickel	0.0033 J

MW-62D-15	01/16/2017
	mg/L
Metals	
Chromium	0.038
Chromium (dissolved)	0.019
Chromium III (trivalent)	0.038
Chromium VI (hexavalent)	0.25 U
Nickel	0.17 [abc]
Nickel (dissolved)	0.013 J

MW-27D-12	08/15/2016	01/16/2017	01/25/2017	04/27/2017	07/25/2019
	mg/L	mg/L	mg/L	mg/L	mg/L
Metals					
Chromium	4.4 [abc]	0.14 [abc]	0.0012 J	0.049	0.079
Chromium (dissolved)	4.2 [abc]	0.042	0.00065 J	0.037	-
Chromium III (trivalent)	2.9 [abc]	0.14 [abc]	0.0050 U	0.049	0.079
Chromium VI (hexavalent)	1.6 [abc]	0.25 U	0.0050 U	1.0 U	0.5 U
Nickel	1.4 [abc]	0.14 [abc]	0.061	0.38 [abc]	0.12 [abc]
Nickel (dissolved)	0.66 [abc]	0.055	0.049	0.085 [c]	-

MW-81D-16	08/15/2016	01/16/2017	01/17/2017	07/25/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.0075-0.0065	0.93 [abc]	-	0.013
Chromium (dissolved)	0.005 U\0.005 U	0.72 [abc]	-	-
Chromium III (trivalent)	0.005 U\0.005 U	0.93 [abc]	-	0.013
Chromium VI (hexavalent)	0.01-0.013 [c]	-	0.25 U	0.01 U
Nickel	0.04 U\0.04 U	0.084 [c]	-	0.04 U
Nickel (dissolved)	0.04 U\0.04 U	0.067	-	-

TW86D-20	10/21/2020
	mg/L
Metals	
Chromium	0.22 [abc]
Chromium (dissolved)	0.032
Chromium III (trivalent)	0.22 [abc]
Chromium VI (hexavalent)	0.010 U
Nickel	0.08 [c]
Nickel (dissolved)	0.017 J

TW86S-20	10/21/2020
	mg/L
Metals	
Chromium	0.22 [abc]
Chromium III (trivalent)	0.017
Chromium VI (hexavalent)	0.20 [abc]
Nickel	0.017 J

MW-31S-19	07/22/2019
	mg/L
Metals	
Chromium	0.1
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.11 [abc]
Nickel	0.4 [abc]

MW-31D-12	08/16/2016	01/17/2017	04/27/2017	07/22/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	5.7 [abc]	13 [abc]	0.95 [abc]	9 [abc]\12 [abc]
Chromium (dissolved)	5.7 [abc]	7.6 [abc]	0.44 [abc]	-
Chromium III (trivalent)	0.005 U	7.6 [abc]	0.95 [abc]	9 [abc]\12 [abc]
Chromium VI (hexavalent)	7.8 [abc]	5.5 [abc]	1.0 U	0.5 U\0.5 U
Nickel	0.05	0.065	0.085 [c]	0.84 [abc]\1.3 [abc]
Nickel (dissolved)	0.05	0.06	0.04 U	-

MW-63D-15	01/16/2017
	mg/L
Metals	
Chromium	2.3 [abc]
Chromium (dissolved)	0.035
Chromium III (trivalent)	2.3 [abc]
Chromium VI (hexavalent)	0.25 U
Nickel	0.085 [c]
Nickel (dissolved)	0.016 J

MW-32D-12	08/16/2016	01/26/2017	04/26/2017	01/12/2018	05/22/2018	07/25/2019
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Metals						
Chromium	83 [abc]	0.29 [abc]\0.24 [abc]	0.11 [abc]	0.087	0.13 [abc]	0.13 [abc]
Chromium (dissolved)	81 [abc]	0.065\0.035	0.005 U	-	0.019	-
Chromium III (trivalent)	0.05 U	0.29 [abc]\0.24 [abc]	0.11 [abc]	0.087	0.13 [abc]	0.13 [abc]
Chromium VI (hexavalent)	86 [abc]	0.50 U\0.50 U	0.50 U	2.5 U	0.25 U	0.01 U
Nickel	0.82 [abc]	0.12 [abc]\0.15 [abc]	0.25 [abc]	0.83 [abc]	0.15 [abc]	1.3 [abc]
Nickel (dissolved)	0.79 [abc]	0.078 [c]\0.093 [c]	0.04 U	-	0.057	-

MW-28D-12	08/15/2016	04/26/2017	01/12/2018	05/22/2018	07/25/2019
	mg/L	mg/L	mg/L	mg/L	mg/L
Metals					
Chromium	0.29 [abc]	0.27 [abc]	0.28 [abc]	0.16 [abc]	0.28 [abc]
Chromium (dissolved)	0.56 [abc]	0.15 [abc]	-	0.046	-
Chromium III (trivalent)	0.29 [abc]	0.27 [abc]	0.28 [abc]	0.16 [abc]	0.28 [abc]
Chromium VI (hexavalent)	0.5 U	1.0 U	2.5 U	1.0 U	0.5 U
Nickel	0.065	0.32 [abc]	1.7 [abc]	0.9 [abc]	0.41 [abc]
Nickel (dissolved)	0.087 [c]	0.24 [abc]	-	0.2 [abc]	-

MW-25D-12	08/15/2016	01/17/2017	04/26/2017
	mg/L	mg/L	mg/L
Metals			
Chromium	0.0069	0.012	0.025
Chromium (dissolved)	0.005 U	0.0028 J	0.005 U
Chromium III (trivalent)	0.0069	0.012	0.025
Chromium VI (hexavalent)	0.5 U	0.25 UH	1.0 U
Nickel	0.04 U	0.096 [c]	0.073
Nickel (dissolved)	0.04 U	0.057	0.04 U

MW-33D-12	08/16/2016	01/26/2017	04/26/2017
	mg/L	mg/L	mg/L
Metals			
Chromium	67 [abc]	0.25 [abc]	0.093
Chromium (dissolved)	58 [abc]	0.036	0.005 U
Chromium III (trivalent)	110 [abc]	0.25 [abc]	0.093
Chromium VI (hexavalent)	55 [abc]	0.025 U	0.50 U
Nickel	3.2 [abc]	0.061	0.058
Nickel (dissolved)	3.3 [abc]	0.02 J	0.04 U

MW-A1-12D	08/16/2016	01/26/2017	04/25/2017	07/22/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.02	0.068	0.023	0.0077
Chromium (dissolved)	0.011	0.0011 J	0.005 U	-
Chromium III (trivalent)	0.005 U	0.068	0.023	0.01 U
Chromium VI (hexavalent)	0.019 [c]	0.025 U	0.25 U	0.5 U
Nickel	2.1 [abc]	0.99 [abc]	0.14 [abc]	0.086 [c]
Nickel (dissolved)	2.1 [abc]	0.061	0.042	-

MW-A1-12S	07/22/2019
	mg/L
Metals	
Chromium	0.045
Chromium III (trivalent)	0.045
Chromium VI (hexavalent)	0.01 U
Nickel	0.04 U

MW-29D-12	08/15/2016	01/17/2017	04/25/2017	07/25/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.025	0.012\0.012	0.0055	0.0097
Chromium (dissolved)	0.012	0.004 J\0.0029 J	0.005 U	-
Chromium III (trivalent)	0.025	0.012\0.012	0.0055	0.01 U
Chromium VI (hexavalent)	0.005 U	0.25 U\0.25 U	0.25 U	0.01 U
Nickel	6.5 [abc]	0.25 [abc]\0.13 [abc]	0.043	0.04 U
Nickel (dissolved)	5.4 [abc]	0.034 J\0.046	0.04 U	-

MW-45D-15	01/16/2017
	mg/L
Metals	
Chromium	90 [abc]
Chromium (dissolved)	62 [abc]
Chromium III (trivalent)	90 [abc]
Chromium VI (hexavalent)	0.25 U
Nickel	1.8 [abc]
Nickel (dissolved)	0.14 [abc]

TWIIS-20	10/22/2020
	mg/L
Metals	
Chromium	0.0017 J\0.00085 J
Chromium III (trivalent)	0.010 U\0.010 UJ
Chromium VI (hexavalent)	0.010 U\0.010 UJ
Nickel	0.014 J\0.014 J

TWIID-20	10/22/2020
	mg/L
Metals	
Chromium	0.35 [abc]
Chromium (dissolved)	0.14 [abc]
Chromium III (trivalent)	0.35 [abc]
Chromium VI (hexavalent)	0.010 U
Nickel	0.092 [c]
Nickel (dissolved)	0.04

MW-42D-15	08/15/2016	01/16/2017	04/27/2017	05/22/2018	07/24/2019
	mg/L	mg/L	mg/L	mg/L	mg/L
Metals					
Chromium	19 [abc]	14 [abc]	1.5 [abc]	1.4 [abc]	1.4 [abc]
Chromium (dissolved)	13 [abc]	14 [abc]	0.45 [abc]	0.046	-
Chromium III (trivalent)	13 [abc]	14 [abc]	1.5 [abc]	1.4 [abc]	1.4 [abc]
Chromium VI (hexavalent)	5 [abc]	0.25 U	0.25 U	0.0050 U	0.01 U
Nickel	0.18 [abc]	2.6 [abc]	0.066	0.04 U	0.04 U
Nickel (dissolved)	0.053	2.7 [abc]	0.04 U	0.04 U	-

MW-44D-15	08/15/2016	04/27/2017
	mg/L	mg/L
Metals		
Chromium	140 [abc]	110 [abc]
Chromium (dissolved)	120 [abc]	84 [abc]
Chromium III (trivalent)	1100 [abc]	110 [abc]
Chromium VI (hexavalent)	26 [abc]	1.0 U
Nickel	0.7 [abc]	0.86 [abc]
Nickel (dissolved)	0.096 [c]	0.4 U

MW-46D-15	07/24/2019
	mg/L
Metals	
Chromium	0.28 [abc]
Chromium III (trivalent)	0.28 [abc]
Chromium VI (hexavalent)	0.01 U
Nickel	0.04 U

MW-23D-12	08/15/2016	01/16/2017	04/27/2017	05/22/2018
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.095	0.032	0.071	0.021
Chromium (dissolved)	0.011	0.015	0.0077	0.0052
Chromium III (trivalent)	0.095	0.032	0.071	0.021
Chromium VI (hexavalent)	0.5 U	0.25 U	1.0 U	0.25 U
Nickel	0.31 [abc]	0.33 [abc]	0.68 [abc]	0.044
Nickel (dissolved)	0.073	0.05	0.052	0.04 U

MW-38D-13	07/24/2019
	mg/L
Metals	
Chromium	0.015
Chromium III (trivalent)	0.015
Chromium VI (hexavalent)	0.01 U
Nickel	0.048

MW-S3D-15	07/24/2019
	mg/L
Metals	
Chromium	0.033
Chromium III (trivalent)	0.033
Chromium VI (hexavalent)	0.01 U
Nickel	0.24 [abc]

MW-39D-13	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-004	05/21/2020
	mg/L
Metals	
Chromium	0.0072 J
Chromium VI (hexavalent)	0.010 U
Nickel	0.92 [abc]

MW-101	05/21/2020
	mg/L
Metals	
Chromium	0.000383 J
Chromium VI (hexavalent)	0.010 U
Nickel	0.0027 J

MW-57D-15	05/01/2017	05/22/2018	07/24/2019
	mg/L	mg/L	mg/L
Metals			
Chromium	0.005 U	0.005 U	0.005 U
Chromium (dissolved)	0.005 U	0.005 U	-
Chromium III (trivalent)	0.0050 U	0.0050 U	0.01 U
Chromium VI (hexavalent)	0.0050 U	0.025 U	0.01 U
Nickel	0.32 [abc]	0.29 [abc]	0.055
Nickel (dissolved)	0.0054 J	0.04 U	-

MW-A1-3S	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.04 U

MW-40D-13	07/25/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	2.4 [abc]

MW-61D-15	05/01/2017	05/23/2018	07/24/2019
	mg/L	mg/L	mg/L
Metals			
Chromium	0.005 U	0.005 U	0.005 U
Chromium (dissolved)	0.005 U	0.005 U	-
Chromium III (trivalent)	0.0050 U	0.0050 U	0.01 U
Chromium VI (hexavalent)	0.010 U	0.25 U	0.01 U
Nickel	5.3 [abc]	1.7 [abc]	2.5 [abc]
Nickel (dissolved)	0.02 J	0.044	-

MW-26D-12	08/15/2016	01/17/2017	04/26/2017
	mg/L	mg/L	mg/L
Metals			
Chromium	0.005 U	0.00097 J	0.005 U
Chromium (dissolved)	0.005 U	0.005 U	0.005 U
Chromium III (trivalent)	0.005 U	0.0050 U	0.0050 U
Chromium VI (hexavalent)	0.05 U	0.25 U	1.0 U
Nickel	4.1 [abc]	0.3 [abc]	1.4 [abc]
Nickel (dissolved)	1.8 [abc]	0.014 J	0.04 U

MW-65D-15	04/27/2017
	mg/L
Metals	
Chromium	0.0064
Chromium (dissolved)	0.005 U
Chromium III (trivalent)	0.0064
Chromium VI (hexavalent)	0.25 U
Nickel	0.04 U
Nickel (dissolved)	0.04 U

MW-64D-15	01/17/2017
	mg/L
Metals	
Chromium	0.0031 J
Chromium (dissolved)	0.0013 J
Chromium III (trivalent)	0.0031 J
Chromium VI (hexavalent)	0.25 UH
Nickel	8.1 [abc]
Nickel (dissolved)	0.049

MW-73D-16	08/15/2016	01/17/2017	04/25/2017	07/25/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.0093	0.0022 J	0.005 U	0.005 U
Chromium (dissolved)	0.005 U	0.005 U	0.005 U	-
Chromium III (trivalent)	0.0093	0.0022 J	0.0050 U	0.01 U
Chromium VI (hexavalent)	0.005 U	0.25 U	0.25 U	0.01 U
Nickel	170 [abc]	3.3 [abc]	2.1 [abc]	0.66 [abc]
Nickel (dissolved)	150 [abc]	0.1 [c]	0.04 U	-

MW-A1-11D	08/16/2016	01/17/2017	04/24/2017	07/22/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.005 U	0.0014 J	0.005 U	0.005 U
Chromium (dissolved)	0.005 U	0.00094 J	0.005 U	-
Chromium III (trivalent)	0.005 U	0.0050 U	0.0050 U	0.01 U
Chromium VI (hexavalent)	0.005 U	0.25 U	0.0050 U	0.01 U
Nickel	0.61 [abc]	1 [abc]	0.99 [abc]	0.29 [abc]
Nickel (dissolved)	0.6 [abc]	0.94 [abc]	0.11 [abc]	-

MW-A1-11S	07/22/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.084 [c]

MW-30D-12	08/15/2016	01/17/2017	04/25/2017	01/12/2018	05/22/2018	07/25/2019
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Metals						
Chromium	0.005 U	0.003 J	0.05 U	0.005 U	0.005 U	0.05 U\0.005 U
Chromium (dissolved)	0.005 U	0.0015 J	0.005 U	-	0.005 U	-
Chromium III (trivalent)	0.005 U	0.0030 J	0.050 U	0.0050 U	0.0050 U	0.01 U\0.01 U
Chromium VI (hexavalent)	0.005 U	0.25 U	1.0 U	2.5 U	0.25 U	1 U\1 U
Nickel	88 [abc]	0.13 [abc]	1.7 [abc]	1 [abc]	1 [abc]	2.4 J [abc]\4.8 J [abc]
Nickel (dissolved)	96 [abc]	0.09 [c]	0.25 [abc]	-	0.04 U	-

MW-34D-12	08/16/2016	01/18/2017	04/25/2017	07/25/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.005 U	0.003 J	0.0089	0.005 U
Chromium (dissolved)	0.005 U	0.0011 J	0.005 U	-
Chromium III (trivalent)	0.005 U	0.0030 J	0.0089	0.01 U
Chromium VI (hexavalent)	0.005 U	0.025 U	0.50 U	0.01 U
Nickel	93 [abc]	2.4 [abc]	0.59 [abc]	1.3 [abc]
Nickel (dissolved)	87 [abc]	0.025 JB	0.04 U	-

MW-7D-16	08/15/2016	01/17/2017	04/25/2017	07/25/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.0093	0.0022 J	0.005 U	0.005 U
Chromium (dissolved)	0.005 U	0.005 U	0.005 U	-
Chromium III (trivalent)	0.0093	0.0022 J	0.0050 U	0.01 U
Chromium VI (hexavalent)	0.005 U	0.25 U	0.25 U	0.01 U
Nickel	170 [abc]	3.3 [abc]	2.1 [abc]	0.66 [abc]
Nickel (dissolved)	150 [abc]	0.1 [c]	0.04 U	-

MW-A1-11D	08/16/2016	01/17/2017	04/24/2017	07/22/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.005 U	0.0014 J	0.005 U	0.005 U
Chromium (dissolved)	0.005 U	0.00094 J	0.005 U	-
Chromium III (trivalent)	0.005 U	0.0050 U	0.0050 U	0.01 U
Chromium VI (hexavalent)	0.005 U	0.25 U	0.0050 U	0.01 U
Nickel	0.61 [abc]	1 [abc]	0.99 [abc]	0.29 [abc]
Nickel (dissolved)	0.6 [abc]	0.94 [abc]	0.11 [abc]	-

MW-A1-11S	07/22/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.084 [c]

MW-30D-12	08/15/2016	01/17/2017	04/25/2017	01/12/2018	05/22/2018	07/25/2019
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Metals						
Chromium	0.005 U	0.003 J	0.05 U	0.005 U	0.005 U	0.05 U\0.005 U
Chromium (dissolved)	0.005 U	0.0015 J	0.005 U	-	0.005 U	-
Chromium III (trivalent)	0.005 U	0.0030 J	0.050 U	0.0050 U	0.0050 U	0.01 U\0.01 U
Chromium VI (hexavalent)	0.005 U	0.25 U	1.0 U	2.5 U	0.25 U	1 U\1 U
Nickel	88 [abc]	0.13 [abc]	1.7 [abc]	1 [abc]	1 [abc]	2.4 J [abc]\4.8 J [abc]
Nickel (dissolved)	96 [abc]	0.09 [c]	0.25 [abc]	-	0.04 U	-

MW-A1-3S	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.04 U

MW-40D-13	07/25/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	2.4 [abc]

MW-61D-15	05/01/2017	05/23/2018	07/24/2019
	mg/L	mg/L	mg/L
Metals			
Chromium	0.005 U	0.005 U	0.005 U
Chromium (dissolved)	0.005 U	0.005 U	-
Chromium III (trivalent)	0.0050 U	0.0050 U	0.01 U
Chromium VI (hexavalent)	0.010 U	0.25 U	0.01 U
Nickel	5.3 [abc]	1.7 [abc]	2.5 [abc]
Nickel (dissolved)	0.02 J	0.044	-

MW-26D-12	08/15/2016	01/17/2017	04/26/2017
	mg/L	mg/L	mg/L
Metals			
Chromium	0.005 U	0.00097 J	0.005 U
Chromium (dissolved)	0.005 U	0.005 U	0.005 U
Chromium III (trivalent)	0.005 U	0.0050 U	0.0050 U
Chromium VI (hexavalent)	0.05 U	0.25 U	1.0 U
Nickel	4.1 [abc]	0.3 [abc]	1.4 [abc]
Nickel (dissolved)	1.8 [abc]	0.014 J	0.04 U

MW-65D-15	04/27/2017
	mg/L
Metals	
Chromium	0.0064
Chromium (dissolved)	0.005 U
Chromium III (trivalent)	0.0064
Chromium VI (hexavalent)	0.25 U
Nickel	0.04 U
Nickel (dissolved)	0.04 U

MW-64D-15	01/17/2017
	mg/L
Metals	
Chromium	0.0031 J
Chromium (dissolved)	0.0013 J
Chromium III (trivalent)	0.0031 J
Chromium VI (hexavalent)	0.25 UH
Nickel	8.1 [abc]
Nickel (dissolved)	0.049

MW-73D-16	08/15/2016	01/17/2017	04/25/2017	07/25/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.0093	0.0022 J	0.005 U	0.005 U
Chromium (dissolved)	0.005 U	0.005 U	0.005 U	-
Chromium III (trivalent)	0.0093	0.0022 J	0.0050 U	0.01 U
Chromium VI (hexavalent)	0.005 U	0.25 U	0.25 U	0.01 U
Nickel	170 [abc]	3.3 [abc]	2.1 [abc]	0.66 [abc]
Nickel (dissolved)	150 [abc]	0.1 [c]	0.04 U	-

MW-004	05/21/2020
	mg/L
Metals	
Chromium	0.0072 J
Chromium VI (hexavalent)	0.010 U
Nickel	0.92 [abc]

MW-S3D-15	07/24/2019
	mg/L
Metals	
Chromium	0.033
Chromium III (trivalent)	0.033
Chromium VI (hexavalent)	0.01 U
Nickel	0.24 [abc]

MW-38D-13	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-46D-15	07/24/2019
	mg/L
Metals	
Chromium	0.28 [abc]
Chromium III (trivalent)	0.28 [abc]
Chromium VI (hexavalent)	0.01 U
Nickel	0.04 U

MW-23D-12	08/15/2016	01/16/2017	04/27/2017	05/22/2018
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.095	0.032	0.071	0.021
Chromium (dissolved)	0.011	0.015	0.0077	0.0052
Chromium III (trivalent)	0.095	0.032	0.071	0.021
Chromium VI (hexavalent)	0.5 U	0.25 U	1.0 U	0.25 U
Nickel	0.31 [abc]	0.33 [abc]	0.68 [abc]	0.044
Nickel (dissolved)	0.073	0.05	0.052	0.04 U

MW-A1-12D	08/16/2016	01/26/2017	04/25/2017	07/22/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.02	0.068	0.023	0.0077
Chromium (dissolved)	0.011	0.0011 J	0.005 U	-
Chromium III (trivalent)	0.005 U	0.068	0.023	0.01 U
Chromium VI (hexavalent)	0.019 [c]	0.025 U	0.25 U	0.5 U
Nickel	2.1 [abc]	0.99 [abc]	0.14 [abc]	0.086 [c]
Nickel (dissolved)	2.1 [abc]	0.061	0.042	-

MW-A1-12S	07/22/2019
	mg/L
Metals	
Chromium	0.045
Chromium III (trivalent)	0.045
Chromium VI (hexavalent)	0.01 U
Nickel	0.04 U

MW-29D-12	08/15/2016	01/17/2017	04/25/2017	07/25/2019
	mg/L	mg/L	mg/L	mg/L
Metals				
Chromium	0.025	0.012\0.012	0.0055	0.0097
Chromium (dissolved)	0.012	0.004 J\0.0029 J	0.005 U	-
Chromium III (trivalent)	0.025	0.012\0.012	0.0055	0.01 U
Chromium VI (hexavalent)	0.005 U	0.25 U\0.25 U	0.25 U	0.01 U
Nickel	6.5 [abc]	0.25 [abc]\0.13 [abc]	0.043	0.04 U
Nickel (dissolved)	5.4 [abc]	0.034 J\0.046	0.04 U	-

MW-W-2S	10/21/2020
	mg/L
Metals	
Chromium	0.0011 J
Chromium III (trivalent)	0.010 U
Chromium VI (hexavalent)	0.010 U
Nickel	0.0031 J

MW-A1-1	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.04 U

MW-S-8S	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-S-8D	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-A1-8S	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-A1-8D	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-S-3S	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-S-7S	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-S-4S	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-S-4D	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-S-5S	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

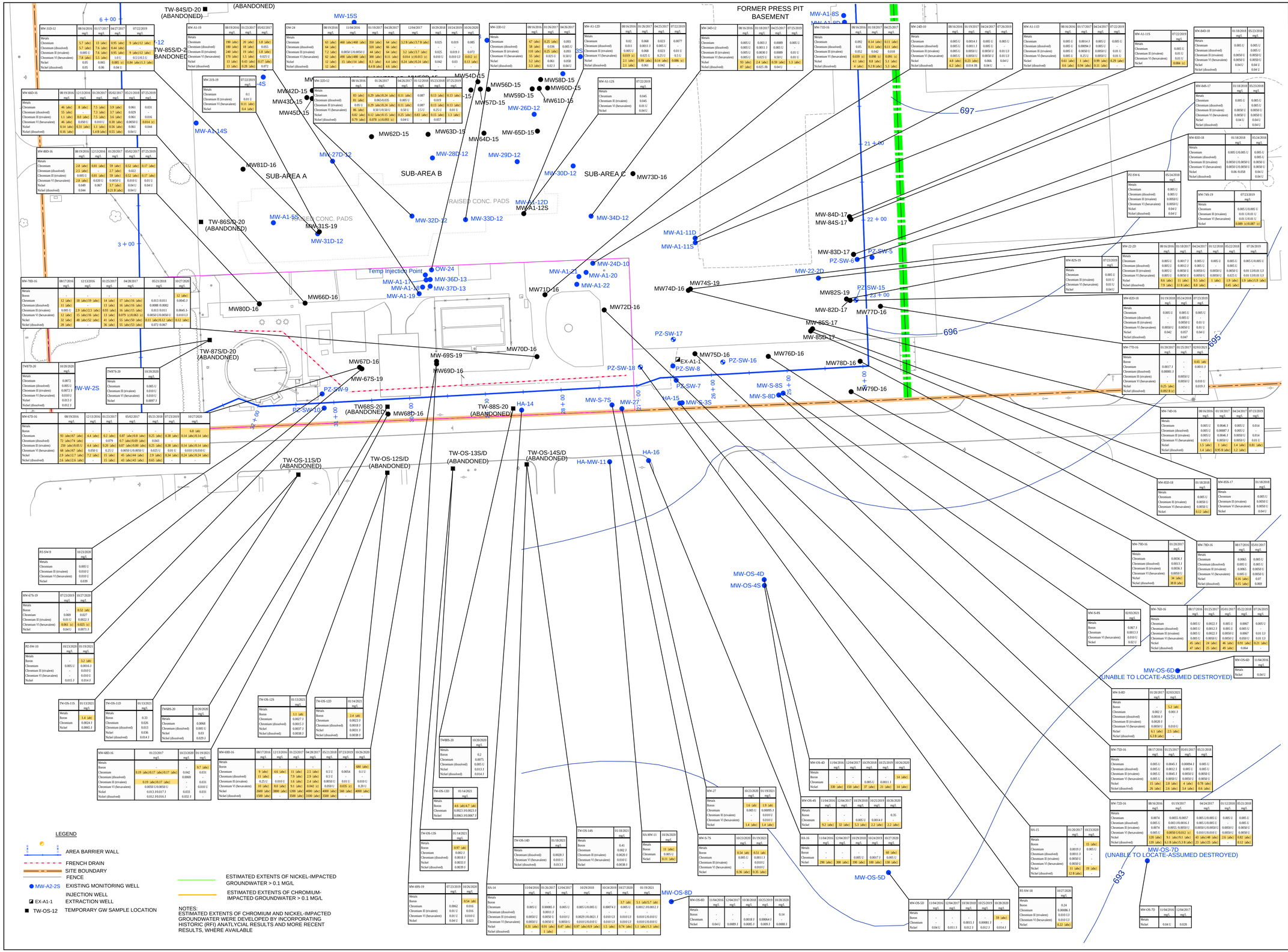
MW-S-5D	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-S-6S	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-S-6D	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-S-2S	07/24/2019
	mg/L
Metals	
Chromium	0.005 U
Chromium III (trivalent)	0.01 U
Chromium VI (hexavalent)	0.01 U
Nickel	0.28 [abc]

MW-S-2D	07/24/2019
	mg/L
Metals	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MW-16D
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MW-17S
MW-17D
MW-17I
MW-18S
MW-18D
MW-18I
MW-19S
MW-19D
MW-19I
MW-20S
MW-20D
MW-20I
MW-21S
MW-21D
MW-21I
MW-22S
MW-22D
MW-22I
MW-23S
MW-23D
MW-23I
MW-24S
MW-24D
MW-24I
MW-25S
MW-25D
MW-25I
MW-26S
MW-26D
MW-26I
MW-27
MW-28D-12
MW-29D-12
MW-30D-12
MW-31S-19
MW-31D-12
MW-32D-12
MW-33D-12
MW-34D-12
MW-35D-12
MW-36D-13
MW-37D-13
MW-38D-13
MW-39D-13
MW-40D-13
MW-41D-13
MW-42D-15
MW-43D-15
MW-45D-15
MW-54D-15
MW-56D-15
MW-57D-15
MW-58D-15
MW-59D-15
MW-60D-15
MW-61D-15
MW-62D-15
MW-63D-15
MW-64D-15
MW-65D-15
MW-66D-16
MW-67D-16
MW-67S-19
MW-68D-16
MW-69D-16
MW-69S-19
MW-70D-16
MW-71D-16
MW-72D-16
MW-73D-16
MW-74D-16
MW-74S-19
MW-75D-16
MW-76D-16
MW-77D-16
MW-78D-16
MW-79D-16
MW-80D-16
MW-81D-16
MW-82D-17
MW-82S-19
MW-83D-17
MW-84D-17
MW-84S-17
MW-85D-17
MW-85S-17
MW-86D-16
MW-87D-20
MW-88D-20
MW-89D-20
MW-90D-20
MW-91D-20
MW-92D-20
MW-93D-20
MW-94D-20
MW-95D-20
MW-96D-20
MW-97D-20
MW-98D-20
MW-99D-20
MW-100D-20
MW-101D-20
MW-102D-20
MW-103D-20
MW-104D-20
MW-105D-20
MW-106D-20
MW-107D-20
MW-108D-20
MW-109D-20
MW-110D-20
MW-111D-20
MW-112D-20
MW-113D-20
MW-114D-20
MW-115D-20
MW-116D-20
MW-117D-20
MW-118D-20
MW-119D-20
MW-120D-20
MW-121D-20
MW-122D-20
MW-123D-20
MW-124D-20
MW-125D-20
MW-126D-20

TW84D-20	10/22/2020 ng/L
PFAS	
HFPO-DA	3.5 U
PFBS	1.8 U
PFHxA	1.8 U
PFHxS	1.3 J
PFNA	0.25 J
PFOA	3.2
PFOS	3.4

MW-109	05/21/2020 ng/L
PFAS	
HFPO-DA	3.7 U
PFBS	0.76 J
PFHxA	3.9
PFHxS	4.6 J
PFNA	0.47 J
PFOA	6.3
PFOS	290 [abc]

TW83S-20	10/22/2020 ng/L
PFAS	
HFPO-DA	3.5 U/3.6 U
PFBS	1.1 J/1.2 J
PFHxA	1.8 U/1.8 U
PFHxS	1.1 J/1.1 J
PFNA	1.8 U/1.8 U
PFOA	2.2/2.4
PFOS	1.8 U/1.8 U

TW83D-20	10/22/2020 ng/L
PFAS	
HFPO-DA	3.4 U
PFBS	1.7 U
PFHxA	1.7 U
PFHxS	1.5 J
PFNA	0.42 J
PFOA	3.9
PFOS	1.8

MW-108	05/21/2020 ng/L
PFAS	
HFPO-DA	3.5 U/3.6 U
PFBS	1.0 J/1.0 J
PFHxA	2.2/2.1
PFHxS	1.8 U/1.8 U
PFNA	0.30 J/0.31 J
PFOA	2.2/2.0
PFOS	6.8 J/6.9 J

MW-32D-12	05/23/2018 ng/L	08/09/2018 ng/L
PFAS		
PFBS	56 J	4.2/4.5
PFHxA	2.0 U	1.7 U/1.7 U
PFHxS	69 [ab]	47/45
PFNA	2.0 U	1.7 U/1.7 U
PFOA	3.6	3.8/2.9
PFOS	190 J [abc]	93 [abc]/92 [abc]

MW-35D-13	08/09/2018 ng/L	12/13/2019 ng/L
PFAS		
HFPO-DA	-	3.8 U
PFBS	1.7 U	1.9 J
PFHxA	3.3	2.6
PFHxS	1.7 U	1.9 U
PFNA	1.7 U	0.53 J
PFOA	3.4	3.8
PFOS	5.5	6.7

MW-39D-13	12/13/2019 ng/L
PFAS	
HFPO-DA	3.6 U
PFBS	0.86 J
PFHxA	2.1
PFHxS	1.8 U
PFNA	1.8 U
PFOA	2.5
PFOS	1.9

MW-004	05/21/2020 ng/L
PFAS	
HFPO-DA	3.6 U
PFBS	0.63 J
PFHxA	1.8 U
PFHxS	1.8 U
PFNA	1.8 U
PFOA	0.82 J
PFOS	3.7

MW-003	10/16/2019 ng/L
PFAS	
HFPO-DA	3.9 U
PFBS	0.84 J
PFHxA	0.71 J
PFHxS	2.0 U
PFNA	3.5
PFOA	4.0
PFOS	17 [abc]

MW-101	05/21/2020 ng/L
PFAS	
HFPO-DA	3.5 U
PFBS	1.3 J
PFHxA	1.7 U
PFHxS	1.7 U
PFNA	1.7 U
PFOA	1.4 J
PFOS	0.86 J

MW-A1-3S	12/13/2019 ng/L
PFAS	
HFPO-DA	3.8 U
PFBS	2.0
PFHxA	2.9
PFHxS	1.9 U
PFNA	1.9 U
PFOA	5.8
PFOS	14 [c]

TW84S-20	10/22/2020 ng/L
PFAS	
HFPO-DA	3.5 U
PFBS	1.2 J
PFHxA	6.4
PFHxS	1.6 J
PFNA	2.9
PFOA	8.6 [ab]
PFOS	87 [abc]

TW85S-20	10/21/2020 ng/L
PFAS	
HFPO-DA	3.5 U
PFBS	1.9
PFHxA	5.9
PFHxS	1.6 J
PFNA	1.0 J
PFOA	4.2
PFOS	19 J [abc]

TW85D-20	10/21/2020 ng/L
PFAS	
HFPO-DA	3.5 U
PFBS	3.2 J
PFHxA	18 U
PFHxS	1.0 J
PFNA	0.69 J
PFOA	18 U
PFOS	15 [c]

MW-001	10/16/2019 ng/L
PFAS	
HFPO-DA	3.9 U
PFBS	1.7 J
PFHxA	7.9
PFHxS	5.1 J
PFNA	0.28 J
PFOA	5.8
PFOS	86 J [abc]

MW-41D-13	08/09/2018 ng/L	12/13/2019 ng/L
PFAS		
HFPO-DA	-	3.7 U
PFBS	3.6 I	1.9 U
PFHxA	1.9 I	3.1
PFHxS	1.7 U	1.9 U
PFNA	1.7 U	0.59 J
PFOA	2.5	3.5
PFOS	5.7	19 [abc]

MW-A1-4S	10/23/2019 ng/L	12/13/2019 ng/L
PFAS		
HFPO-DA	3.8 U	3.7 U
PFBS	0.90 J	1.9
PFHxA	3.4	2.8
PFHxS	20 J	21 I
PFNA	1.5 J	1.0 J
PFOA	25 [ab]	22 [ab]
PFOS	1400 J [abc]	1400 J [abc]

MW-A1-14S	10/23/2019 ng/L
PFAS	
HFPO-DA	3.6 U
PFBS	1.8 U
PFHxA	3.8
PFHxS	5.5
PFNA	0.79 J
PFOA	7.0
PFOS	150 [abc]

TW86S-20	10/21/2020 ng/L
PFAS	
HFPO-DA	3.7 U
PFBS	1.2 J
PFHxA	2.7
PFHxS	1.6 J
PFNA	1.8 U
PFOA	4.0
PFOS	12 J

TW86D-20	10/21/2020 ng/L
PFAS	
HFPO-DA	3.7 U
PFBS	18 U
PFHxA	18 U
PFHxS	18 U
PFNA	1.8 U
PFOA	18 U
PFOS	2.2 J

MW-31D-12	08/09/2018 ng/L	07/22/2019 ng/L
PFAS		
PFBS	50 U	2.9 J/25 U
PFHxA	50 U	25 U/25 U
PFHxS	50 U	28 J/25 J
PFNA	50 U	25 U/25 U
PFOA	50 U	25 U/25 U
PFOS	740 [abc]	370 J [abc]/390 J [abc]

MW-31S-19	07/22/2019 ng/L
PFAS	
PFBS	1.3 J
PFHxA	2.2
PFHxS	3.4 J
PFNA	0.29 J
PFOA	3.5
PFOS	72 J [abc]

MW-40D-13	08/09/2018 ng/L	12/13/2019 ng/L
PFAS		
HFPO-DA	-	3.9 U
PFBS	1.8	2.0 U
PFHxA	1.8 U	1.3 J
PFHxS	1.8 U	2.0 U
PFNA	1.8 U	2.0 U
PFOA	3.0	3.1
PFOS	5.5	4.5

MW-A1-12D	07/22/2019 ng/L
PFAS	
PFBS	1.6 J
PFHxA	1.9 U
PFHxS	9.3 J
PFNA	0.64 J
PFOA	2.4
PFOS	28 J [abc]

MW-A1-12S	07/22/2019 ng/L
PFAS	
PFBS	1.1 J
PFHxA	1.9
PFHxS	1.9 U
PFNA	0.41 J
PFOA	1.9 U
PFOS	1.9

MW-34D-12	08/09/2018 ng/L
PFAS	
PFBS	1.7 U
PFHxA	1.7 U
PFHxS	3.0
PFNA	1.7 U
PFOA	5.1
PFOS	4.9

MW-A1-11D	08/09/2018 ng/L	07/22/2019 ng/L
PFAS		
PFBS	3.6	1.4 J
PFHxA	1.8 U	0.62 J
PFHxS	41	1.9 U
PFNA	1.8 U	1.9 U
PFOA	4.8	2.2
PFOS	78 [abc]	5.9

MW-A1-11S	07/22/2019 ng/L
PFAS	
PFBS	1.2 J
PFHxA	1.9 U
PFHxS	1.9 U
PFNA	1.9 U
PFOA	1.3 J
PFOS	4.6

MW-109 (REMOVED)
MW-001 (REMOVED)
MW-002 (REMOVED)
MW-003 (REMOVED)
MW-004 (REMOVED)
MW-101 (REMOVED)
TW-83S/D-20 (ABANDONED)
TW-84S/D-20 (ABANDONED)
TW-85S/D-20 (ABANDONED)
TW-86S/D-20 (ABANDONED)
TW-87S/D-20 (ABANDONED)
TW68S-20 (ABANDONED)
TW-88S-20 (ABANDONED)
TW-OS-11S/D (ABANDONED)
TW-OS-12S/D (ABANDONED)
TW-OS-13S/D (ABANDONED)
TW-OS-14S/D (ABANDONED)
PZ-SW-3
PZ-SW-4
PZ-SW-11
PZ-SW-12
PZ-SW-9
PZ-SW-10
PZ-SW-17
PZ-SW-18
PZ-SW-8
PZ-SW-7
PZ-SW-16
MW-A1-8D
MW-A1-3S
MW-A1-14S
MW-A1-5S
MW-A1-11D
MW-A1-11S
MW-A1-12S
MW-A1-12D
MW-A1-17
MW-A1-18
MW-A1-19
MW-A1-21
MW-A1-20
MW-A1-22
MW-41D-13
MW-A1-4S
MW-15S
MW-38D-13
MW-39D-13
MW-35D-13
MW-40D-13
MW-25D-12
MW-26D-12
MW-23D-12
MW-27D-12
MW-28D-12
MW-29D-12
MW-30D-12
MW-32D-12
MW-33D-12
MW-34D-12
MW-31S-19
MW-31D-12
MW-36D-13
MW-37D-13
MW-24D-10
MW-69S-19
MW-69D-16
MW-67S-19
MW-67D-16
MW-70D-16
MW-71D-16
MW-72D-16
MW-74S-19
MW-74D-16
MW-75D-16
MW-76D-16
MW-77D-16
MW-79D-16
MW-84D-17
MW-84S-17
MW-85S-17
MW-85D-17
MW-22-2
MW-A1-33-8D
MW42D-15
MW43D-15
MW45D-15
MW48D-15
MW47D-15
MW46D-15
MW49D-15
MW50D-15
MW53D-15
MW52D-15
MW51D-15
MW54D-15
MW57D-15
MW56D-15
MW55D-15
MW58D-15
MW61D-15
MW59D-15
MW60D-15
MW62D-15
MW63D-15
MW64D-15
MW65D-15
MW81D-16
MW73D-16
MW66D-16
MW68D-16
MH1
MH2
MH4
GWTP
HA-14
HA-15
HA-16
HA-MW-11
MW-S-3S
MW-S-7S
MW-S-8S
MW-S-8D
MW-27
EX-A1-1
SUB-AREA A
SUB-AREA B
SUB-AREA C
FORMER PRESS PIT BASEMENT
RAISED CONC. PADS
RAISED CONC. PADS
72" STORM
72" STORM
72" PUB STM
EX STM MH #5 (ref 3) EX RIM 706.61 72" E INV XXX 72" W INV XXX REMOVED BULKHEAD
EX STM MH #6 (ref 6) EX RIM 705.57 72" E INV 685± 72" W INV 685±
EX STM MH #7 (ref 9) EX RIM 705.01 72" E INV XXX 72" W INV XXX REMOVE BULKHEAD
EX STM MH #8 (ref 12) EX RIM 705.67 72" E INV XXX 72" W INV XXX REMOVE BULKHEAD
EX STM MH #9 (ref 13) EX RIM 704.12 66" E INV 688± 72" W INV 688± ADJUST RIM 703.75 REMOVE BULKHEAD
Temp Injection Point OW-24
6 + 00
5 + 00
4 + 00
3 + 00
1 + 00
18 + 00
0
+ 00
21 + 00
22 + 00
23 + 00
25 + 00
26 + 00
27 + 00
28 + 00
29 + 00
30 + 00
31 + 00
32 + 00

LEGEND
- AREA BARRIER WALL
- FRENCH DRAIN
- SITE BOUNDARY FENCE
- MW-A2-2S EXISTING MONITORING WELL
- EX-A1-1 PROPOSED WELL LOCATION EXTRACTION WELL
- MW-004 SME TEMP MONITORING WELL/ MONITORING LOCATION (REMOVED)
- TW-OS-12 TEMPORARY GW SAMPLE LOCATION (ABANDONED)

PFH - PERFLUORINATED HYDROCARBONS
PFAS - PERFLUOROALKYL AND POLYFLUOROALKYL SUBSTANCES

0 20 40 ft

MW-A1-12D	07/22/2019 ng/L
PFAS	
PFBS	1.6 J
PFHxA	1.9 U
PFHxS	9.3 J
PFNA	0.64 J
PFOA	2.4
PFOS	28 J [abc]

SAMPLE LOCATION
SAMPLE DATE
RESULT (ng/L)
PARAMETER EXCEEDANCE OF CRITERIA

Per-/Polyfluoroalkyl Substances (PFAS) (ng/L)	Residential - Non-Drinking Water Groundwater	Residential - Drinking Water Groundwater	Industrial/ Commercial Surface Water
	a	b	c
Perfluorooctanoic acid (PFOA)	12	240	240
Perfluorooctane sulfonic acid (PFOS)	3.3	70	70
Perfluorohexane sulfonic acid (PFHxS)	0.3	4.9	4.9
Perfluorobutane sulfonic acid (PFBS)	420	420	420
Perfluorononanoic acid (PFNA)	6.6	150	150
Perfluorohexanoic acid (PFHxA)	16	16	16
Perfluorobutanoic acid (PFBA)	8	8	8

Notes:
U - Not detected at the associated report limit
J - Estimated concentration.
UJ - Not detected. Associated report limit is estimated.
J+ - Estimated concentration, result may be biased high.
R - Value is unusable and should not be reported.

(1) (Fact Sheet: Interim Cleanup Criteria for Certain Per- and Polyfluoroalkyl Substances (PFAS) in Groundwater, Michigan Department of Environmental Quality, Remediation and Redevelopment Division, September 2018)

(2) Surface water criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3 and pH of 7 s.u. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness and pH of the surface water sample collected.

(3) Groundwater criteria are for the protection of surface water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(4) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(5) Groundwater criteria are for the protection of surface water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(6) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(7) Groundwater criteria are for the protection of surface water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(8) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(9) Groundwater criteria are for the protection of surface water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(10) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

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(14) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(15) Groundwater criteria are for the protection of surface water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(16) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(17) Groundwater criteria are for the protection of surface water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(18) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

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(26) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

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(28) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

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(32) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(33) Groundwater criteria are for the protection of surface water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(34) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(35) Groundwater criteria are for the protection of surface water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(36) Groundwater criteria are for the protection of drinking water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

(37) Groundwater criteria are for the protection of surface water. Groundwater criteria are hardness dependent. The criteria listed are for a hardness of 150 mg/L CaCO3. Assurance Laboratories will be required to calculate a site-specific criteria based on the hardness of the groundwater sample collected.

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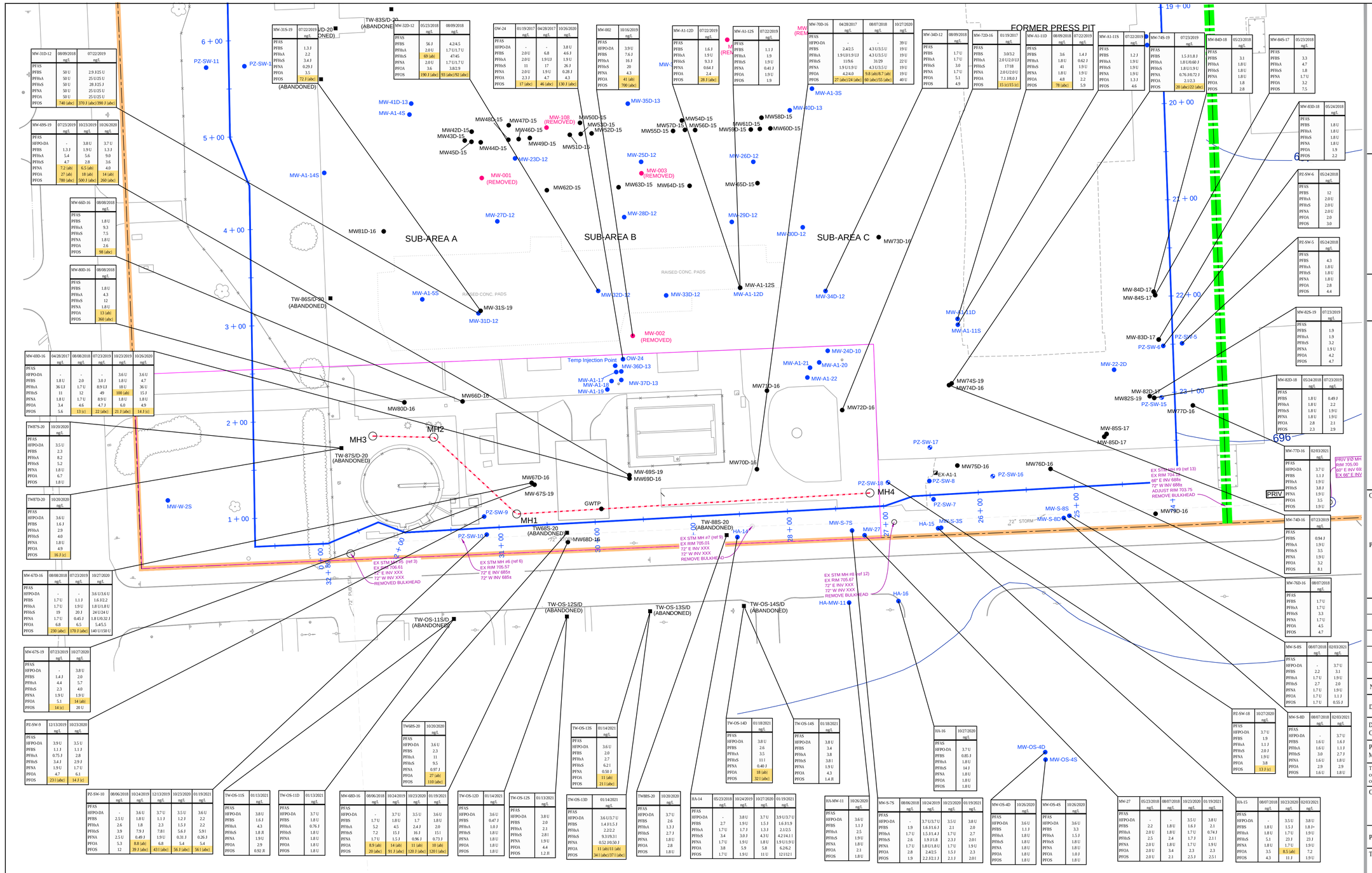

MW-31S-19	07/22/2019
	ng/L
PFAS	
PFBS	1.3 J
PFHxA	2.2
PFHxS	3.4 J
PFNA	0.29 J
PFOA	3.5
PFOS	72 J [abc]

MW-31D-12	08/09/2018	07/22/2019
	ng/L	ng/L
PFAS		
PFBS	50 U	2.9 J/25 U
PFHxA	50 U	25 U/25 U
PFHxS	50 U	28 J/25 J
PFNA	50 U	25 U/25 U
PFOA	50 U	25 U/25 U
PFOS	740 [abc]	370 J [abc]/390 J [abc]

MW-32D-12	05/23/2018	08/09/2018
	ng/L	ng/L
PFAS		
PFBS	56 J	4.2/4.5
PFHxA	2.0 U	1.7 U/1.7 U
PFHxS	69 [ab]	47/45
PFNA	2.0 U	1.7 U/1.7 U
PFOA	3.6	3.8/2.9
PFOS	190 J [abc]	93 [abc]/92 [abc]

OW-24	01/19/2017	04/28/2017	10/26/2020
	ng/L	ng/L	ng/L
PFAS			
HFPO-DA	-	-	3.8 U
PFBS	2.0 U	6.8	4.6 J
PFHxA	2.0 U	1.9 U	1.9 U
PFHxS	11	17	26 J
PFNA	2.0 U	1.9 U	0.28 J
PFOA	2.3 J	4.7	4.3
PFOS	17 [abc]	46 [abc]	130 J [abc]

MW-002	10/16/2019
	ng/L
PFAS	
HFPO-DA	3.9 U
PFBS	7.6 J
PFHxA	16 J
PFHxS	20
PFNA	4.3
PFOA	41 [ab]
PFOS	700 [abc]

MW-A1-12D	07/22/2019
	ng/L
PFAS	
PFBS	1.6 J
PFHxA	1.9 U
PFHxS	9.3 J
PFNA	0.64 J
PFOA	2.4
PFOS	28 J [abc]

MW-A1-12S	07/22/2019
	ng/L
PFAS	
PFBS	1.1 J
PFHxA	1.9
PFHxS	1.9 U
PFNA	0.41 J
PFOA	1.9 U
PFOS	1.9

MW-70D-16	04/28/2017	08/07/2018	10/27/2020
	ng/L	ng/L	ng/L
PFAS			
HFPO-DA	-	-	39 U
PFBS	2.42.5	4.3 U/3.5 U	19 U
PFHxA	1.9 UJ/1.9 UJ	4.3 U/3.5 U	19 U
PFHxS	11/9.6	31/29	22 U
PFNA	1.9 UJ/1.9 UJ	4.3 U/3.5 U	19 U
PFOA	4.2/4.0	9.8 [ab]/8.7 [ab]	19 U
PFOS	27 [abc]/24 [abc]	60 [abc]/55 [abc]	40 U

MW-34D-12	08/09/2018
	ng/L
PFAS	
PFBS	1.7 U
PFHxA	1.7 U
PFHxS	3.0
PFNA	1.7 U
PFOA	5.1
PFOS	4.9

MW-72D-16	01/19/2017
	ng/L
PFAS	
PFBS	3.0/3.2
PFHxA	2.0 U/2.0 UJ
PFHxS	17/18
PFNA	2.0 U/2.0 U
PFOA	7.1 J/8.0 J
PFOS	15 [c]/15 [c]

MW-A1-11D	08/09/2018	07/22/2019
	ng/L	ng/L
PFAS		
PFBS	3.6	1.4 J
PFHxA	1.8 U	0.62 J
PFHxS	41	1.9 U
PFNA	1.8 U	1.9 U
PFOA	4.8	2.2
PFOS	78 [abc]	5.9

MW-A1-11S	07/22/2019
	ng/L
PFAS	
PFBS	1.2 J
PFHxA	1.9 U
PFHxS	1.9 U
PFNA	1.9 U
PFOA	1.3 J
PFOS	4.6

MW-74S-19	07/23/2019
	ng/L
PFAS	
PFBS	1.5 J/1.8 J
PFHxA	1.8 U/0.60 J
PFHxS	1.8 U/1.9 U
PFNA	0.76 J/0.72 J
PFOA	2.1/2.3
PFOS	20 [abc]/22 [abc]

MW-84D-18	05/23/2018
	ng/L
PFAS	
PFBS	3.1
PFHxA	1.8 U
PFHxS	1.8 U
PFNA	1.8 U
PFOA	1.8
PFOS	2.8

MW-84S-17	05/23/2018
	ng/L
PFAS	
PFBS	3.3
PFHxA	4.7
PFHxS	1.8
PFNA	1.7 U
PFOA	3.2
PFOS	7.5

MW-83D-18	05/24/2018
	ng/L
PFAS	
PFBS	1.8 U
PFHxA	1.8 U
PFHxS	1.8 U
PFNA	1.8 U
PFOA	1.9
PFOS	2.2

PZ-SW-6	05/24/2018
	ng/L
PFAS	
PFBS	12
PFHxA	2.0 U
PFHxS	2.0 U
PFNA	2.0 U
PFOA	2.0
PFOS	3.0

PZ-SW-5	05/24/2018
	ng/L
PFAS	
PFBS	4.3
PFHxA	1.8 U
PFHxS	1.8 U
PFNA	1.8 U
PFOA	2.8
PFOS	4.4

MW-82S-19	07/23/2019
	ng/L
PFAS	
PFBS	1.9
PFHxA	1.9
PFHxS	3.2
PFNA	1.9 U
PFOA	4.2
PFOS	4.7

MW-82D-18	05/24/2018	07/23/2019
	ng/L	ng/L
PFAS		
PFBS	1.8 U	0.49 J
PFHxA	1.8 U	2.2
PFHxS	1.8 U	1.9 U
PFNA	1.8 U	1.9 U
PFOA	2.8	2.1
PFOS	2.3	2.9

MW-77D-16	02/03/2021
	ng/L
PFAS	
HFPO-DA	3.7 U
PFBS	1.1 J
PFHxA	1.9 U
PFHxS	3.8 J
PFNA	1.9 U
PFOA	3.5
PFOS	1.9 U

MW-74D-16	07/23/2019
	ng/L
PFAS	
PFBS	0.94 J
PFHxA	1.9 U
PFHxS	3.5
PFNA	1.9 U
PFOA	3.2
PFOS	8.1

MW-76D-16	08/07/2018
	ng/L
PFAS	
PFBS	1.7 U
PFHxA	1.7 U
PFHxS	3.3
PFNA	1.7 U
PFOA	4.5
PFOS	4.7

MW-S-8S	08/07/2018	02/03/2021
	ng/L	ng/L
PFAS		
HFPO-DA	-	3.7 U
PFBS	2.2	3.1
PFHxA	1.7 U	1.9 U
PFHxS	2.7	2.0
PFNA	1.7 U	1.9 U
PFOA	1.7 U	1.1 J
PFOS	1.7 U	0.55 J

PZ-SW-18	10/27/2020
	ng/L
PFAS	
HFPO-DA	3.7 U
PFBS	1.9
PFHxA	1.1 J
PFHxS	2.0 J
PFNA	1.9 U
PFOA	3.8
PFOS	13 J [c]

MW-S-8D	08/07/2018	02/03/2021
	ng/L	ng/L
PFAS		
HFPO-DA	-	3.7 U
PFBS	1.6 U	1.6 J
PFHxA	1.6 U	1.1 J
PFHxS	3.0	2.7 J
PFNA	1.6 U	1.8 U
PFOA	2.9	2.9
PFOS	1.6 U	1.8 U

MW-49S-19	07/23/2019	10/23/2019	10/26/2020
	ng/L	ng/L	ng/L
PFAS			
HFPO-DA	-	3.8 U	3.7 U
PFBS	1.3 J	1.9 U	1.3 J
PFHxA	5.4	5.6	9.0
PFHxS	4.7	2.8	3.6
PFNA	7.2 [ab]	6.5 [ab]	4.0
PFOA	27 [ab]	18 [ab]	14 [ab]
PFOS	780 [abc]	500 J [abc]	260 [abc]

MW-66D-16	08/08/2018
	ng/L
PFAS	
PFBS	1.8 U
PFHxA	9.3
PFHxS	7.5
PFNA	1.8 U
PFOA	2.6
PFOS	98 [abc]

MW-80D-16	08/08/2018
	ng/L
PFAS	
PFBS	1.8 U
PFHxA	4.3
PFHxS	12
PFNA	1.8 U
PFOA	13 [ab]
PFOS	360 [abc]

MW-69D-DA	04/28/2017	08/08/2018	07/23/2019	10/23/2019	10/26/2020
	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS					
HFPO-DA	-	-	-	3.6 U	3.6 U
PFBS	1.8 U	2.0	3.0 J	1.8 U	4.7
PFHxA	36 UJ	1.7 U	8.9 UJ	1.8 U	30 U
PFHxS	11	12	49	100 [ab]	15 J
PFNA	1.8 U	1.7 U	8.9 U	1.8 U	1.8 U
PFOA	3.4	4.6	4.7 J	2.1 J	4.9
PFOS	5.6	13 [c]	22 [abc]	21 J [abc]	14 J [c]

TW8TS-20	10/20/2020
	ng/L
PFAS	
HFPO-DA	3.5 U
PFBS	2.3
PFHxA	8.2
PFHxS	5.2
PFNA	1.8 U
PFOA	6.7
PFOS	1.8 U

TW8TD-20	10/20/2020
	ng/L
PFAS	
HFPO-DA	3.6 U
PFBS	2.3
PFHxA	11
PFHxS	9.5
PFNA	0.97 J
PFOA	27 [ab]
PFOS	110 [abc]

MW-67D-16	08/08/2018	07/23/2019	10/27/2020
	ng/L	ng/L	ng/L
PFAS			
HFPO-DA	-	-	3.6 U/3.6 U
PFBS	1.7 U	1.1 J	1.6 J/2.2
PFHxA	1.7 U	1.9 U	1.8 U/1.8 U
PFHxS	19	20 J	24 U/24 U
PFNA	1.7 U	0.45 J	1.8 U/0.32 J
PFOA	6.8	6.5	5.4/5.5
PFOS	230 [abc]	170 J [abc]	140 U/150 U

MW-67S-19	07/23/2019	10/27/2020
	ng/L	ng/L
PFAS		
HFPO-DA	-	3.8 U
PFBS	1.4 J	2.0
PFHxA	4.4	5.7
PFHxS	2.3	4.0
PFNA	1.9 U	1.9 U
PFOA	5.1	14 [ab]
PFOS	14 [c]	20 U

PZ-SW-9	12/13/2019	10/23/2020
	ng/L	ng/L
PFAS		
HFPO-DA	3.9 U	3.5 U
PFBS	1.1 J	1.1 J
PFHxA	0.75 J	2.8
PFHxS	3.4 J	2.9 J
PFNA	1.9 U	1.7 U
PFOA	4.7	6.1
PFOS	23 J [abc]	14 J [c]

PZ-SW-10	08/06/2018	10/24/2019	12/13/2019	10/23/2020	01/19/2021
	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS					
HFPO-DA	-	3.6 U	3.7 U	3.5 U	3.6 U
PFBS	2.5 U	1.8 U	1.1 J	1.2 J	2.2
PFHxA	2.6	1.8	2.3	1.5 J	2.2
PFHxS	3.9	7.9 J	7.8 J	5.6 J	5.9 J
PFNA	2.5 U	0.49 J	1.9 U	0.31 J	0.26 J
PFOA	5.3	8.8 [ab]	6.8	5.4	5.4
PFOS	12	39 J [abc]	43 J [abc]	56 J [abc]	56 J [abc]

TW-OS-11S	01/13/2021
	ng/L
PFAS	
HFPO-DA	3.8 U
PFBS	1.6 J
PFHxA	4.3
PFHxS	1.8 J[
PFNA	1.9 U
PFOA	2.9
PFOS	0.92 J[

TW-OS-11D	01/13/2021
	ng/L
PFAS	
HFPO-DA	3.7 U
PFBS	1.8 U
PFHxA	0.76 J
PFHxS	1.8 U
PFNA	1.8 U
PFOA	1.8 U
PFOS	1.8 U

MW-68D-16	08/06/2018	10/24/2019	10/23/2020	01/19/2021
	ng/L	ng/L	ng/L	ng/L
PFAS				
HFPO-DA	-	3.7 U	3.5 U	3.6 U
PFBS	1.7 U	1.8 U	1.7	1.8 U
PFHxA	5.2	4.5	2.4 J	2.0
PFHxS	7.2	15 J	16 J	15
PFNA	1.7 U	1.5 J	0.96 J	0.73 J
PFOA	8.9 [ab]	14 [ab]	11 [ab]	10 [ab]
PFOS	20 [abc]	91 J [abc]	120 J [abc]	120 [abc]

TW-OS-12D	01/14/2021
	ng/L
PFAS	
HFPO-DA	3.6 U
PFBS	0.47 J
PFHxA	1.0 J
PFHxS	1.8 U
PFNA	1.8 U
PFOA	1.8 U
PFOS	1.8 U

TW-OS-12S	01/13/2021
	ng/L
PFAS	
HFPO-DA	3.8 U
PFBS	2.0
PFHxA	2.1
PFHxS	2.8 J
PFNA	1.9 U
PFOA	4.4
PFOS	1.2 J[

TW-OS-13S	01/14/2021
	ng/L
PFAS	
HFPO-DA	3.6 U
PFBS	2.0
PFHxA	2.7
PFHxS	6.2 J
PFNA	0.50 J
PFOA	11 [ab]
PFOS	21 J [abc]

TW-OS-13D	01/14/2021
	ng/L
PFAS	
HFPO-DA	3.6 U/3.7 U
PFBS	1.4 J/1.5 J
PFHxA	2.2/2.2
PFHxS	9.3 J/9.3 J
PFNA	0.52 J/0.50 J
PFOA	11 [ab]/11 [ab]
PFOS	34 [abc]/37 [abc]

TW8BS-20	10/20/2020
	ng/L
PFAS	
HFPO-DA	3.7 U
PFBS	2.6
PFHxA	1.3 J
PFHxS	2.7 J
PFNA	1.8 U
PFOA	2.8
PFOS	1.8 U

TW-OS-14D	01/18/2021
	ng/L
PFAS	
HFPO-DA	3.8 U
PFBS	2.6
PFHxA	3.5
PFHxS	11 J
PFNA	0.40 J
PFOA	18 [ab]
PFOS	32 J [abc]

TW-OS-14S	01/18/2021
	ng/L
PFAS	
HFPO-DA	3.8 U
PFBS	3.4
PFHxA	3.8
PFHxS	3.8 J
PFNA	1.9 U
PFOA	4.3
PFOS	1.4 J[

HA-14	05/23/2018	10/24/2019	10/27/2020	01/19/2021
	ng/L	ng/L	ng/L	ng/L
PFAS				
HFPO-DA	-	3.8 U	3.7 U	3.9 U/3.7 U
PFBS	2.7	1.9 U	1.5 J	1.6 J/1.9
PFHxA	1.7 U	1.7 J	1.3 J	2.1/2.5
PFHxS	3.4	3.0 J	4.3 U	4.2 J/4.1 J
PFNA	1.7 U	1.9 U	1.8 U	1.9 U/1.9 U
PFOA	3.8	5.9	5.8	6.2/6.2
PFOS	1.7 U	1.9 U	11 U	12 U/12 J

HA-MW-11	10/26/2020
	ng/L
PFAS	
HFPO-DA	3.6 U
PFBS	1.1 J
PFHxA	2.5
PFHxS	1.9 U
PFNA	1.8 U
PFOA	2.1
PFOS	1.8 U

MW-S-7S	08/06/2018	10/24/2019	10/23/2020	01/19/2021
	ng/L	ng/L	ng/L	ng/L
PFAS				
HFPO-DA	-	3.7 U/3.7 U	3.5 U	3.8 U
PFBS	1.9	1.6 J/1.6 J	2.1	2.0
PFHxA	1.7 U	1.5 J/1.4 J	1.7 U	2.7
PFHxS	2.6	1.9 J/1.8	2.3 J	2.0 J
PFNA	1.7 U	1.8 U/1.8 U	1.7 U	1.9 U
PFOA	2.8	2.4/2.5	1.5 J	2.3
PFOS	1.9	2.2 J/2.1 J	2.1 J	2.0 J

HA-16	10/27/2020
	ng/L
PFAS	
HFPO-DA	3.7 U
PFBS	0.85 J
PFHxA	1.8 U
PFHxS	14 J
PFNA	1.8 U
PFOA	1.8 U
PFOS	1.8 U

MW-OS-4D	10/26/2020
	ng/L
PFAS	
HFPO-DA	3.6 U
PFBS	1.1 J
PFHxA	1.8 U
PFHxS	1.8 U
PFNA	1.8 U
PFOA	1.8 U
PFOS	1.8 U

MW-OS-4S	10/26/2020
	ng/L
PFAS	
HFPO-DA	3.6 U
PFBS	3.3
PFHxA	1.5 J
PFHxS	1.8 U
PFNA	1.8 U
PFOA	1.0 J
PFOS	1.8 U

MW-27	05/23/2018	08/07/2018	10/23/2020	01/19/2021
	ng/L	ng/L	ng/L	ng/L
PFAS				
HFPO-DA	-	-	3.5 U	3.8 U
PFBS	2.2	1.8 U	1.6 J	2.1
PFHxA	2.0 U	1.8 U	1.7 U	0.74 J
PFHxS	2.5	2.4	1.7 J	2.1 I
PFNA	2.0 U	1.8 U	1.7 U	1.9 U
PFOA	2.0 U	3.4	2.3	2.3
PFOS	2.0 U	2.1	2.5 J	2.5 I

HA-15	08/07/2018	10/23/2020	02/03/2021
	ng/L	ng/L	ng/L
PFAS			
HFPO-DA	-	3.5 U	3.8 U
PFBS	1.8 U	1.5 J	1.8 J+
PFHxA	1.8 U	1.7 U	1.9 U
PFHxS	5.1	23 J	23 J
PFNA	1.8 U	1.7 U	1.9 U
PFOA	3.5	8.5 [ab]	7.2
PFOS	4.3	11 J	1.9 U

LEGEND

AREA BARRIER WALL
FRENCH DRAIN

PFH - PERFLUORINATED HYDROCARBONS
PFAS - PERFLUOROALKYL AND POLYFLUOROALKYL SUBSTANCES

SITE BOUNDARY
FENCE
MW-A2-2S EXISTING MONITORING WELL
PROPOSED WELL LOCATION
EX-A1-1 EXTRACTION WELL
MW-004 SME TEMP MONITORING WELL/ MONITORING LOCATION
TW-OS-12 TEMPORARY GW SAMPLE LOCATION

MW-A1-12D	07/22/2019
	ng/L
PFAS	
PFBS	1.6 J
PFHxA	1.9 U
PFHxS	9.3 J
PFNA	0.64 J
PFOA	2.4
PFOS	28 J [abc]

SAMPLE LOCATION
SAMPLE DATE
RESULT (ng/L)
PARAMETER
EXCEEDANCE OF CRITERIA

RSLS Generic Groundwater Cleanup Criteria (1)

Parameter	Residential Drinking Water	Nonresidential Drinking Water	Groundwater Surface Water Interface
	a	b	
Perfluorooctane Sulfonate (PFOS) (ng/L)	16	70	12
Perfluorooctanoic acid (PFOA) (ng/L)	12	50	12
Perfluorohexane sulfonic acid (PFHxS) (ng/L)	51	210	51
Perfluorobutane sulfonic acid (PFBS) (ng/L)	420000	420000	
Perfluorononanoic acid (PFNA) (ng/L)	6	6	6
Perfluorohexane sulfonic acid (PFHxS) (ng/L)	400	400	12
Perfluorobutane sulfonic acid (PFBS) (ng/L)	400	400	2100

Notes:
U - not detected at the associated reporting limit
J - Estimated concentration.
UJ - Not detected, associated reporting limit is estimated.
J+ - Estimated concentration, may be biased high.
J- - Estimated concentration, may be biased low.
R - Value is unusable (sample and/or analyte data not acceptable).

(1) P.L.A. - Michigan Department of Environmental Quality, Land Bureau, Remediation and Redevelopment Division, Operational Memorandum No. 1, Attachment 1, Table 1a, Groundwater Cleanup Criteria, Part 201 Generic Cleanup Criteria for Hazardous Substances, Effective December 30, 2013, pursuant to Part 201 of NREPA, 1994 PA 451, as amended

(2) A drinking water criterion of 70 ng/L for PFOA and PFOS individually or combined is protective of human health based on a lifetime exposure. Refer to the Part 201 Cleanup Criteria Rule, R 299.44 Table 1a, for the drinking water criterion for PFOA and PFOS.

(3) An interim criterion of 12 ng/L for PFOA and PFOS individually or combined is protective of surface water quality based on the Great Lakes Water Quality Initiative Tier II Secondary Acute Value (SAV). Refer to the Part 201 Cleanup Criteria Rule, R 299.44 Table 1a, for the groundwater surface water interface protection criterion for PFOA and PFOS.

(4) An interim criterion of 51 ng/L for PFHxS individually or combined is protective of surface water quality based on the Great Lakes Water Quality Initiative Tier II Secondary Acute Value (SAV). Refer to the Part 201 Cleanup Criteria Rule, R 299.44 Table 1a, for the groundwater surface water interface protection criterion for PFHxS.

(5) An interim criterion of 2100 ng/L for PFBS individually or combined is protective of surface water quality based on the Great Lakes Water Quality Initiative Tier II Secondary Acute Value (SAV). Refer to the Part 201 Cleanup Criteria Rule, R 299.44 Table 1a, for the groundwater surface water interface protection criterion for PFBS.

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Client
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Project
ECKLES ROAD SITE
LIVONIA, MICHIGAN

No.	Issue	Drawn	Approved	Date
-	-	-	-	-

Drawn DMW
Designer
Drafting Check
Design Check
Project Manager CM
Date Mar 5, 2021
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Scale AS SHOWN
Original Size ANSI D
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Project No. 012607A-T31Y21
Title
PFAS RESULTS
AREA 1 SOUTH
Sheet No.
FIGURE 4
Sheet 1 of 1

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Plotted By: Chris Meincke
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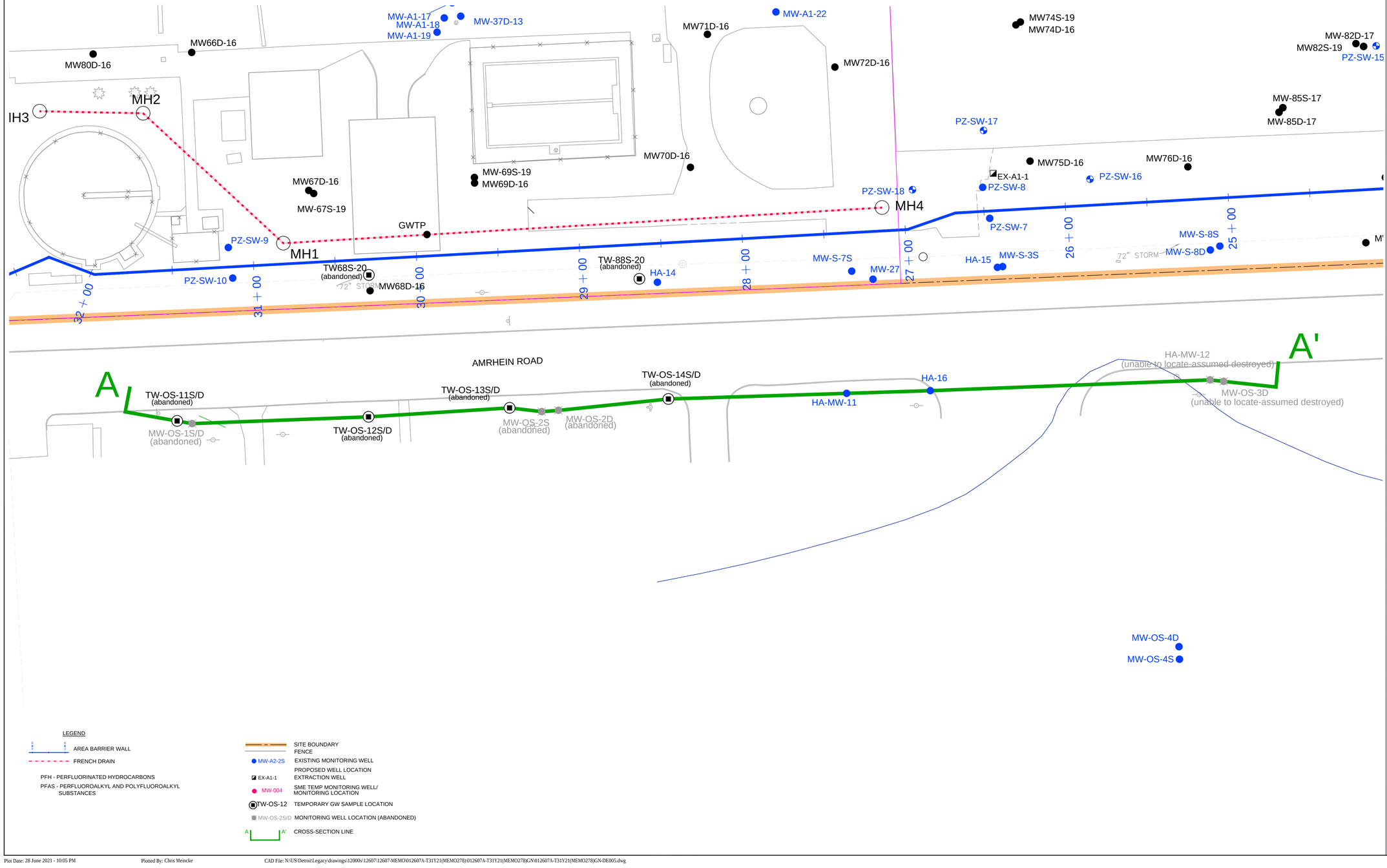

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Project
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LIVONIA, MICHIGAN

No.	Issue	Drawn	Approved	Date
-	-	-	-	-

Drawn DRAWN	Designer
Drafting Check	Design Check
Project Manager CM	Date Jun 28, 2021
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Project No. 012607-T31Y21

Title
CROSS-SECTION LOCATION A-A'
SOUTH SIDE OF AMRHEIN ROAD

Sheet No.
FIGURE 5

Sheet 1 of 1

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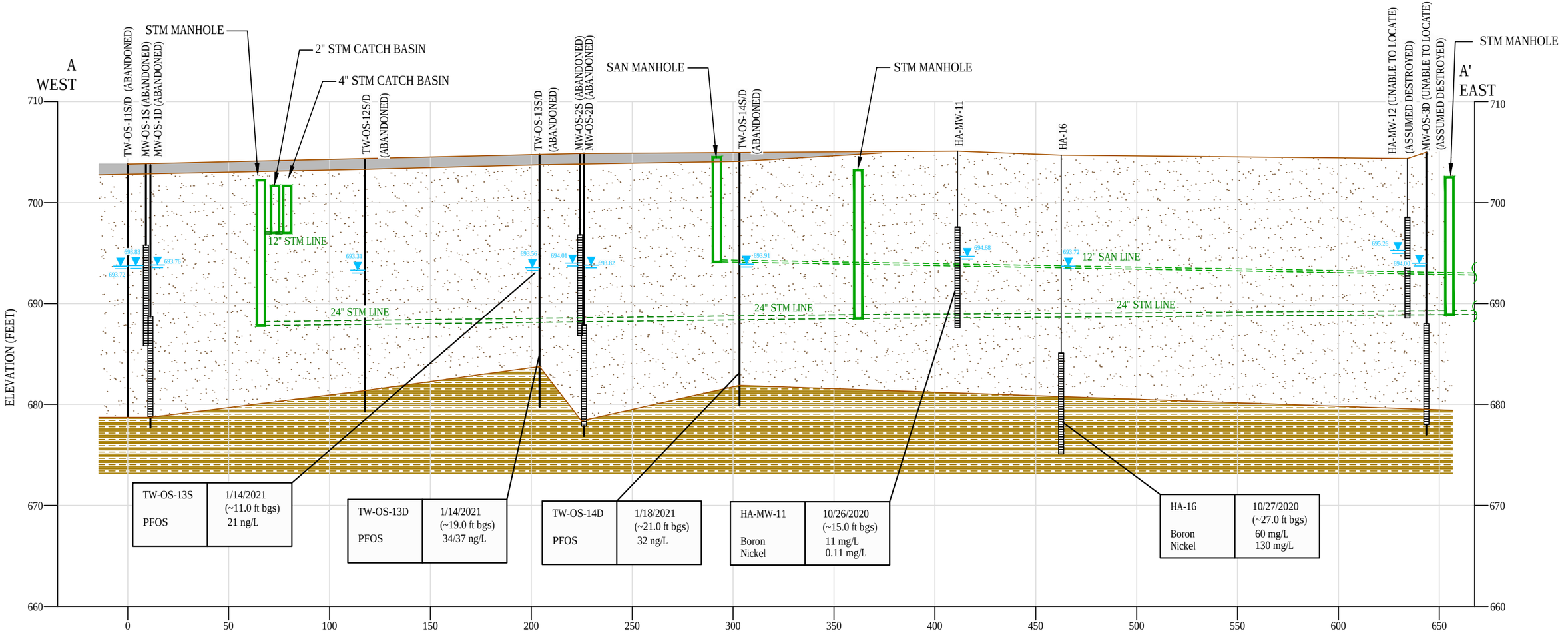

DISTANCE ALONG BASELINE (FEET)

HORIZONTAL SCALE 1' = 50'
VERTICAL SCALE 1' = 10'

LEGEND

MW-OS-2D — WELL DESIGNATION
GROUND SURFACE
STRATIGRAPHIC CONTACT
694.01 — GROUNDWATER ELEVATION
SCREEN
END OF BOREHOLE

TOPSOIL
SAND
CLAY

MW-OS-2D	MONITORING WELL LOCATION
TW-OS-11S/D	TEMPORARY GROUNDWATER SAMPLING LOCATION
BGS	BELOW GROUND SURFACE
mg/L	MILLIGRAM PER LITER
ng/L	NANOGRAM PER LITER

NOTE:

- GROUNDWATER ELEVATIONS RECORDED IN OCTOBER 2018, EXCEPT FOR TW-OS LOCATIONS, WHICH WERE RECORED IN JANUARY 2021.
- STORM AND SANITARY SEWER LINES/MANHOLE PLACEMENT WAS APPROXIMATED BASED ON CITY OF LIVONIA AMRHEIN ROAD RECONSTRUCTION PLANS, DATED MARCH 2017.
- GEOLOGY BETWEEN TW-OS-14S/D TO MW-OS-3D WAS INTERPOLATED WITHOUT INFLUENCE FROM THE "HA" WELL LOCATIONS.
- GROUNDWATER RESULTS EXCEEDING EGLE PART 201 GROUNDWATER SURFACE WATER INTERFACE CRITERIA DURING MOST RECENT SAMPLING EVENT ARE DISPLAYED.

RACER TRUST
ECKLES ROAD SITE
LIVONIA, MICHIGAN

Project No. 12607
Date March 2021

GEOLOGICAL CROSS-SECTION A-A'

FIGURE 6

Filename: N:\US\Detroit\Legacy\drawings\12000s\12607\12607-MEMO\012607A-T31Y21(MEMO278)\012607A-T31Y21(MEMO278)GN\012607A-T31Y21(MEMO278)GN-DE006.dwg
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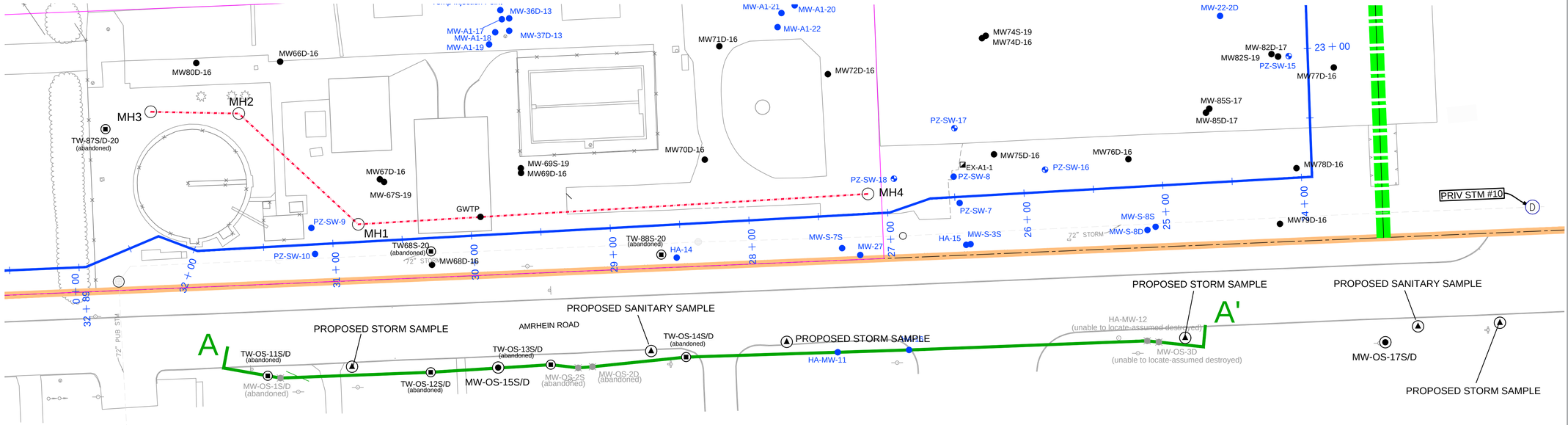

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Project
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LIVONIA, MICHIGAN

No.	Issue	Drawn	Approved	Date
-	-	-	-	-

Drawn DRAWN	Designer
Drafting Check	Design Check
Project Manager CM	Date Jun 29, 2021
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Original Size ANSI D	Bar is one inch on original size drawing 0 1"

Project No. 012607-T31Y21

Title
PROPOSED MONITORING WELL & SEWER SAMPLE LOCATIONS

Sheet No.
FIGURE 7

Sheet 1 of 1

Plot Date: 29 June 2021 - 9:04 PM
Plotted By: Chris Meincke
CAD File: \\ghdnet\ghd\US\Detroit\Legacy\drawings\12000s\12607\12607-MEMO\012607\A-T31Y21(MEMO278)012607A-T31Y21(MEMO278)GN\012607A-T31Y21(MEMO278)GN-DE007.dwg

Table

Table 1

Field Sample Key
Additional Characterization Sampling
Eckles Road Site
Livonia, Michigan

Sample ID	Location	Depth Interval	Sample Date	Notes
GW-12607-102020-SK-001	TW68S-20	Shallow	10/20/2020	Field Filtered
GW-12607-102020-SK-002	TW88S-20	Shallow	10/20/2020	Field Filtered
GW-12607-102020-SK-003	TW87S-20	Shallow	10/20/2020	
GW-12607-102020-SK-004	TW87D-20	Deep	10/20/2020	Field Filtered
GW-12607-102120-SK-005	TW85S-20	Shallow	10/21/2020	
GW-12607-102120-SK-006	TW85D-20	Deep	10/21/2020	Field Filtered
GW-12607-102120-SK-007	TW86S-20	Shallow	10/21/2020	
GW-12607-102120-SK-008	TW86D-20	Deep	10/21/2020	Field Filtered
GW-12607-102220-SK-009	TW83S-20	Shallow	10/22/2020	
GW-12607-102220-SK-010	TW83S-20	Shallow	10/22/2020	Field Duplicate
GW-12607-102220-SK-011	TW83D-20	Deep	10/22/2020	Field Filtered
GW-12607-102220-SK-012	TW84S-20	Shallow	10/22/2020	
GW-12607-102220-SK-013	TW84D-20	Deep	10/22/2020	Field Filtered
EB-12607-102220-SK-001	EB - S/S Screen		10/22/2020	Equipment Blank
EB-12607-102220-SK-002	EB - Tubing		10/22/2020	Equipment Blank
FB-12607-102220-SK-003	Field Blank		10/22/2020	Field Blank
GW-12607-102320-SK-014	MW68D-16	Deep	10/22/2020	Field Filtered
GW-12607-102320-SK-015	PZ-SW-10	Shallow	10/23/2020	
GW-12607-102320-SK-016	MW-S-7S	Shallow	10/23/2020	
GW-12607-102320-SK-017	MW-27	Deep	10/23/2020	
GW-12607-102320-SK-018	HA-15	Deep	10/23/2020	
GW-12607-102320-SK-019	PZ-SW-9	Shallow	10/23/2020	
GW-12607-102620-DR-020	MW-OS-4D	Deep	10/26/2020	
GW-12607-102620-DR-021	MW-OS-4S	Shallow	10/26/2020	
GW-12607-102620-DR-022	HA-MW-11	Shallow	10/26/2020	
GW-12607-102620-DR-023	OW-24	Deep	10/26/2020	
GW-12607-102620-DR-024	MW-69D-16	Deep	10/26/2020	
GW-12607-102620-DR-025	MW-69S-19	Shallow	10/26/2020	
GW-12607-102720-DR-026	HA-16	Deep	10/27/2020	
GW-12607-102720-DR-027	PZ-SW-18	Shallow	10/27/2020	
GW-12607-102720-DR-028	HA-14	Deep	10/27/2020	
GW-12607-102720-DR-029	MW-70D-16	Deep	10/27/2020	
GW-12607-102720-DR-030	MW-67D-16	Deep	10/27/2020	
GW-12607-102720-DR-031	MW-67D-16	Deep	10/27/2020	Field Duplicate
GW-12607-102720-DR-032	MW-67S-19	Shallow	10/27/2020	
GW-12607-102820-DR-033	MW-OS-8D	Deep	10/28/2020	
GW-12607-102820-DR-034	MW-OS-5D	Deep	10/28/2020	
GW-12607-011321-DA-001	TW-OS-11	Shallow	1/13/2021	
EB-12607-011321-DA-002	Equipment Blank		1/13/2021	Equipment Blank
FB-12607-011321-DA-003	Field Blank		1/13/2021	Field Blank
GW-12607-011321-DA-004	TW-OS-11	Deep	1/13/2021	Field Filtered
GW-12607-011321-DA-005	TW-OS-12	Shallow	1/13/2021	Field Filtered
GW-12607-011421-DA-006	TW-OS-12	Deep	1/14/2021	Field Filtered
GW-12607-011421-DA-007	TW-OS-13	Shallow	1/14/2021	Field Filtered
GW-12607-011421-DA-008	TW-OS-13	Deep	1/14/2021	
GW-12607-011421-DA-009	TW-OS-13	Deep	1/14/2021	Field Duplicate
GW-12607-011821-DA-010	TW-OS-14	Shallow	1/18/2021	
GW-12607-011821-DA-011	TW-OS-14	Deep	1/18/2021	Field Filtered
GW-12607-011921-DA-012	PZ-SW-10	Shallow	1/19/2021	
GW-12607-011921-DA-013	MW-68D-16	Deep	1/19/2021	
GW-12607-011921-DA-014	HA-14	Deep	1/19/2021	
GW-12607-011921-DA-015	MW-S-7S	Shallow	1/19/2021	
GW-12607-011921-DA-016	MW-27	Deep	1/19/2021	
FB-12607-011921-DA-017	Field Blank		1/19/2021	Field Blank
GW-12607-011921-DA-018	HA-14	Deep	1/19/2021	Field Duplicate
GW-12607-020321-DA-007	MW-77D-16	Deep	2/3/2021	
GW-12607-020321-DA-008	MW-S-8S	Shallow	2/3/2021	
GW-12607-020321-DA-009	MW-S-8D	Deep	2/3/2021	
GW-12607-020321-DA-010	HA-15	Deep	2/3/2021	
FB-12607-020321-DA-011	Field Blank		2/3/2021	Field Blank

Notes:
Field Filtered - Samples for the analysis of metals were field filtered if turbidity did not stabilize below 10 NTU

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
HA-14	09/23/2015		-	Deep	--	--	0.0023 J	--	0.0050 U	0.0050 U	**0.12**[abc]	--	8.67	--	--
HA-14	11/04/2016		-	Deep	--	--	0.005 U	--	0.0050 U	0.0050 U	**0.31**[abc]	--	1.64	--	--
HA-14	01/26/2017		-	Deep	--	--	0.00085 J	0.0011 J	0.0050 U	0.0050 U	**0.91**[abc]	**1**[abc]	0.85	--	--
HA-14	12/04/2017		-	Deep	--	--	0.005 U	--	0.010 U	0.0050 U	**0.47**[abc]	--	1.89	--	--
HA-14	05/23/2018		-	Deep	--	--	--	--	--	--	--	--	--	1.7 U	3.8
HA-14	05/23/2018		-	Deep	--	--	--	--	--	--	--	--	2.43	--	--
HA-14	10/29/2018		-	Deep	--	--	0.005 U	--	0.0029 J	0.010 U	**0.97**[abc]	--	2.03	--	--
HA-14	10/29/2018	Duplicate	-	Deep	--	--	0.005 U	--	0.0021 J	0.010 U	**0.9**[abc]	--	2.03	--	--
HA-14	10/24/2019		-	Deep	--	--	0.00074 J	--	0.010 UJ	0.010 UJ	**1.5**[abc]	--	0.94	1.9 U	5.9
HA-14	10/27/2020		-	Deep	**3.7**[ab]	--	0.005 U	--	0.010 UJ	0.010 UJ	**0.74**[abc]	--	0.59	11 U	5.8
HA-14	01/19/2021		-	Deep	**5.1**[ab]	--	0.0012 J	--	0.010 U	0.010 U	**1.1**[abc]	--	2.25	12 J	6.2
HA-14	01/19/2021	Duplicate	-	Deep	**5.7**[ab]	--	0.0012 J	--	0.010 U	0.010 U	**1.3**[abc]	--	2.25	12 J	6.2
HA-15	01/20/2017		-	Deep	--	--	0.0019 J	0.0011 J	0.0050 U	0.0050 U	**11**[abc]	**12 B**[abc]	5.68	--	--
HA-15	08/07/2018		-	Deep	--	--	--	--	--	--	--	--	0.66	4.3	3.5
HA-15	10/23/2020		-	Deep	**15**[abc]	--	0.005 U	--	--	--	**19**[abc]	--	1.13	11 J	**8.5**[ab]
HA-15	02/03/2021		-	Deep	**13**[abc]	--	0.0011 J	--	--	0.010 U	**12**[abc]	--	4.25	1.9 U	7.2
HA-16	09/23/2015		-	Deep	--	--	--	--	--	--	**350**[abc]	--	6.19	--	--
HA-16	11/04/2016		-	Deep	--	--	--	--	--	--	**290**[abc]	--	1.84	--	--
HA-16	12/04/2017		-	Deep	--	--	--	--	--	--	**300**[abc]	--	4.07	--	--
HA-16	10/29/2018		-	Deep	--	--	0.005 U	--	--	--	**190**[abc]	--	4.58	--	--
HA-16	10/24/2019		-	Deep	--	--	0.0017 J	--	--	--	**100**[abc]	--	5.94	--	--
HA-16	10/27/2020		-	Deep	**60**[abc]	--	0.005 U	--	--	--	**130**[abc]	--	3.66	1.8 U	1.8 U
HA-MW-11	10/26/2020		-	Shallow	**11**[abc]	--	0.005 U	--	--	--	**0.11**[abc]	--	1.9	1.8 U	2.1
MW-001	10/16/2019		-	Shallow	--	--	--	--	--	--	--	--	26.35	**86 J**[abc]	5.8
MW-002	10/16/2019		-	Shallow	--	--	--	--	--	--	--	--	27.44	**700**[abc]	**41**[ab]
MW-003	10/16/2019		-	Shallow	--	--	--	--	--	--	--	--	4.17	**17**[abc]	4.0
MW-004	05/21/2020		-	Shallow	--	--	0.0072 J	--	--	0.010 U	**0.92**[abc]	--	211	3.7	0.82 J
MW-23D-12	05/13/2015		-	Deep	--	--	**43**[abc]	**43**[abc]	**22**[abc]	**21**[abc]	**0.17**[abc]	**0.18**[abc]	0.32	--	--
MW-23D-12	07/06/2015		-	Deep	--	--	**0.2**[abc]	0.011	0.0050 U	**17**[abc]	**0.09**[c]	0.069	10.9	--	--
MW-23D-12	07/20/2015		-	Deep	--	--	0.05 U	0.05 U	0.050 U	**2.2**[abc]	0.4 U	0.4 U	3.97	--	--
MW-23D-12	09/03/2015		-	Deep	--	--	**0.11**[abc]	0.0091	0.050 U	**12**[abc]	**0.42**[abc]	**0.21**[abc]	162	--	--
MW-23D-12	12/07/2015		-	Deep	--	--	0.085	0.05 U	0.085	2.5 U	0.4 U	0.4 U	26.8	--	--
MW-23D-12	08/15/2016		-	Deep	--	--	0.095	0.011	0.095	0.5 U	**0.31**[abc]	0.073	4.25	--	--
MW-23D-12	01/16/2017		-	Deep	--	--	0.032	0.015	0.032	0.25 U	**0.33**[abc]	0.05	4.35	--	--
MW-23D-12	04/27/2017		-	Deep	--	--	0.071	0.0077	0.071	1.0 U	**0.68**[abc]	0.052	5.36	--	--
MW-23D-12	05/22/2018		-	Deep	--	--	0.021	0.0052	0.021	0.25 U	0.044	0.04 U	18.5	--	--

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-24D-10	08/16/2016		-	Deep	--	--	0.005 U	0.005 U	0.005 U	0.005 U	**4.8**[abc]	**6.2**[abc]	1.46	--	--
MW-24D-10	01/19/2017		-	Deep	--	--	0.0014 J	0.0011 J	0.0050 U	0.0050 U	**0.23**[abc]	0.014 JB	4.44	--	--
MW-24D-10	04/24/2017		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	0.066	0.04 U	2.36	--	--
MW-24D-10	07/26/2019		-	Deep	--	--	0.005 U	--	0.01 UJ	0.01 UJ	0.04 U	--	1.04	--	--
MW-25D-12	05/13/2015		-	Deep	--	--	**1.5**[abc]	**1.5**[abc]	**0.36**[abc]	**1.1**[abc]	**1.4**[abc]	**1.4**[abc]	4.79	--	--
MW-25D-12	06/19/2015		-	Deep	--	--	0.011	0.022	0.011	0.050 U	0.041	0.041	9.21	--	--
MW-25D-12	07/06/2015		-	Deep	--	--	0.011	0.005 U	0.011	0.50 U	**0.082**[c]	0.04 U	8.08	--	--
MW-25D-12	09/03/2015		-	Deep	--	--	0.0068	0.005 U	0.0068	5.0 U	**0.092**[c]	**0.25**[abc]	27.9	--	--
MW-25D-12	12/10/2015		-	Deep	--	--	0.0075	0.011	0.0075	5.0 U	**0.085**[c]	0.059		--	--
MW-25D-12	08/15/2016		-	Deep	--	--	0.0069	0.005 U	0.0069	0.5 U	0.04 U	0.04 U	2.62	--	--
MW-25D-12	01/17/2017		-	Deep	--	--	0.012	0.0028 J	0.012	0.25 UH	**0.096**[c]	0.057	3.94	--	--
MW-25D-12	04/26/2017		-	Deep	--	--	0.025	0.005 U	0.025	1.0 U	0.073	0.04 U	5.59	--	--
MW-26D-12	05/12/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**12**[abc]	**12**[abc]	0.75	--	--
MW-26D-12	05/28/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	**1.7**[abc]	**0.96**[abc]	14.7	--	--
MW-26D-12	06/11/2015		-	Deep	--	--	0.005 U	0.034	0.0050 U	0.50 U	0.04 U	**1**[abc]	61.2	--	--
MW-26D-12	09/01/2015		-	Deep	--	--	0.0066	0.005 U	0.0050 U	**5.2**[abc]	**5.7**[abc]	**3.8**[abc]	63.5	--	--
MW-26D-12	12/10/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	**1.2**[abc]	**0.34**[abc]	32.5	--	--
MW-26D-12	08/15/2016		-	Deep	--	--	0.005 U	0.005 U	0.005 U	0.05 U	**4.1**[abc]	**1.8**[abc]	7.94	--	--
MW-26D-12	01/17/2017		-	Deep	--	--	0.00097 J	0.005 U	0.0050 U	0.25 U	**0.3**[abc]	0.014 J	1.45	--	--
MW-26D-12	04/26/2017		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	1.0 U	**1.4**[abc]	0.04 U	394	--	--
MW-27	05/23/2018		-	Deep	--	--	--	--	--	--	--	--	--	2.0 U	2.0 U
MW-27	05/23/2018		-	Deep	--	--	--	--	--	--	--	--	17.6	--	--
MW-27	08/07/2018		-	Deep	--	--	--	--	--	--	--	--	1.30	2.1	3.4
MW-27	10/23/2020		-	Deep	**1.6**[ab]	--	0.005 U	--	--	--	**1.4**[abc]	--	0.94	2.5 J	2.3
MW-27	01/19/2021		-	Deep	**1.9**[ab]	--	0.00095 J	--	0.010 U	0.010 U	**1.4**[abc]	--	2.76	2.5 J	2.3
MW-27D-12	05/13/2015		-	Deep	--	--	**140**[abc]	**150**[abc]	**15**[abc]	**130**[abc]	**0.76**[abc]	**0.72**[abc]	5.67	--	--
MW-27D-12	07/06/2015		-	Deep	--	--	**77**[abc]	**73**[abc]	**4.0**[abc]	**73**[abc]	**0.54**[abc]	**0.52**[abc]	4.03	--	--
MW-27D-12	07/20/2015		-	Deep	--	--	**170**[abc]	**89**[abc]	**30**[abc]	**140**[abc]	**0.9**[abc]	**0.58**[abc]	2.88	--	--
MW-27D-12	07/20/2015	Duplicate	-	Deep	--	--	**99**[abc]	**93**[abc]	0.050 U	**170**[abc]	**0.63**[abc]	**0.6**[abc]	2.88	--	--
MW-27D-12	09/02/2015		-	Deep	--	--	**120**[abc]	**130**[abc]	**37**[abc]	**86**[abc]	**0.65**[abc]	**0.68**[abc]	--	--	--
MW-27D-12	09/02/2015	Duplicate	-	Deep	--	--	**120**[abc]	**110**[abc]	**24**[abc]	**92**[abc]	**0.63**[abc]	**0.59**[abc]	--	--	--
MW-27D-12	12/08/2015		-	Deep	--	--	**17**[abc]	**13**[abc]	**17**[abc]	5.0 U	**0.58**[abc]	**0.4**[abc]	93.2	--	--
MW-27D-12	08/15/2016		-	Deep	--	--	**4.4**[abc]	**4.2**[abc]	**2.9**[abc]	**1.6**[abc]	**1.4**[abc]	**0.66**[abc]	15.8	--	--
MW-27D-12	01/16/2017		-	Deep	--	--	**0.14**[abc]	0.042	**0.14**[abc]	0.25 U	**0.14**[abc]	0.055	14.2	--	--
MW-27D-12	01/25/2017		-	Deep	--	--	0.0012 J	0.00065 J	0.0050 U	0.0050 U	0.061	0.049	2.52	--	--
MW-27D-12	04/27/2017		-	Deep	--	--	0.049	0.037	0.049	1.0 U	**0.38**[abc]	**0.085**[c]	3.97	--	--
MW-27D-12	07/25/2019		-	Deep	--	--	0.079	--	0.079	0.5 U	**0.12**[abc]	--	3.99	--	--

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-28D-12	05/14/2015		-	Deep	--	--	**17**[abc]	**16**[abc]	**17**[abc]	**0.024 H**[c]	**0.36**[abc]	**0.34**[abc]	0.62	--	--
MW-28D-12	05/28/2015		-	Deep	--	--	**15**[abc]	**14**[abc]	**5.5**[abc]	**9.1 H**[abc]	**0.34**[abc]	**0.34**[abc]	5.62	--	--
MW-28D-12	06/09/2015		-	Deep	--	--	**17**[abc]	**15**[abc]	**1.6**[abc]	**15**[abc]	**0.39**[abc]	**0.33**[abc]	5.62	--	--
MW-28D-12	09/01/2015		-	Deep	--	--	**15**[abc]	**6**[abc]	**5.9**[abc]	**8.7**[abc]	**0.36**[abc]	**0.26**[abc]	3.07	--	--
MW-28D-12	12/10/2015		-	Deep	--	--	**83**[abc]	**24**[abc]	**53**[abc]	**29**[abc]	**1.1**[abc]	**0.53**[abc]		--	--
MW-28D-12	12/10/2015	Duplicate	-	Deep	--	--	**82**[abc]	**28**[abc]	**61**[abc]	**21**[abc]	**1**[abc]	**0.6**[abc]		--	--
MW-28D-12	08/15/2016		-	Deep	--	--	**0.29**[abc]	**0.56**[abc]	**0.29**[abc]	0.5 U	0.065	**0.087**[c]	3.62	--	--
MW-28D-12	04/26/2017		-	Deep	--	--	**0.27**[abc]	**0.15**[abc]	**0.27**[abc]	1.0 U	**0.32**[abc]	**0.24**[abc]	2.47	--	--
MW-28D-12	01/12/2018		-	Deep	--	--	**0.28**[abc]	--	**0.28**[abc]	2.5 U	**1.7**[abc]	--	3.63	--	--
MW-28D-12	05/22/2018		-	Deep	--	--	**0.16**[abc]	0.046	**0.16**[abc]	1.0 U	**0.9**[abc]	**0.2**[abc]	13.6	--	--
MW-28D-12	07/25/2019		-	Deep	--	--	**0.28**[abc]	--	**0.28**[abc]	0.5 U	**0.41**[abc]	--	3.66	--	--
MW-29D-12	05/12/2015		-	Deep	--	--	0.028	0.015	0.022	0.0067	**7**[abc]	**7**[abc]	2.33	--	--
MW-29D-12	05/29/2015		-	Deep	--	--	0.024	0.005 U	0.024	5.0 U	**6.9**[abc]	**6.3**[abc]	1.72	--	--
MW-29D-12	05/29/2015	Duplicate	-	Deep	--	--	0.023	0.005 U	0.023	5.0 U	**6.3**[abc]	**6.2**[abc]	1.72	--	--
MW-29D-12	06/09/2015		-	Deep	--	--	0.043	0.03	0.043	0.50 U	**7.6**[abc]	**7.2**[abc]	1.59	--	--
MW-29D-12	09/01/2015		-	Deep	--	--	0.017	0.013	0.017	0.050 U	**5.8**[abc]	**5.3**[abc]	1.45	--	--
MW-29D-12	12/10/2015		-	Deep	--	--	0.063	0.021	0.063	0.0050 U	**9.4**[abc]	**8.9**[abc]	16.9	--	--
MW-29D-12	08/15/2016		-	Deep	--	--	0.025	0.012	0.025	0.005 U	**6.5**[abc]	**5.4**[abc]	2.12	--	--
MW-29D-12	01/17/2017		-	Deep	--	--	0.012	0.004 J	0.012	0.25 U	**0.25**[abc]	0.034 J	30.5	--	--
MW-29D-12	01/17/2017	Duplicate	-	Deep	--	--	0.012	0.0029 J	0.012	0.25 U	**0.13**[abc]	0.046	30.5	--	--
MW-29D-12	04/25/2017		-	Deep	--	--	0.0055	0.005 U	0.0055	0.25 U	0.043	0.04 U	7.4	--	--
MW-29D-12	07/25/2019		-	Deep	--	--	0.0097	--	0.01 U	0.01 U	0.04 U	--	22.3	--	--
MW-30D-12	05/12/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**100**[abc]	**110**[abc]	0.73	--	--
MW-30D-12	05/29/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	**170**[abc]	**140**[abc]	2.02	--	--
MW-30D-12	06/09/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	**120**[abc]	**110**[abc]	1.32	--	--
MW-30D-12	09/10/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.050 U	**57**[abc]	**56**[abc]	2	--	--
MW-30D-12	12/10/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**51**[abc]	**51**[abc]		--	--
MW-30D-12	08/15/2016		-	Deep	--	--	0.005 U	0.005 U	0.005 U	0.005 U	**88**[abc]	**96**[abc]	9.99	--	--
MW-30D-12	01/17/2017		-	Deep	--	--	0.003 J	0.0015 J	0.0030 J	0.25 U	**0.13**[abc]	**0.09**[c]	78.7	--	--
MW-30D-12	04/25/2017		-	Deep	--	--	0.05 U	0.005 U	0.050 U	1.0 U	**1.7**[abc]	**0.25**[abc]	36.29	--	--
MW-30D-12	01/12/2018		-	Deep	--	--	0.005 U	--	0.0050 U	2.5 U	**1**[abc]	--	8.49	--	--
MW-30D-12	05/22/2018		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.25 U	**1**[abc]	0.04 U	16.5	--	--
MW-30D-12	07/25/2019		-	Deep	--	--	0.05 U	--	0.01 U	1 U	**2.4 J**[abc]	--	23.8	--	--
MW-30D-12	07/25/2019	Duplicate	-	Deep	--	--	0.005 U	--	0.01 U	1 U	**4.8 J**[abc]	--	23.8	--	--

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
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Livonia, Michigan

					Metals									PFAS	
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				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-31D-12	08/16/2016		-	Deep	--	--	**5.7**[abc]	**5.7**[abc]	0.005 U	**7.8**[abc]	0.05	0.05	2.34	--	--
MW-31D-12	01/17/2017		-	Deep	--	--	**13**[abc]	**7.6**[abc]	**7.6**[abc]	**5.5**[abc]	0.065	0.06	61.2	--	--
MW-31D-12	04/27/2017		-	Deep	--	--	**0.95**[abc]	**0.44**[abc]	**0.95**[abc]	1.0 U	**0.085**[c]	0.04 U	5.11	--	--
MW-31D-12	08/09/2018		-	Deep	--	--	--	--	--	--	--	--	1000 >	**740**[abc]	50 U
MW-31D-12	07/22/2019		-	Deep	--	--	**9**[abc]	--	**9**[abc]	0.5 U	**0.84**[abc]	--	13.49	**370 J**[abc]	25 U
MW-31D-12	07/22/2019	Split	-	Deep	--	--	--	--	--	--	--	--	--	**342 I**[abc]	**12.1**[ab]
MW-31D-12	07/22/2019	Duplicate	-	Deep	--	--	**12**[abc]	--	**12**[abc]	0.5 U	**1.3**[abc]	--	13.49	**390 J**[abc]	25 U
MW-31D-12	07/22/2019	Split	-	Deep	--	--	--	--	--	--	--	--	--	**329 I**[abc]	**12.6**[ab]
MW-32D-12	08/16/2016		-	Deep	--	--	**83**[abc]	**81**[abc]	0.05 U	**86**[abc]	**0.82**[abc]	**0.79**[abc]	2.93	--	--
MW-32D-12	01/26/2017		-	Deep	--	--	**0.29**[abc]	0.065	**0.29**[abc]	0.50 U	**0.12**[abc]	**0.078**[c]	11	--	--
MW-32D-12	01/26/2017		-	Deep	--	--	**0.24**[abc]	0.035	**0.24**[abc]	0.50 U	**0.15**[abc]	**0.093**[c]	11	--	--
MW-32D-12	04/26/2017		-	Deep	--	--	**0.11**[abc]	0.005 U	**0.11**[abc]	0.50 U	**0.25**[abc]	0.04 U	5.45	--	--
MW-32D-12	01/12/2018		-	Deep	--	--	0.087	--	0.087	2.5 U	**0.83**[abc]	--	23.3	--	--
MW-32D-12	05/23/2018		-	Deep	--	--	--	--	--	--	--	--	--	**190 J**[abc]	3.6
MW-32D-12	05/23/2018		-	Deep	--	--	**0.13**[abc]	0.019	**0.13**[abc]	0.25 U	**0.15**[abc]	0.057	11.1	--	--
MW-32D-12	08/09/2018		-	Deep	--	--	--	--	--	--	--	--	5.21	**92**[abc]	2.9
MW-32D-12	08/09/2018		-	Deep	--	--	--	--	--	--	--	--	5.21	**93**[abc]	3.8
MW-32D-12	07/25/2019		-	Deep	--	--	**0.13**[abc]	--	**0.13**[abc]	0.01 U	**1.3**[abc]	--	15.3	--	--
MW-33D-12	08/16/2016		-	Deep	--	--	**67**[abc]	**58**[abc]	**110**[abc]	**55**[abc]	**3.2**[abc]	**3.3**[abc]	3.21	--	--
MW-33D-12	01/26/2017		-	Deep	--	--	**0.25**[abc]	0.036	**0.25**[abc]	0.025 U	0.061	0.02 J	21.4	--	--
MW-33D-12	04/26/2017		-	Deep	--	--	0.093	0.005 U	0.093	0.50 U	0.058	0.04 U	6.61	--	--
MW-34D-12	08/16/2016		-	Deep	--	--	0.005 U	0.005 U	0.005 U	0.005 U	**93**[abc]	**87**[abc]	4.62	--	--
MW-34D-12	01/18/2017		-	Deep	--	--	0.003 J	0.0011 J	0.0030 J	0.025 U	**2.4**[abc]	0.025 JB	203	--	--
MW-34D-12	04/25/2017		-	Deep	--	--	0.0089	0.005 U	0.0089	0.50 U	**0.59**[abc]	0.04 U	215	--	--
MW-34D-12	08/09/2018		-	Deep	--	--	--	--	--	--	--	--	39.6	4.9	5.1
MW-34D-12	07/25/2019		-	Deep	--	--	0.005 U	--	0.01 U	0.01 U	**1.3**[abc]	--	23.2	--	--
MW-35D-13	05/13/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**11**[abc]	**11**[abc]	1.72	--	--
MW-35D-13	05/29/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	0.069	0.04 U	4.02	--	--
MW-35D-13	06/09/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	0.051	0.04 U	8	--	--
MW-35D-13	09/03/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	0.04 U	0.04 U	138	--	--
MW-35D-13	09/03/2015	Duplicate	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	0.04 U	0.04 U	138	--	--
MW-35D-13	12/09/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.050 U	**0.23**[abc]	0.055		--	--
MW-35D-13	08/09/2018		-	Deep	--	--	--	--	--	--	--	--	8.54	5.5	3.4
MW-35D-13	12/13/2019		-	Deep	--	--	--	--	--	--	--	--	1.53	6.7	3.8
MW-38D-13	07/24/2019		-	Deep	--	--	0.015	--	0.015	0.01 U	0.048	--	12.3	--	--
MW-39D-13	07/24/2019		-	Deep	--	--	0.005 U	--	0.01 U	0.01 U	**0.28**[abc]	--	55.2	--	--
MW-39D-13	12/13/2019		-	Deep	--	--	--	--	--	--	--	--	3.81	1.9	2.5

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

Parameters:					Metals									PFAS	
					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-40D-13	05/12/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0067	**2.6**[abc]	**2.6**[abc]	2.78	--	--
MW-40D-13	05/29/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	**4.8**[abc]	**4.3**[abc]	4.75	--	--
MW-40D-13	06/09/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	**3.1**[abc]	**2.7**[abc]	13.2	--	--
MW-40D-13	08/31/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	**0.10 H**[c]	**3.3**[abc]	**3.5**[abc]	1.78	--	--
MW-40D-13	12/09/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**3.6**[abc]	**3.9**[abc]	58	--	--
MW-40D-13	08/09/2018		-	Deep	--	--	--	--	--	--	--	--	2.46	5.5	3.0
MW-40D-13	07/25/2019		-	Deep	--	--	0.005 U	--	0.01 U	0.01 U	**2.4**[abc]	--	4.97	--	--
MW-40D-13	12/13/2019		-	Deep	--	--	--	--	--	--	--	--	1.31	4.5	3.1
MW-41D-13	08/09/2018		-	Deep	--	--	--	--	--	--	--	--	5.69	5.7	2.5
MW-41D-13	07/24/2019		-	Deep	--	--	0.02	--	0.02	0.01 U	0.04 U	--	4.45	--	--
MW-41D-13	12/13/2019		-	Deep	--	--	--	--	--	--	--	--	4.48	**19**[abc]	3.5
MW-42D-15	05/14/2015		-	Deep	--	--	**14**[abc]	**14**[abc]	**14**[abc]	**0.015 H**[c]	**0.18**[abc]	**0.19**[abc]	2.44	--	--
MW-42D-15	06/18/2015		-	Deep	--	--	**24**[abc]	**30**[abc]	**24**[abc]	0.50 U	**0.84**[abc]	**1.1**[abc]	79	--	--
MW-42D-15	07/07/2015		-	Deep	--	--	**21**[abc]	**24**[abc]	**21**[abc]	0.50 U	**0.51**[abc]	**0.28**[abc]	14.3	--	--
MW-42D-15	09/01/2015		-	Deep	--	--	**50**[abc]	**48**[abc]	**43**[abc]	**6.7**[abc]	**0.79**[abc]	**0.27**[abc]	76	--	--
MW-42D-15	12/07/2015		-	Deep	--	--	**95**[abc]	**82**[abc]	**73**[abc]	**22**[abc]	**0.14**[abc]	0.04 U	139	--	--
MW-42D-15	08/15/2016		-	Deep	--	--	**19**[abc]	**13**[abc]	**13**[abc]	**5**[abc]	**0.18**[abc]	0.053	26.5	--	--
MW-42D-15	01/16/2017		-	Deep	--	--	**14**[abc]	**14**[abc]	**14**[abc]	0.25 U	**2.6**[abc]	**2.7**[abc]	30.8	--	--
MW-42D-15	04/27/2017		-	Deep	--	--	**1.5**[abc]	**0.45**[abc]	**1.5**[abc]	0.25 U	0.066	0.04 U	27.2	--	--
MW-42D-15	05/22/2018		-	Deep	--	--	**1.4**[abc]	0.046	**1.4**[abc]	0.0050 U	0.04 U	0.04 U	16.3	--	--
MW-42D-15	07/24/2019		-	Deep	--	--	**1.4**[abc]	--	**1.4**[abc]	0.01 U	0.04 U	--	10.9	--	--
MW-43D-15	05/14/2015		-	Deep	--	--	**66**[abc]	**69**[abc]	**66**[abc]	**0.093 H**[c]	**0.48**[abc]	**0.47**[abc]	6.18	--	--
MW-43D-15	05/14/2015	Duplicate	-	Deep	--	--	**65**[abc]	**67**[abc]	**65**[abc]	**0.19 H**[abc]	**0.48**[abc]	**0.47**[abc]	6.18	--	--
MW-43D-15	06/18/2015		-	Deep	--	--	**0.77**[abc]	**6**[abc]	**0.77**[abc]	0.50 U	**0.32**[abc]	**0.93**[abc]	112	--	--
MW-43D-15	07/07/2015		-	Deep	--	--	**1.5**[abc]	**0.55**[abc]	**1.5**[abc]	0.50 U	**1.4**[abc]	**0.77**[abc]	13.6	--	--
MW-43D-15	08/31/2015		-	Deep	--	--	**4.6**[abc]	**2.1**[abc]	**4.6**[abc]	5.0 UH	**0.84**[abc]	**0.24**[abc]	17.4	--	--
MW-43D-15	12/07/2015		-	Deep	--	--	**4.2**[abc]	**4**[abc]	**4.2**[abc]	0.50 U	**0.67**[abc]	**0.21**[abc]	23.2	--	--
MW-44D-15	05/14/2015		-	Deep	--	--	**61**[abc]	**60**[abc]	**61**[abc]	**0.084 H**[c]	**0.24**[abc]	**0.23**[abc]	5.51	--	--
MW-44D-15	06/18/2015		-	Deep	--	--	**21**[abc]	**30**[abc]	**12**[abc]	**9.3**[abc]	**0.29**[abc]	**0.47**[abc]	525	--	--
MW-44D-15	07/07/2015		-	Deep	--	--	**64**[abc]	**52**[abc]	**38**[abc]	**25**[abc]	**0.65**[abc]	**0.31**[abc]	538	--	--
MW-44D-15	07/07/2015	Duplicate	-	Deep	--	--	**59**[abc]	**46**[abc]	**32**[abc]	**26**[abc]	**0.6**[abc]	**0.21**[abc]	538	--	--
MW-44D-15	09/01/2015		-	Deep	--	--	**200**[abc]	**170**[abc]	**23**[abc]	**180**[abc]	0.4 U	0.4 U	134	--	--
MW-44D-15	12/07/2015		-	Deep	--	--	**290**[abc]	**180**[abc]	0.25 U	**310**[abc]	0.4 U	0.4 U	208	--	--
MW-44D-15	08/15/2016		-	Deep	--	--	**140**[abc]	**120**[abc]	**1100**[abc]	**26**[abc]	**0.7**[abc]	**0.096**[c]	43.1	--	--
MW-44D-15	04/27/2017		-	Deep	--	--	**110**[abc]	**84**[abc]	**110**[abc]	1.0 U	**0.86**[abc]	0.4 U	127	--	--

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-45D-15	05/14/2015		-	Deep	--	--	**87**[abc]	**86**[abc]	**87**[abc]	**0.15 H**[abc]	**0.36**[abc]	**0.35**[abc]	3.35	--	--
MW-45D-15	06/18/2015		-	Deep	--	--	**59**[abc]	**79**[abc]	**59**[abc]	0.50 U	**0.11**[abc]	**0.18**[abc]	569	--	--
MW-45D-15	07/07/2015		-	Deep	--	--	**53**[abc]	**57**[abc]	**6.1**[abc]	**47**[abc]	0.04 U	0.04 U	21.7	--	--
MW-45D-15	09/01/2015		-	Deep	--	--	**88**[abc]	**80**[abc]	**79**[abc]	**8.7**[abc]	0.4 U	0.4 U	34.7	--	--
MW-45D-15	12/07/2015		-	Deep	--	--	**660**[abc]	**630**[abc]	**140**[abc]	**520**[abc]	**0.64**[abc]	0.4 U	181	--	--
MW-45D-15	01/16/2017		-	Deep	--	--	**90**[abc]	**62**[abc]	**90**[abc]	0.25 U	**1.8**[abc]	**0.14**[abc]	172	--	--
MW-46D-15	05/13/2015		-	Deep	--	--	**6.6**[abc]	**6.4**[abc]	**3.9**[abc]	**2.7**[abc]	**0.11**[abc]	**0.11**[abc]	3.03	--	--
MW-46D-15	07/06/2015		-	Deep	--	--	**0.25**[abc]	0.016	**0.25**[abc]	0.50 U	0.04 U	0.04 U	6.5	--	--
MW-46D-15	07/20/2015		-	Deep	--	--	0.048	0.005 U	0.048	0.50 U	0.04 U	0.04 U	4.72	--	--
MW-46D-15	09/02/2015		-	Deep	--	--	0.038	0.0089	0.038	0.50 U	0.04 U	0.04 U	51	--	--
MW-46D-15	12/08/2015		-	Deep	--	--	0.043	0.012	0.043	10 U	**0.33**[abc]	0.044		--	--
MW-46D-15	07/24/2019		-	Deep	--	--	**0.28**[abc]	--	**0.28**[abc]	0.01 U	0.04 U	--	22.6	--	--
MW-47D-15	05/14/2015		-	Deep	--	--	**32**[abc]	**32**[abc]	**32**[abc]	**0.050 H**[c]	**0.26**[abc]	**0.27**[abc]	6.87	--	--
MW-47D-15	07/06/2015		-	Deep	--	--	**0.38**[abc]	**0.22**[abc]	**0.38**[abc]	0.50 U	**0.096**[c]	0.04 U	4.12	--	--
MW-47D-15	07/20/2015		-	Deep	--	--	**0.37**[abc]	**0.13**[abc]	**0.37**[abc]	0.50 U	0.04 U	0.04 U	11.7	--	--
MW-47D-15	09/02/2015		-	Deep	--	--	**2.9**[abc]	**1.7**[abc]	**2.9**[abc]	0.10 U	0.055	0.04 U	100	--	--
MW-47D-15	12/08/2015		-	Deep	--	--	**3.1**[abc]	0.063	**3.1**[abc]	10 U	**0.36**[abc]	0.04 U		--	--
MW-48D-15	05/13/2015		-	Deep	--	--	**21**[abc]	**21**[abc]	0.093	**20**[abc]	**0.22**[abc]	**0.22**[abc]	4.11	--	--
MW-48D-15	07/06/2015		-	Deep	--	--	**0.72**[abc]	**0.12**[abc]	**0.72**[abc]	0.50 U	0.04 U	0.04 U	6.6	--	--
MW-48D-15	07/20/2015		-	Deep	--	--	**0.43**[abc]	0.017	**0.43**[abc]	0.50 U	0.046	0.04 U	31.3	--	--
MW-48D-15	09/02/2015		-	Deep	--	--	**0.45**[abc]	0.079	0.0050 U	**1.7**[abc]	0.04 U	0.04 U	3.88	--	--
MW-48D-15	12/08/2015		-	Deep	--	--	**0.65**[abc]	0.033	**0.65**[abc]	10 U	**0.28**[abc]	**0.094**[c]		--	--
MW-49D-15	05/13/2015		-	Deep	--	--	**2.3**[abc]	**2.2**[abc]	**0.79**[abc]	**1.5**[abc]	**0.12**[abc]	**0.12**[abc]	3.4	--	--
MW-49D-15	07/06/2015		-	Deep	--	--	0.012	0.005 U	0.012	0.50 U	0.04 U	0.04 U	4.97	--	--
MW-49D-15	07/20/2015		-	Deep	--	--	0.0091	0.005 U	0.0091	0.50 U	0.04 U	0.04 U	2.6	--	--
MW-49D-15	09/02/2015		-	Deep	--	--	0.0056	0.005 U	0.0056	0.050 U	0.04 U	0.04 U	2.5	--	--
MW-49D-15	09/02/2015	Duplicate	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.050 U	0.04 U	0.04 U	2.5	--	--
MW-49D-15	12/08/2015		-	Deep	--	--	0.028	0.005 U	0.028	0.025 U	**0.094**[c]	0.04 U		--	--
MW-50D-15	05/13/2015		-	Deep	--	--	**0.59**[abc]	**0.22**[abc]	**0.22**[abc]	0.0067	**4.6**[abc]	**4.9**[abc]	9.45	--	--
MW-50D-15	06/19/2015		-	Deep	--	--	0.016	0.005 U	0.016	0.0050 U	0.04 U	0.04 U	76.9	--	--
MW-50D-15	07/07/2015		-	Deep	--	--	0.036	0.02	0.036	0.50 U	0.04 U	0.04 U	5.54	--	--
MW-50D-15	09/03/2015		-	Deep	--	--	0.015	0.0094	0.015	5.0 U	0.04 U	0.04 U	55.5	--	--
MW-50D-15	12/08/2015		-	Deep	--	--	0.013	0.005 U	0.013	10 U	**0.28**[abc]	0.04 U	16.6	--	--

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-51D-15	05/13/2015		-	Deep	--	--	**0.92**[abc]	**0.83**[abc]	**0.33**[abc]	**0.60**[abc]	**0.49**[abc]	**0.49**[abc]	4.75	--	--
MW-51D-15	05/13/2015	Duplicate	-	Deep	--	--	**1**[abc]	**0.8**[abc]	**0.41**[abc]	**0.60**[abc]	**0.52**[abc]	**0.49**[abc]	4.75	--	--
MW-51D-15	06/19/2015		-	Deep	--	--	**7.8**[abc]	**4**[abc]	**7.5**[abc]	**0.27 H**[abc]	**0.48**[abc]	**0.27**[abc]	273	--	--
MW-51D-15	07/07/2015		-	Deep	--	--	**0.37**[abc]	0.043	0.0050 U	**11**[abc]	**0.11**[abc]	0.07	14.7	--	--
MW-51D-15	09/03/2015		-	Deep	--	--	**0.23**[abc]	0.0064	0.0050 U	**0.40**[abc]	**0.082**[c]	0.04 U	10	--	--
MW-51D-15	12/08/2015		-	Deep	--	--	**0.18**[abc]	0.005 U	**0.18**[abc]	0.025 U	0.04 U	0.04 U	16.9	--	--
MW-52D-15	05/13/2015		-	Deep	--	--	**1**[abc]	**0.96**[abc]	0.0050 U	**8.6**[abc]	**1.1**[abc]	**0.93**[abc]	1.27	--	--
MW-52D-15	06/19/2015		-	Deep	--	--	0.06	0.035	0.048	**0.012**[c]	0.04 U	0.04 U	5.22	--	--
MW-52D-15	07/07/2015		-	Deep	--	--	0.027	0.013	0.027	0.50 U	0.04 U	0.04 U	2.49	--	--
MW-52D-15	09/03/2015		-	Deep	--	--	0.013	0.005 U	0.013	0.050 U	0.055	0.04 U	21.2	--	--
MW-52D-15	12/08/2015		-	Deep	--	--	0.0059	0.005 U	0.0059	0.025 U	**0.078**[c]	0.062	46.1	--	--
MW-53D-15	05/13/2015		-	Deep	--	--	**0.37**[abc]	**0.22**[abc]	**0.24**[abc]	**0.13**[abc]	**1.7**[abc]	**1.8**[abc]	6.71	--	--
MW-53D-15	06/19/2015		-	Deep	--	--	**0.65**[abc]	0.094	**0.65**[abc]	0.050 UH	**0.098**[c]	0.047	70.1	--	--
MW-53D-15	07/07/2015		-	Deep	--	--	**0.13**[abc]	0.021	**0.13**[abc]	0.50 U	0.041	0.04 U	11.7	--	--
MW-53D-15	09/03/2015		-	Deep	--	--	0.029	0.005 U	0.029	0.050 U	0.04 U	0.04 U	5.11	--	--
MW-53D-15	12/08/2015		-	Deep	--	--	**0.14**[abc]	0.014	**0.14**[abc]	0.025 U	0.04 U	0.04 U	19.2	--	--
MW-53D-15	07/24/2019		-	Deep	--	--	0.033	--	0.033	0.01 U	**0.24**[abc]	--	3.41	--	--
MW-54D-15	05/13/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**7.1**[abc]	**7.1**[abc]	0.66	--	--
MW-54D-15	05/27/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	0.04 U	0.04 U	4.29	--	--
MW-54D-15	05/27/2015	Duplicate	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	0.04 U	0.04 U	4.29	--	--
MW-54D-15	06/10/2015		-	Deep	--	--	0.014	0.005 U	0.014	0.50 U	**0.16**[abc]	0.04 U	11.1	--	--
MW-54D-15	09/03/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	0.04 U	0.04 U	4.92	--	--
MW-54D-15	12/09/2015		-	Deep	--	--	**0.13**[abc]	0.005 U	0.0050 U	**0.28 H**[abc]	**1**[abc]	0.04 U		--	--
MW-55D-15	05/13/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**19**[abc]	**18**[abc]	1.76	--	--
MW-55D-15	05/27/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	0.04 U	0.04 U	3.74	--	--
MW-55D-15	06/10/2015		-	Deep	--	--	0.018	0.005 U	0.018	0.50 U	**0.13**[abc]	0.04 U	16.8	--	--
MW-55D-15	09/03/2015		-	Deep	--	--	0.021	0.005 U	0.021	0.50 U	**0.57**[abc]	0.04	19	--	--
MW-55D-15	12/09/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	**0.21 H**[abc]	**0.079**[c]	0.04 U		--	--
MW-56D-15	05/13/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**6**[abc]	**5.8**[abc]	1.16	--	--
MW-56D-15	05/27/2015		-	Deep	--	--	0.00506 J	0.00908 J	5.0 U	5.0 U	0.05 U	0.05 U	3.4	--	--
MW-56D-15	06/10/2015		-	Deep	--	--	0.031	0.005 U	0.031	0.50 U	**0.27**[abc]	**0.14**[abc]	15.7	--	--
MW-56D-15	09/03/2015		-	Deep	--	--	0.0082	0.005 U	0.0082	0.050 U	**0.23**[abc]	**0.087**[c]	4.54	--	--
MW-56D-15	12/09/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.050 U	**1.1**[abc]	**0.24**[abc]		--	--

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-57D-15	05/13/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**5.8**[abc]	**5.8**[abc]	1.78	--	--
MW-57D-15	05/13/2015	Duplicate	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**6**[abc]	**5.9**[abc]	1.78	--	--
MW-57D-15	05/27/2015		-	Deep	--	--	0.000553 J	0.00362 J	5.0 U	5.0 U	0.05 U	0.05 U	5.35	--	--
MW-57D-15	06/10/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	0.04 U	0.04 U	20.9	--	--
MW-57D-15	09/03/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	**0.55**[abc]	0.04 U	22	--	--
MW-57D-15	12/09/2015		-	Deep	--	--	**0.24**[abc]	0.005 U	**0.11**[abc]	**0.13 H**[abc]	**2.4**[abc]	**0.19**[abc]		--	--
MW-57D-15	05/01/2017		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**0.32**[abc]	0.0054 J	5.71	--	--
MW-57D-15	05/22/2018		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.025 U	**0.29**[abc]	0.04 U	4.76	--	--
MW-57D-15	07/24/2019		-	Deep	--	--	0.005 U	--	0.01 U	0.01 U	0.055	--	3.08	--	--
MW-58D-15	05/12/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.011	**5.8**[abc]	**5.9**[abc]	1.05	--	--
MW-58D-15	05/27/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	**30**[abc]	**29**[abc]	9.01	--	--
MW-58D-15	06/10/2015		-	Deep	--	--	0.005	0.005 U	0.0050	0.50 U	**1.5**[abc]	**0.24**[abc]	16.6	--	--
MW-58D-15	09/01/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	**2.3**[abc]	**0.15**[abc]	38.9	--	--
MW-58D-15	12/09/2015		-	Deep	--	--	0.0069	0.005 U	0.0050 U	**0.35 H**[abc]	**4.2**[abc]	**0.11**[abc]	42.5	--	--
MW-59D-15	05/12/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**12**[abc]	**12**[abc]	4.15	--	--
MW-59D-15	05/27/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	**0.41**[abc]	**0.32**[abc]	5.03	--	--
MW-59D-15	06/10/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	**0.24**[abc]	0.04 U	22.3	--	--
MW-59D-15	08/31/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	**0.25**[abc]	**1.1**[abc]	**0.17**[abc]	39.6	--	--
MW-59D-15	12/09/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.050 U	**0.45**[abc]	0.04 U	19.5	--	--
MW-60D-15	05/12/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0055	**6.5**[abc]	**6.3**[abc]	0.78	--	--
MW-60D-15	05/12/2015	Duplicate	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**6.7**[abc]	**6.3**[abc]	0.78	--	--
MW-60D-15	05/27/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	**1.1**[abc]	**0.15**[abc]	5.9	--	--
MW-60D-15	06/11/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	0.047	**1.7**[abc]	34.4	--	--
MW-60D-15	06/11/2015	Duplicate	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	0.04 U	**1.5**[abc]	34.4	--	--
MW-60D-15	08/31/2015		-	Deep	--	--	0.005	0.005 U	0.0050	0.050 UH	**5.5**[abc]	**0.23**[abc]	192	--	--
MW-60D-15	12/09/2015		-	Deep	--	--	0.0066	0.005 U	0.0066	0.050 U	**6**[abc]	**0.19**[abc]	34.3	--	--
MW-61D-15	05/12/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**9.5**[abc]	**9**[abc]	0.61	--	--
MW-61D-15	05/27/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	**0.36**[abc]	**0.24**[abc]	4.43	--	--
MW-61D-15	06/11/2015		-	Deep	--	--	0.005 U	0.014	0.0050 U	0.50 U	0.04 U	**0.25**[abc]	16.6	--	--
MW-61D-15	08/31/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	**0.30**[abc]	**0.44**[abc]	0.068	29.2	--	--
MW-61D-15	12/09/2015		-	Deep	--	--	0.0055	0.005 U	0.0055	0.050 U	**0.44**[abc]	**0.095**[c]	38.8	--	--
MW-61D-15	05/01/2017		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.010 U	**5.3**[abc]	0.02 J	10.7	--	--
MW-61D-15	05/23/2018		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.25 U	**1.7**[abc]	0.044	10.2	--	--
MW-61D-15	07/24/2019		-	Deep	--	--	0.005 U	--	0.01 U	0.01 U	**2.5**[abc]	--	4.21	--	--

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-62D-15	05/13/2015		-	Deep	--	--	**2.7**[abc]	**2.1**[abc]	**1.7**[abc]	**0.91**[abc]	**0.24**[abc]	**0.24**[abc]	11.7	--	--
MW-62D-15	07/06/2015		-	Deep	--	--	**0.54**[abc]	0.069	**0.54**[abc]	0.50 U	**0.12**[abc]	**0.12**[abc]	16.2	--	--
MW-62D-15	07/20/2015		-	Deep	--	--	**0.11**[abc]	0.047	**0.11**[abc]	0.50 U	**0.12**[abc]	**0.12**[abc]	2.4	--	--
MW-62D-15	09/02/2015		-	Deep	--	--	**0.61**[abc]	**0.28**[abc]	**0.61**[abc]	0.10 U	**0.14**[abc]	**0.13**[abc]	10.7	--	--
MW-62D-15	12/08/2015		-	Deep	--	--	0.079	0.0063	0.079	0.0050 U	**0.17**[abc]	**0.093**[c]		--	--
MW-62D-15	12/08/2015	Duplicate	-	Deep	--	--	**0.12**[abc]	0.0067	**0.12**[abc]	0.025 U	**0.25**[abc]	**0.097**[c]		--	--
MW-62D-15	01/16/2017		-	Deep	--	--	0.038	0.019	0.038	0.25 U	**0.17**[abc]	0.013 J	9.49	--	--
MW-63D-15	05/14/2015		-	Deep	--	--	**2.4**[abc]	**2.1**[abc]	**2.4**[abc]	0.011 H	**0.33**[abc]	**0.31**[abc]	4.83	--	--
MW-63D-15	05/28/2015		-	Deep	--	--	**2.6**[abc]	**2.3**[abc]	**2.6**[abc]	5.0 U	**0.28**[abc]	**0.26**[abc]	7.9	--	--
MW-63D-15	06/09/2015		-	Deep	--	--	**3.8**[abc]	**3.5**[abc]	**1.5**[abc]	**2.4**[abc]	**0.28**[abc]	**0.27**[abc]	8.36	--	--
MW-63D-15	09/02/2015		-	Deep	--	--	**7.8**[abc]	0.098	**7.8**[abc]	5.0 U	0.066	0.04 U	187	--	--
MW-63D-15	12/10/2015		-	Deep	--	--	0.0054	0.005 U	0.0054	5.0 U	**9.5**[abc]	**0.079**[c]		--	--
MW-63D-15	01/16/2017		-	Deep	--	--	**2.3**[abc]	0.035	**2.3**[abc]	0.25 U	**0.085**[c]	0.016 J	22.6	--	--
MW-64D-15	05/14/2015		-	Deep	--	--	0.036	0.007	0.036	0.0050 U	**13**[abc]	**14**[abc]	3.75	--	--
MW-64D-15	05/28/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	0.057	0.04 U	47.5	--	--
MW-64D-15	06/09/2015		-	Deep	--	--	**0.52**[abc]	0.009	**0.52**[abc]	0.50 U	**4.4**[abc]	0.04 U	45	--	--
MW-64D-15	09/02/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.50 U	**5.1**[abc]	0.04 U	601	--	--
MW-64D-15	12/10/2015		-	Deep	--	--	**7.3**[abc]	**1.8**[abc]	**7.3**[abc]	5.0 U	0.071	0.04 U		--	--
MW-64D-15	01/17/2017		-	Deep	--	--	0.0031 J	0.0013 J	0.0031 J	0.25 UH	**8.1**[abc]	0.049	133	--	--
MW-65D-15	05/14/2015		-	Deep	--	--	0.0074	0.005 U	0.0074	0.0050 U	**8.6**[abc]	**8.4**[abc]	4.7	--	--
MW-65D-15	05/28/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	5.0 U	**9.6**[abc]	**9.2**[abc]	4.91	--	--
MW-65D-15	06/09/2015		-	Deep	--	--	0.0072	0.005 U	0.0072	0.50 U	**18**[abc]	**18**[abc]	9.15	--	--
MW-65D-15	06/09/2015	Duplicate	-	Deep	--	--	0.0072	0.005 U	0.0072	0.50 U	**19**[abc]	**18**[abc]	9.15	--	--
MW-65D-15	09/10/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.050 U	**0.18**[abc]	0.04 U	3.7	--	--
MW-65D-15	12/10/2015		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**0.46**[abc]	**0.2**[abc]	18.2	--	--
MW-65D-15	04/27/2017		-	Deep	--	--	0.0064	0.005 U	0.0064	0.25 U	0.04 U	0.04 U	4.17	--	--
MW-66D-16	08/19/2016		-	Deep	--	--	**46**[abc]	**55**[abc]	**1.1**[abc]	**46**[abc]	**0.14**[abc]	**0.16**[abc]	2.21	--	--
MW-66D-16	12/13/2016		-	Deep	--	--	**8**[abc]	--	**8.0**[abc]	0.050 U	**0.31**[abc]	--	4.86	--	--
MW-66D-16	01/20/2017		-	Deep	--	--	**7.5**[abc]	**7.3**[abc]	**7.5**[abc]	0.010 U	**1.1**[abc]	**1.4 B**[abc]	14.4	--	--
MW-66D-16	05/02/2017		-	Deep	--	--	**3.9**[abc]	**3.7**[abc]	**3.6**[abc]	**0.30**[abc]	**0.56**[abc]	**0.55**[abc]	2.96	--	--
MW-66D-16	05/21/2018		-	Deep	--	--	0.061	0.029	0.061	0.0050 U	0.061	0.04 U	10.8	--	--
MW-66D-16	08/08/2018		-	Deep	--	--	--	--	--	--	--	--	4.22	**98**[abc]	2.6
MW-66D-16	07/25/2019		-	Deep	--	--	0.031	--	0.016	**0.014**[c]	0.044	--	2	--	--

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-67D-16	08/19/2016		-	Deep	--	--	**93**[abc]	**72**[abc]	**250**[abc]	**68**[abc]	**2.9**[abc]	**2.6**[abc]	50.7	--	--
MW-67D-16	08/19/2016	Duplicate	-	Deep	--	--	**67**[abc]	**74**[abc]	0.05 U	**67**[abc]	**2.7**[abc]	**2.6**[abc]	50.7	--	--
MW-67D-16	12/13/2016		-	Deep	--	--	**4.4**[abc]	--	**4.4**[abc]	0.050 U	**7.2**[abc]	--	22.9	--	--
MW-67D-16	01/23/2017		-	Deep	--	--	**0.2**[abc]	0.079	**0.20**[abc]	0.25 U	**15**[abc]	**15**[abc]	11.8	--	--
MW-67D-16	05/02/2017		-	Deep	--	--	**0.87**[abc]	**0.7**[abc]	**0.87**[abc]	0.0050 U	**45**[abc]	**43**[abc]	14.2	--	--
MW-67D-16	05/02/2017	Duplicate	-	Deep	--	--	**0.8**[abc]	**0.69**[abc]	**0.80**[abc]	0.0050 U	**44**[abc]	**43**[abc]	--	--	--
MW-67D-16	05/21/2018		-	Deep	--	--	**0.25**[abc]	0.043	**0.25**[abc]	0.025 U	**2.9**[abc]	**0.65**[abc]	10.8	--	--
MW-67D-16	08/08/2018		-	Deep	--	--	--	--	--	--	--	--	6.19	**230**[abc]	6.8
MW-67D-16	07/23/2019		-	Deep	--	--	**0.38**[abc]	--	**0.38**[abc]	0.01 U	**0.34**[abc]	--	24.8	**170 J**[abc]	6.5
MW-67D-16	07/23/2019	Split	-	Deep	--	--	--	--	--	--	--	--	--	**155 I**[abc]	10 U
MW-67D-16	10/27/2020		-	Deep	**6.8**[ab]	--	**0.14**[abc]	--	**0.14**[abc]	0.010 U	**0.24**[abc]	--	2.71	140 U	5.4
MW-67D-16	10/27/2020	Duplicate	-	Deep	--	--	**0.14**[abc]	--	**0.14**[abc]	0.010 U	**0.24**[abc]	--	2.71	150 U	5.5
MW-67S-19	07/23/2019		-	Shallow	--	--	0.069	--	0.01 U	**0.061**[c]	0.04 U	--	16.2	**14**[c]	5.1
MW-67S-19	07/23/2019	Split	-	Shallow	--	--	--	--	--	--	--	--	--	11.3 I	10 U
MW-67S-19	10/27/2020		-	Shallow	**0.52**[ab]	--	0.027	--	0.0022 J	**0.025**[c]	0.0071 J	--	0.61	20 U	**14**[ab]
MW-68D-16	01/23/2017		-	Deep	--	--	**0.19**[abc]	0.098	**0.19**[abc]	0.0050 U	0.013 J	0.012 J	19	--	--
MW-68D-16	01/23/2017	Duplicate	-	Deep	--	--	--	--	--	--	--	--	--	--	--
MW-68D-16	01/23/2017		-	Deep	--	--	**0.17**[abc]	0.1	**0.17**[abc]	0.0050 U	0.017 J	0.016 J	19	--	--
MW-68D-16	01/23/2017	Duplicate	-	Deep	--	--	--	--	--	--	--	--	--	--	--
MW-68D-16	08/06/2018		-	Deep	--	--	--	--	--	--	--	--	16.6	**20**[abc]	**8.9**[ab]
MW-68D-16	10/24/2019		-	Deep	--	--	--	--	--	--	--	--	4.04	**91 J**[abc]	**14**[ab]
MW-68D-16	10/23/2020		-	Deep	--	--	0.042	0.0069	--	--	0.033	0.032 J	10.9	**120 J**[abc]	**11**[ab]
MW-68D-16	01/19/2021		-	Deep	**9.7**[abc]	--	0.031	--	0.031	0.010 U	0.031	--	2.96	**120 J**[abc]	**10**[ab]
MW-69D-16	08/17/2016		-	Deep	--	--	**9**[abc]	**11**[abc]	0.25 U	**10**[abc]	**2600**[abc]	**1500**[abc]	5.48	--	--
MW-69D-16	12/13/2016		-	Deep	--	--	**4.6**[abc]	--	0.010 U	**8.0**[abc]	**3800**[abc]	--	5.95	--	--
MW-69D-16	01/23/2017		-	Deep	--	--	**11**[abc]	**7.9**[abc]	**1.6**[abc]	**9.1**[abc]	**1200**[abc]	**3500**[abc]	2.14	--	--
MW-69D-16	04/28/2017		-	Deep	--	--	**2.5**[abc]	**2.9**[abc]	**2.4**[abc]	**0.042**[c]	**4000**[abc]	**3100**[abc]	17.7	5.6	3.4
MW-69D-16	05/21/2018		-	Deep	--	--	0.5 U	0.5 U	0.0050 U	0.050 U	**4000**[abc]	**3500**[abc]	9.64	--	--
MW-69D-16	08/08/2018		-	Deep	--	--	--	--	--	--	--	--	3.59	**13**[c]	4.6
MW-69D-16	07/23/2019		-	Deep	--	--	0.0054	--	0.01 U	**0.035**[c]	**560**[abc]	--	3.19	**22**[abc]	4.7 J
MW-69D-16	07/23/2019	Split	-	Deep	--	--	--	--	--	--	--	--	--	**35.8 I**[abc]	10 U
MW-69D-16	10/23/2019		-	Deep	--	--	--	--	--	--	--	--	1.54	**21 J**[abc]	6.0
MW-69D-16	10/26/2020		-	Deep	**680**[abc]	--	0.1 U	--	0.010 U	0.20 U	**4000**[abc]	--	0.79	**14 J**[c]	4.9
MW-69S-19	07/23/2019		-	Shallow	--	--	0.0062	--	0.01 U	0.01 U	0.04 U	--	13.91	**780**[abc]	**27**[ab]
MW-69S-19	07/23/2019	Split	-	Shallow	--	--	--	--	--	--	--	--	--	**666**[abc]	**34**[ab]
MW-69S-19	10/23/2019		-	Shallow	--	--	--	--	--	--	--	--	6.58	**500 J**[abc]	**18**[ab]
MW-69S-19	10/26/2020		-	Shallow	**0.54**[ab]	--	0.016	--	0.016	0.010 U	0.023	--	5.95	**260**[abc]	**14**[ab]

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

Parameters:					Metals									PFAS	
					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-70D-16	08/17/2016		-	Deep	--	--	**12**[abc]	**11**[abc]	0.005 U	**12**[abc]	**32**[abc]	**28**[abc]	9.37	--	--
MW-70D-16	12/13/2016		-	Deep	--	--	**18**[abc]	--	**2.9**[abc]	**15**[abc]	**48**[abc]	--	4.02	--	--
MW-70D-16	12/13/2016	Duplicate	-	Deep	--	--	**19**[abc]	--	**2.5**[abc]	**16**[abc]	**52**[abc]	--	4.02	--	--
MW-70D-16	01/25/2017		-	Deep	--	--	**14**[abc]	**13**[abc]	**0.93**[abc]	**13**[abc]	**41**[abc]	**36**[abc]	8.6	--	--
MW-70D-16	04/28/2017		-	Deep	--	--	**17**[abc]	**16**[abc]	**16**[abc]	**0.079**[c]	**55**[abc]	**55**[abc]	10.4	**27**[abc]	4.2
MW-70D-16	04/28/2017	Duplicate	-	Deep	--	--	**16**[abc]	**16**[abc]	**15**[abc]	**0.063**[c]	**50**[abc]	**53**[abc]	10.4	**24**[abc]	4.0
MW-70D-16	05/21/2018		-	Deep	--	--	0.013	0.0088	0.013	0.0050 U	**0.11**[abc]	0.072	2.47	--	--
MW-70D-16	05/21/2018	Duplicate	-	Deep	--	--	0.011	0.0082	0.011	0.0050 U	**0.12**[abc]	0.067	2.47	--	--
MW-70D-16	08/07/2018		-	Deep	--	--	--	--	--	--	--	--	18.3	**60**[abc]	**9.8**[ab]
MW-70D-16	08/07/2018	Duplicate	-	Deep	--	--	--	--	--	--	--	--	18.3	**55**[abc]	**8.7**[ab]
MW-70D-16	10/27/2020		-	Deep	**12**[abc]	--	0.0045 J	--	0.0045 J-	0.010 UJ	**0.12**[abc]	--	0.94	40 U	19 U
MW-71D-16	08/16/2016		-	Deep	--	--	0.092	0.05	0.052	**0.039**[c]	**4.1**[abc]	**4**[abc]	17.1	--	--
MW-71D-16	01/18/2017		-	Deep	--	--	**0.14**[abc]	**0.11**[abc]	0.042	**0.098**[c]	**8.8**[abc]	**9.2 B**[abc]	9.86	--	--
MW-71D-16	04/25/2017		-	Deep	--	--	**0.11**[abc]	**0.11**[abc]	0.018	**0.091**[c]	**5.1**[abc]	**5.3**[abc]	3.85	--	--
MW-72D-16	08/16/2016		-		--	--	0.0074	0.005 U	0.0074	0.005 U	**120**[abc]	**120**[abc]	21.1	--	--
MW-72D-16	01/19/2017		-	Deep	--	--	0.0055	0.003 J	0.0055	0.0050 U	**9.1**[abc]	**6.1 B**[abc]	18.3	**15**[c]	7.1 J
MW-72D-16	01/19/2017	Duplicate	-	Deep	--	--	0.0057	0.0016 J	0.0050 U	**0.012**[c]	**9.1**[abc]	**5.3 B**[abc]	18.3	**15**[c]	8.0 J
MW-72D-16	04/24/2017		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.010 U	**43**[abc]	**23**[abc]	129	--	--
MW-72D-16	04/24/2017	Duplicate	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.010 U	**48**[abc]	**25**[abc]	129	--	--
MW-72D-16	01/12/2018		-	Deep	--	--	0.005 U	--	0.0050 U	0.0050 U	**2.6**[abc]	--	4.67	--	--
MW-72D-16	05/21/2018		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**0.82**[abc]	**0.12**[abc]	10.6	--	--
MW-73D-16	08/15/2016		-	Deep	--	--	0.0093	0.005 U	0.0093	0.005 U	**170**[abc]	**150**[abc]	19.5	--	--
MW-73D-16	01/17/2017		-	Deep	--	--	0.0022 J	0.005 U	0.0022 J	0.25 U	**3.3**[abc]	**0.1**[c]	28.3	--	--
MW-73D-16	04/25/2017		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.25 U	**2.1**[abc]	0.04 U	5.09	--	--
MW-73D-16	07/25/2019		-	Deep	--	--	0.005 U	--	0.01 U	0.01 U	**0.66**[abc]	--	9.97	--	--
MW-74D-16	08/16/2016		-	Deep	--	--	0.005 U	0.005 U	0.005 U	0.005 U	**1.5**[abc]	**1.4**[abc]	4.73	--	--
MW-74D-16	01/18/2017		-	Deep	--	--	0.0046 J	0.00087 J	0.0046 J	0.0050 U	**1**[abc]	**0.95 B**[abc]	8.54	--	--
MW-74D-16	04/24/2017		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**1.4**[abc]	**1.2**[abc]	5.21	--	--
MW-74D-16	07/23/2019		-	Deep	--	--	0.014	--	0.014	0.01 U	**0.81**[abc]	--	9.8	8.1	3.2
MW-74D-16	07/23/2019	Split	-	Deep	--	--	--	--	--	--	--	--	--	10 U	10 U
MW-74S-19	07/23/2019		-	Shallow	--	--	0.005 U	--	0.01 U	0.01 U	**0.089**[c]	--	9.16	**20**[abc]	2.1
MW-74S-19	07/23/2019	Split	-	Shallow	--	--	--	--	--	--	--	--	--	**18.7**[abc]	10 U
MW-74S-19	07/23/2019	Duplicate	-	Shallow	--	--	0.005 U	--	0.01 U	0.01 U	**0.087**[c]	--	9.16	**22**[abc]	2.3
MW-74S-19	07/23/2019	Split	-	Shallow	--	--	--	--	--	--	--	--	--	**20**[abc]	10 U

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

				Metals									PFAS	
Parameters:				Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
		Units:		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water		a		0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water		b		0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface		c		7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**										
MW-75D-16	08/17/2016	-	Deep	--	--	0.005 U	0.005 U	0.005 U	0.005 U	**15**[abc]	**26**[abc]	6.69	--	--
MW-75D-16	01/25/2017	-	Deep	--	--	0.0045 J	0.0012 J	0.0045 J	0.0050 U	**2.8**[abc]	**2.6**[abc]	9.63	--	--
MW-75D-16	05/01/2017	-	Deep	--	--	0.00094 J	0.005 U	0.0050 U	0.0050 U	**4**[abc]	**3.4**[abc]	6.1	--	--
MW-75D-16	05/21/2018	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**0.78**[abc]	**0.6**[abc]	6.76	--	--
MW-76D-16	08/17/2016	-	Deep	--	--	0.005 U	0.005 U	0.005 U	0.005 U	**45**[abc]	**47**[abc]	11.6	--	--
MW-76D-16	01/25/2017	-	Deep	--	--	0.0022 J	0.0012 J	0.0022 J	0.0050 U	**24**[abc]	**25**[abc]	6.56	--	--
MW-76D-16	05/01/2017	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	**46**[abc]	**49**[abc]	--	--	--
MW-76D-16	05/22/2018	-	Deep	--	--	0.0067	0.005 U	0.0067	0.050 U	**0.91**[abc]	0.064	20.5	--	--
MW-76D-16	08/07/2018	-	Deep	--	--	--	--	--	--	--	--	5.46	4.7	4.5
MW-76D-16	07/26/2019	-	Deep	--	--	0.005 U	--	0.01 UJ	0.01 UJ	**0.21**[abc]	--	2.49	--	--
MW-77D-16	01/20/2017	-	Deep	--	--	0.0017 J	0.00081 J	--	--	**0.25**[abc]	**0.092 B**[c]	25.3	--	--
MW-77D-16	01/25/2017	-	Deep	--	--	--	--	0.0050 U	0.0050 U	--	--	25.3	--	--
MW-77D-16	02/03/2021	-	Deep	**0.65**[ab]	--	0.0011 J	--	--	0.010 U	0.019 J	--	4.12	1.9 U	3.5
MW-78D-16	08/17/2016	-	Deep	--	--	0.0065	0.005 U	0.0065	0.005 U	**0.16**[abc]	**0.15**[abc]	10.7	--	--
MW-78D-16	05/01/2017	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	0.07	0.069	12.6	--	--
MW-79D-16	01/20/2017	-	Deep	--	--	0.0036 J	0.0013 J	0.0036 J	0.0050 U	**34**[abc]	**38 B**[abc]	72	--	--
MW-80D-16	08/19/2016	-	Deep	--	--	**2.8**[abc]	**2.5**[abc]	0.005 U	**2.8**[abc]	0.049	0.044	15.5	--	--
MW-80D-16	12/13/2016	-	Deep	--	--	**0.81**[abc]	--	**0.81**[abc]	0.020 U	0.067	--	13	--	--
MW-80D-16	01/20/2017	-	Deep	--	--	**59**[abc]	**2.7**[abc]	**59**[abc]	0.0050 U	**3.7**[abc]	**0.21 B**[abc]	15.9	--	--
MW-80D-16	05/02/2017	-	Deep	--	--	**0.52**[abc]	0.022	**0.52**[abc]	0.010 U	0.04 U	0.04 U	5.76	--	--
MW-80D-16	08/08/2018	-	Deep	--	--	--	--	--	--	--	--	5.00	**360**[abc]	**13**[ab]
MW-80D-16	07/25/2019	-	Deep	--	--	**0.17**[abc]	--	**0.17**[abc]	0.01 U	0.04 U	--	3.93	--	--
MW-81D-16	08/15/2016	-	Deep	--	--	0.0075	0.005 U	0.005 U	0.01	0.04 U	0.04 U	6.04	--	--
MW-81D-16	08/15/2016	Duplicate -	Deep	--	--	0.0065	0.005 U	0.005 U	**0.013**[c]	0.04 U	0.04 U	6.04	--	--
MW-81D-16	01/16/2017	-	Deep	--	--	**0.93**[abc]	**0.72**[abc]	**0.93**[abc]	--	**0.084**[c]	0.067	36.5	--	--
MW-81D-16	01/17/2017	-	Deep	--	--	--	--	--	0.25 U	--	--	36.5	--	--
MW-81D-16	07/25/2019	-	Deep	--	--	0.013	--	0.013	0.01 U	0.04 U	--	4.86	--	--
MW-82D-18	01/19/2018	-	Deep	--	--	0.005 U	--	--	0.0050 U	0.042	--	14	--	--
MW-82D-18	05/24/2018	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	0.057	0.047	10.8	2.3	2.8
MW-82D-18	07/23/2019	-	Deep	--	--	0.005 U	--	0.01 U	0.01 U	0.04 U	--	12.5	2.9	2.1
MW-82D-18	07/23/2019	Split -	Deep	--	--	--	--	--	--	--	--	--	10 U	10 U
MW-82S-19	07/23/2019	-	Shallow	--	--	0.005 U	--	0.01 U	0.01 U	0.04 U	--	14.9	4.7	4.2
MW-82S-19	07/23/2019	Split -	Shallow	--	--	--	--	--	--	--	--	--	10 U	10 U
MW-83D-18	01/18/2018	-	Deep	--	--	0.005 U	--	0.0050 U	0.0050 U	0.06	--	9.59	--	--
MW-83D-18	01/18/2018	Duplicate -	Deep	--	--	0.005 U	--	0.0050 U	0.0050 U	0.058	--	9.59	--	--
MW-83D-18	05/24/2018	-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	0.04 U	0.04 U	7.41	2.2	1.9

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-84D-18	01/18/2018		-	Deep	--	--	0.005 U	--	0.0050 U	0.0050 U	0.04 U	--	17.6	--	--
MW-84D-18	05/23/2018		-	Deep	--	--	--	--	--	--	--	--	--	2.8	1.8
MW-84D-18	05/23/2018		-	Deep	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	0.04 U	0.04 U	16.1	--	--
MW-84S-17	01/18/2018		-	Shallow	--	--	0.005 U	--	0.0050 U	0.0050 U	0.04 U	--	26.3	--	--
MW-84S-17	05/23/2018		-	Shallow	--	--	--	--	--	--	--	--	--	7.5	3.2
MW-84S-17	05/23/2018		-	Shallow	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	0.04 U	0.04 U	4.31	--	--
MW-85D-18	01/18/2018		-	Deep	--	--	0.005 U	--	0.0050 U	0.0050 U	**0.12**[abc]	--	13.9	--	--
MW-85S-17	01/18/2018		-	Shallow	--	--	0.005 U	--	0.0050 U	0.0050 U	0.04 U	--	24.2	--	--
MW-101	05/21/2020		-	Shallow	--	--	0.00083 J	--	--	0.010 U	0.0027 J	--	6.14	0.86 J	1.4 J
MW-108	05/21/2020		-	Shallow	--	--	--	--	--	--	--	--	1.75	6.8 J	2.2
MW-108	05/21/2020	Duplicate	-	Shallow	--	--	--	--	--	--	--	--	1.75	6.9 J	2.0
MW-109	05/21/2020		-	Shallow	--	--	--	--	--	--	--	--	383	**290**[abc]	6.3
MW-31S-19	07/22/2019		-	Shallow	--	--	0.1	--	0.01 U	**0.11**[abc]	**0.4**[abc]	--	8.19	**72 J**[abc]	3.5
MW-31S-19	07/22/2019	Split	-	Shallow	--	--	--	--	--	--	--	--	--	**64.5**[abc]	10 U
MW-A1-12S	07/22/2019		-	Shallow	--	--	0.045	--	0.045	0.01 U	0.04 U	--	15.6	1.9	1.9 U
MW-A1-12S	07/22/2019	Split	-	Shallow	--	--	--	--	--	--	--	--	--	10 U	10 U
MW-A1-14S	10/23/2019		-	Shallow	--	--	--	--	--	--	--	--	21.2	**150**[abc]	7.0
MW-A1-19	08/19/2016		-	Deep	--	--	**190**[abc]	**180**[abc]	**240**[abc]	**170**[abc]	**13**[abc]	**13**[abc]	3.05	--	--
MW-A1-19	01/23/2017		-	Deep	--	--	**20**[abc]	**18**[abc]	**19**[abc]	**1.5**[abc]	**0.43**[abc]	**0.28**[abc]	87.5	--	--
MW-A1-19	05/02/2017		-	Deep	--	--	**1.8**[abc]	0.055	**1.8**[abc]	0.025 U	**0.17**[abc]	0.072	40.9	--	--
MW-OS-4D	09/23/2015		-	Deep	--	--	--	--	--	--	**410**[abc]	--	3.54	--	--
MW-OS-4D	09/23/2015	Duplicate	-	Deep	--	--	--	--	--	--	**390**[abc]	--	3.54	--	--
MW-OS-4D	11/04/2016		-	Deep	--	--	--	--	--	--	**330**[abc]	--	1.01	--	--
MW-OS-4D	12/04/2017		-	Deep	--	--	--	--	--	--	**150**[abc]	--	4.45	--	--
MW-OS-4D	10/29/2018		-	Deep	--	--	0.005 U	--	--	--	**37**[abc]	--	4.3	--	--
MW-OS-4D	10/25/2019		-	Deep	--	--	0.0011 J	--	--	--	**21**[abc]	--	1.63	--	--
MW-OS-4D	10/26/2020		-	Deep	**14**[abc]	--	--	--	--	--	**14**[abc]	--	1.28	1.8 U	1.8 U
MW-OS-4S	09/23/2015		-	Shallow	--	--	--	--	--	--	**13**[abc]	--	4.19	--	--
MW-OS-4S	11/04/2016		-	Shallow	--	--	--	--	--	--	**9.2**[abc]	--	1.82	--	--
MW-OS-4S	12/04/2017		-	Shallow	--	--	--	--	--	--	**32**[abc]	--	4.77	--	--
MW-OS-4S	10/29/2018		-	Shallow	--	--	0.005 U	--	--	--	**5.3**[abc]	--	4.71	--	--
MW-OS-4S	10/25/2019		-	Shallow	--	--	0.0014 J	--	--	--	**2.2**[abc]	--	15.5	--	--
MW-OS-4S	10/26/2020		-	Shallow	0.35	--	--	--	--	--	**2.2**[abc]	--	2.11	1.8 U	1.0 J

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
MW-OS-5D	09/23/2015		-	Deep	--	--	--	--	--	--	0.02 J	--	5.5	--	--
MW-OS-5D	11/04/2016		-	Deep	--	--	--	--	--	--	0.04 U	--	1.04	--	--
MW-OS-5D	12/04/2017		-	Deep	--	--	--	--	--	--	0.011 J	--	4.51	--	--
MW-OS-5D	10/30/2018		-	Deep	--	--	0.0015 J	--	--	--	0.012 J	--	3.95	--	--
MW-OS-5D	10/25/2019		-	Deep	--	--	0.00081 J	--	--	--	0.012 J	--	0.63	--	--
MW-OS-5D	10/28/2020		-	Deep	**59[abc]**	--	--	--	--	--	0.014 J	--	1.65	--	--
MW-OS-6D	09/23/2015		-	Deep	--	--	--	--	--	--	0.017 J	--	2.75	--	--
MW-OS-6D	11/04/2016		-	Deep	--	--	--	--	--	--	0.04 U	--	3.33	--	--
MW-OS-7D	09/23/2015		-	Deep	--	--	--	--	--	--	0.027 J	--	0.95	--	--
MW-OS-7D	11/04/2016		-	Deep	--	--	--	--	--	--	0.04 U	--	1.22	--	--
MW-OS-7D	12/04/2017		-	Deep	--	--	--	--	--	--	0.028	--	4.29	--	--
MW-OS-8D	09/23/2015		-	Deep	--	--	--	--	--	--	0.018 J	--	7.64	--	--
MW-OS-8D	11/04/2016		-	Deep	--	--	--	--	--	--	0.04 U	--	3.24	--	--
MW-OS-8D	12/04/2017		-	Deep	--	--	--	--	--	--	0.0089 J	--	4.53	--	--
MW-OS-8D	10/30/2018		-	Deep	--	--	0.0018 J	--	--	--	0.0085 J	--	8.76	--	--
MW-OS-8D	10/25/2019		-	Deep	--	--	0.00064 J	--	--	--	0.009 J	--	0.97	--	--
MW-OS-8D	10/28/2020		-	Deep	0.14	--	--	--	--	--	0.0088 J	--	2.42	--	--
MW-S-8D	01/20/2017		-	Deep	--	--	0.002 J	0.0016 J	0.0020 J	0.0050 U	**6.1[abc]**	**6.3 B[abc]**	18.4	--	--
MW-S-8D	08/07/2018		-	Deep	--	--	--	--	--	--	--	--	3.61	1.6 U	2.9
MW-S-8D	02/03/2021		-	Deep	**5.2[ab]**	--	0.001 J	--	--	0.010 U	**2.5[abc]**	--	4.02	1.8 U	2.9
MW-S-8S	08/07/2018		-	Shallow	--	--	--	--	--	--	--	--	1.60	1.7 U	1.7 U
MW-S-8S	02/03/2021		-	Shallow	0.067 J	--	0.0013 J	--	--	0.010 U	0.02 U	--	3.76	0.55 J	1.1 J
OW-24	09/23/2015		-	Deep	--	--	**84[abc]**	--	**19[abc]**	**65[abc]**	**11[abc]**	--	2.57	--	--
OW-24	08/19/2016		-	Deep	--	--	**63[abc]**	**64[abc]**	**7.2[abc]**	**62[abc]**	**12[abc]**	**12[abc]**	2	--	--
OW-24	11/04/2016		-	Deep	--	--	**460[abc]**	--	0.0050 U	**490[abc]**	**15[abc]**	--	1	--	--
OW-24	11/04/2016	Duplicate	-	Deep	--	--	**460[abc]**	--	0.0050 U	**480[abc]**	**14[abc]**	--	1	--	--
OW-24	01/19/2017		-	Deep	--	--	**350[abc]**	**320[abc]**	**44[abc]**	**300[abc]**	**8.3[abc]**	**8.4 B[abc]**	0.2 D 20.2	**17[abc]**	2.3 J
OW-24	04/28/2017		-	Deep	--	--	**64[abc]**	**66[abc]**	**64[abc]**	**0.11[abc]**	**4.4[abc]**	**4.6[abc]**	4.75	**46[abc]**	4.7
OW-24	12/04/2017		-	Deep	--	--	**3.2 B[abc]**	--	**3.2[abc]**	**0.014[c]**	**0.24[abc]**	--	3.75	--	--
OW-24	12/04/2017	Duplicate	-	Deep	--	--	**3.7 B[abc]**	--	**3.7[abc]**	**0.013[c]**	**0.24[abc]**	--	3.75	--	--
OW-24	10/29/2018		-	Deep	--	--	0.025	--	0.025	0.010 U	0.042	--	1.3	--	--
OW-24	10/24/2019		-	Deep	--	--	0.019	--	0.019 J	0.010 UJ	0.03	--	1.01	--	--
OW-24	10/26/2020		-	Deep	--	--	0.085	--	0.072	**0.012[c]**	**0.13[abc]**	--	1.19	**130 J[abc]**	4.3
PZ-SW-5	05/24/2018		-	Shallow	--	--	--	--	--	--	--	--	1.94	4.4	2.8
PZ-SW-6	05/24/2018		-	Shallow	--	--	0.005 U	0.005 U	0.0050 U	0.0050 U	0.04 U	0.04 U	22.3	3.0	2.0
PZ-SW-9	12/13/2019		-	Shallow	--	--	--	--	--	--	--	--	1.21	**23 I[abc]**	4.7
PZ-SW-9	10/23/2020		-	Shallow	--	--	0.005 U	--	0.010 U	0.010 U	0.039	--	2.44	**14 J[c]**	6.1

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

					Metals									PFAS	
Parameters:					Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	(PFOS)	(PFOA)
				Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water				a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water				b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface				c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000
Sample Loca	**Sample Date**	**Sample T**	**Sample Depth**	**Screened Interval**											
PZ-SW-10	08/06/2018		-	Shallow	--	--	--	--	--	--	--	--	6.28	12	5.3
PZ-SW-10	10/24/2019		-	Shallow	--	--	--	--	--	--	--	--	1.42	**39 J[abc]**	**8.8[ab]**
PZ-SW-10	12/13/2019		-	Shallow	--	--	--	--	--	--	--	--	1.17	**43 I[abc]**	6.8
PZ-SW-10	10/23/2020		-	Shallow	--	--	0.005 U	--	--	--	0.015 J	--	1.37	**56 J[abc]**	5.4
PZ-SW-10	01/19/2021		-	Shallow	**3.2[ab]**	--	0.0016 J	--	0.010 U	0.010 U	0.014 J	--	2.96	**56 J[abc]**	5.4
PZ-SW-18	10/27/2020		-	Shallow	0.24	--	0.00086 J	--	0.010 UJ	0.010 UJ	**0.22[abc]**	--	4.76	**13 J[c]**	3.8
TW68S-20	10/20/2020		-	Shallow	--	--	0.0068	0.005 U	--	--	0.03	0.029 J	23.7	**110[abc]**	**27[ab]**
TW83D-20	10/22/2020		-	Deep	--	--	**0.35[abc]**	**0.14[abc]**	**0.35[abc]**	0.010 U	**0.092[c]**	0.04	1000	1.8	3.9
TW83S-20	10/22/2020		-	Shallow	--	--	0.0017 J	--	0.010 UJ	0.010 UJ	0.014 J	--	9.21	1.8 U	2.2
TW83S-20	10/22/2020	Duplicate	-	Shallow	--	--	0.00085 J	--	0.010 UJ	0.010 UJ	0.014 J	--	9.21	1.8 U	2.4
TW84D-20	10/22/2020		-	Deep	--	--	**0.29[abc]**	0.018	**0.29[abc]**	0.050 U	**0.11[abc]**	0.012 J	1000	3.4	3.2
TW84S-20	10/22/2020		-	Shallow	--	--	0.0011 J	--	0.010 U	0.010 U	0.0031 J	--	9.32	**87[abc]**	**8.6[ab]**
TW85D-20	10/21/2020		-	Deep	--	--	0.011	0.0014 J	0.011	0.010 U	0.0057 J	0.0034 J	30.8	**15[c]**	18 U
TW85S-20	10/21/2020		-	Shallow	--	--	0.00086 J	--	0.010 U	0.010 U	0.0033 J	--	5.74	**19 J[abc]**	4.2
TW86D-20	10/21/2020		-	Deep	--	--	**0.22[abc]**	0.032	**0.22[abc]**	0.010 U	**0.08[c]**	0.017 J	1000	2.2 J	18 U
TW86S-20	10/21/2020		-	Shallow	--	--	**0.22[abc]**	--	0.017	**0.20[abc]**	0.017 J	--	8.4	12 J	4.0
TW87D-20	10/20/2020		-	Deep	--	--	0.0072	0.005 U	0.0072 J	0.010 U	0.013 J	0.012 J	79.5	**16 J[c]**	4.9
TW87S-20	10/20/2020		-	Shallow	--	--	0.005 U	--	0.010 U	0.010 U	0.0097 J	--	3.53	1.8 U	6.7
TW88S-20	10/20/2020		-	Shallow	0.2	--	0.0075	0.005 U	--	--	0.013 J	0.014 J	24.8	1.8 U	2.8
TW-OS-11D	01/13/2021		(21-21) ft BGS	Deep	0.33	0.33	0.026	0.013	--	--	0.036	0.014 J	796	1.8 U	1.8 U
TW-OS-11S	01/13/2021		(11-11) ft BGS	Shallow	**1.4[ab]**	--	0.0024 J	--	--	--	0.0065 J	--	8.56	0.92 J	2.9
TW-OS-12D	01/14/2021		(21-21) ft BGS	Deep	**2.4[ab]**	**2.4[ab]**	0.0023 J	0.0018 J	--	--	0.0031 J	0.0038 J	12.15	1.8 U	1.8 U
TW-OS-12S	01/13/2021		(12-12) ft BGS	Shallow	**1.1[ab]**	**1.1[ab]**	0.0027 J	0.0015 J	--	--	0.0037 J	0.0038 J	42.5	1.2 J	4.4
TW-OS-13D	01/14/2021		(19-19) ft BGS	Deep	**4.6[ab]**	--	0.0023 J	--	--	--	0.0063 J	--	4.9	**34 J[abc]**	**11[ab]**
TW-OS-13D	01/14/2021	Duplicate	(19-19) ft BGS	Deep	**4.7[ab]**	--	0.0023 J	--	--	--	0.0067 J	--	4.9	**37 J[abc]**	**11[ab]**
TW-OS-13S	01/14/2021		(11-11) ft BGS	Shallow	**0.97[ab]**	**0.99[ab]**	0.002 J	0.0018 J	--	--	0.0033 J	0.0039 J	16.56	**21 J[abc]**	**11[ab]**
TW-OS-14D	01/18/2021		(21-21) ft BGS	Deep	--	**3.2[ab]**	--	0.0028 J	--	0.010 UJ	--	0.013 J	94.67	**32 J[abc]**	**18[ab]**
TW-OS-14S	01/18/2021		(14-14) ft BGS	Shallow	0.41	--	0.002 J	--	0.0020 J-	0.010 UJ	0.0038 J	--	8.54	1.4 J	4.3

Table 2

Analytical Results of Groundwater Samples
Area 1 - 2015-2021
Eckles Road Site
Livonia, Michigan

Parameters:		Metals: Boron	Boron (dissolved)	Chromium	Chromium (dissolved)	Chromium III (trivalent)	Chromium VI (hexavalent)	Nickel	Nickel (dissolved)	Turbidity, field	PFAS: (PFOS)	(PFOA)
Units:		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	NTU	ng/L	ng/L
Residential Drinking Water	a	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Non-Residential Drinking Water	b	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	--	16	8
Groundwater Surface Water Interface	c	7.2	7.2	0.1	0.1	0.1	0.011	0.073	0.073	--	12	12000

Sample Loca	Sample Date	Sample T	Sample Depth	Screened Interval

Notes
ND ( ) - Not detected at the associated reporting limit.
U - Not detected at the associated reporting limit.
J - Estimated concentration.
UJ - Not detected; associated reporting limit is estimated.
J- - Estimated concentration, result may be biased low
J+ - Estimated concentration, result may be biased high.
B - Result detected in associated method blank.
CI - The peak identified by the data system exhibited chromatographic interference that could not be resolved. There is a reason to suspect there may be a high bias.
H - Sample was prepped or analyzed beyond the specified holding time.
-- - parameter not analyzed or criteria not developed for parameter
ID - means insufficient data to develop criterion.
NA - means a criterion or value is not available or, in the case of background and CAS numbers, not applicable.
NLL - means hazardous substance is not likely to leach under most soil conditions.
NLV - means hazardous substance is not likely to volatilize under most conditions.

(1) EGLE - Michigan Department of Environment, Great Lakes and Energy (EGLE) Generic cleanup criteria for residential and nonresidential category, administrative rule R 299.44 effective December 30, 2013, pursuant to Part 201 of 1994 PA 451 as amended

Attachment A

Stratigraphic Boring Logs

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD SITE
PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: SB68-20
DATE COMPLETED: October 20, 2020
DRILLING METHOD: HA - DP GEOPROBE
FIELD PERSONNEL: S. Kippen

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
	TOPSOIL	0.40					
2	SM-SILTY SAND, fine to coarse gravel, compact, fine grained, poorly graded, moist, brown - trace fine to coarse gravel light brown from 1.00 to 4.00ft BGS		1		100		5.7
4	- no gravels from 4.00 to 20.00ft BGS						6.7
6							
8			2		60		6.0
10	- wet from 10.00 to 20.00ft BGS						7.6
12			3		40		7.7
14							8.4
16							
18			4		60		5.7
20	END OF BOREHOLE @ 20.00ft BGS	20.00					6.4
22							
24							
26							
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD SITE
PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: SB83S/D-20
DATE COMPLETED: October 22, 2020
DRILLING METHOD: DP GEOPROBE
FIELD PERSONNEL: S. Kippen

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
	CONCRETE	0.70					
2	SP-SAND, trace silt, trace fine to coarse gravel (fill), compact, fine to coarse sand, poorly graded, moist, orangish-brown		1		60		9.6
4	- dark gray to black from 4.20 to 4.50ft BGS - concrete from 4.50 to 4.70ft BGS	4.50					11.5
6	SP-SAND, trace silt, compact, fine grained, poorly graded, moist, light brown - wet from 5.30 to 6.00ft BGS	6.00					
8	SP-SAND, trace silt, with fine to coarse gravel, compact, fine to coarse sand, poorly graded, wet, grayish-brown		2		80		13.1
10	SM-SILTY SAND, compact, fine grained, poorly graded, wet, light grayish-brown	9.40					14.6
12	- trace fine to coarse gravel from 12.70 to 14.50ft BGS		3		80		13.7
14							14.6
16							
18			4		60		8.0
20							8.6
22		22.70	5		85		8.8
24	END OF BOREHOLE @ 25.00ft BGS						10.9
26							
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 12607A-SC.GPJ GHD_Corp 3/5/21

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD SITE
PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: SB84S/D-20
DATE COMPLETED: October 22, 2020
DRILLING METHOD: DP GEOPROBE
FIELD PERSONNEL: S. Kippen

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
2	SP/GP-SAND/GRAVEL, with slag material (fill), compact, fine to coarse grained, poorly graded. moist, browns-grays-black						
		2.50	1		80		23.1
4	SP-SAND, trace silt, trace fine to coarse gravels, compact, fine to coarse sand, poorly graded, mosit, brown						
	- wet from 5.10 to 10.20ft BGS						10.3
6							
8	- with fine gravels from 7.50 to 10.20ft BGS		2		90		7.7
10		10.20					7.9
12	SM-SILTY SAND, compact, fine grained, wet, grayish-brown		3		80		8.9
14	- trace fine gravels from 14.00 to 14.50ft BGS						
							8.3
16							
18			4		80		4.5
20							10.5
22			5		5		-
		23.00					
24	CL-SILTY CLAY, stiff, low plasticity, moist, gray						
		25.00					7.9
26	END OF BOREHOLE @ 25.00ft BGS						
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD SITE
PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: SB85S/D-20
DATE COMPLETED: October 21, 2020
DRILLING METHOD: DP GEOPROBE
FIELD PERSONNEL: S. Kippen

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
	TOPSOIL/FILL/CONCRETE, reworked area						
2		2.50	1		65		6.3
	SP-SAND, trace silt, trace fine to coarse gravel compact, fine to coarse sand, poorly graded, moist, orangish-brown						
4							
	- wet from 5.00 to 9.50ft BGS						6.0
6							
	- trace fine gravels from 7.00 to 7.60ft BGS		2		75		6.3
8							
	ML-SANDY SILT, compact fine grained, wet, brown	9.50					
10	SM-SILTY SAND, trace fine gravel, compact, fine grained, poorly graded, wet, brown	10.20					7.5
12			3		75		2.0
14							
	- grayish brown from 15.00 to 22.50ft BGS						1.9
16							
			4		75		4.7
18							
20							6.1
22							
	CL-SILTY CLAY, stiff, low plasticity, moist, gray	22.50	5		80		3.2
24							
	END OF BOREHOLE @ 25.00ft BGS	25.00					0.8
26							
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD SITE
PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: SB86S/D-20
DATE COMPLETED: October 21, 2020
DRILLING METHOD: DP GEOPROBE
FIELD PERSONNEL: S. Kippen

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
	CONCRETE	0.90					
2	SP-SAND, trace silt, with fine to coarse gravel, compact, fine to coarse sand, poorly graded, moist, orangish-brown						
	- trace fine gravel from 2.50 to 7.20ft BGS		1		80		9.4
4	wet						12.1
6							
	ML-SANDY SILT, compact, fine grained, wet, brown	7.20					
8	SM-SILTY SAND, compact, fine grained, wet, brown	7.60	2		80		0.0
	SP-SAND, trace silt, with fine gravel, compact, fine to coarse sand, poorly graded, wet, brown	8.40					
10							0.0
	SM-SILTY SAND, compact, fine grained, poorly graded, wet, grayish-brown	10.80					
12			3		90		1.9
14							
	- with fine to coarse gravel from 15.20 to 17.00ft BGS						4.1
16							
18			4		80		6.2
20							2.0
22			5		15		6.8
24							
	END OF BOREHOLE @ 25.00ft BGS	25.00					-
26							
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD SITE
PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: SB87-20
DATE COMPLETED: October 20, 2020
DRILLING METHOD:
FIELD PERSONNEL: S. Kippen

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
	TOPSOIL	0.50					
2	SP-SAND, trace silt, trace fine to coarse gravel, compact, fine grained, poorly graded, moist, brown		1		100		18
4	- wet from 4.20 to 15.60ft BGS						18.4
6	- with fine gravels from 6.00 to 10.50ft BGS						
8			2		15		12.1
10							-
12	- with fine gravels from 12.30 to 14.70ft BGS		3		70		20.3
14	- with fine gravels from 15.30 to 15.60ft BGS						14.0
16	SM-SILTY SAND, compact, fine grained, poorly graded, wet, light greyish-brown	15.60					
18			4		75		19.2
20							23.9
22	- light grey from 22.50 to 24.00ft BGS		5		90		22.9
24	CL-SILTY CLAY, stiff, low plasticity, moist, grey	24.00					
	END OF BOREHOLE @ 25.00ft BGS	25.00					21.8
26							
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 12607A-SC.GPJ GHD_Corp 3/5/21

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD SITE
PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: SB88S-20
DATE COMPLETED: October 20, 2020
DRILLING METHOD: HA - DP GEOPROBE
FIELD PERSONNEL: S. Kippen

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value	SAMPLE PID (ppm)
	TOPSOIL	0.40					
2	SM-SILTY SAND, trace fine to coarse gravel, compact, fine grained, poorly graded, moist, brown - no gravels from 2.00 to 5.00ft BGS		1		100		1.5
4							1.9
6							
8			2		70		2.7
10							4.4
12	- with fine gravels, wet from 10.50 to 15.00ft BGS		3		65		4.6
14							
	END OF BOREHOLE @ 15.00ft BGS	15.00					4.9
16							
18							
20							
22							
24							
26							
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD
SITE PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: TW-OS-11
DATE COMPLETED: January 13, 2021
DRILLING METHOD: DP
FIELD PERSONNEL: D. Antulis

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value
	TOPSOIL					
	CL-SILTY CLAY, with trace fine gravel	1.00				
	SP-SILTY SAND, poorly graded, compact, light gray, dry	2.50				
	- dry to moist at 8.00ft BGS					
	- moist to saturated at 12.00ft BGS					
	- increases silt content at 21.00ft BGS					
	SM-SILTY SAND, with trace coarse sand, poorly graded, gray, wet	22.00				
	CL-SILTY CLAY, with trace fine gravel, medium plasticity, gray, hard, moist	24.00				
	END OF BOREHOLE @ 25.00ft BGS	25.00				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 12607A-SC.GPJ GHD_Corp 3/4/21

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD
SITE PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: TW-OS-12
DATE COMPLETED: January 13, 2021
DRILLING METHOD: DP
FIELD PERSONNEL: D. Antulis

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value
0	TOPSOIL					
	SP-SILTY SAND, with trace fine gravel, compact, brown, poorly graded, moist	1.00				
2						
4						
6						
8						
10						
	- moist to saturated at 11.00ft BGS					
12						
	SM-SILTY SAND, poorly graded, compact, gray, saturated	13.00				
14						
16						
18						
20						
22						
	CL-SILTY CLAY, with trace fine gravel, medium plasticity, gray, compact, moist	23.00				
24						
	END OF BOREHOLE @ 25.00ft BGS	25.00				
26						
28						
30						
32						
34						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 12607A-SC.GPJ GHD_Corp 3/4/21

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD
SITE PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: TW-OS-13
DATE COMPLETED: January 14, 2021
DRILLING METHOD: DP
FIELD PERSONNEL: D. Antulis

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value
	TOPSOIL					
	SP-SILTY SAND, with trace fine gravel, compact, brown, poorly graded, moist	1.00				
	- moist to saturated at 11.00ft BGS					
	SM-SILTY SAND, poorly graded, compact, gray, saturated	12.50				
	CL-SILTY CLAY, with trace fine gravel, medium plasticity, gray, compact, moist	21.00				
	END OF BOREHOLE @ 25.00ft BGS	25.00				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 12607A-SC.GPJ GHD_Corp 3/4/21

STRATIGRAPHIC LOG
(OVERBURDEN)

PROJECT NAME: ECKLES ROAD
SITE PROJECT NUMBER: 12607A
CLIENT: RACER
LOCATION: LIVONIA, MICHIGAN

HOLE DESIGNATION: TW-OS-14
DATE COMPLETED: January 28, 2021
DRILLING METHOD: DP
FIELD PERSONNEL: D. Antulis

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value
	TOPSOIL					
	SP-SILTY SAND, with trace fine gravel, compact, brown, poorly graded, moist	0.80				
	- moist to saturated at 11.00ft BGS					
	SM-SILTY SAND, poorly graded, compact, gray, saturated	12.00				
	CL-SILTY CLAY, with trace fine gravel, medium plasticity, gray, compact, moist	23.00				
	END OF BOREHOLE @ 25.00ft BGS	25.00				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 12607A-SC.GPJ GHD_Corp 3/4/21

Attachment B

Summary of Analytical Results – Metals & PFAS

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		EGLE Generic Groundwater Cleanup Criteria(1)			HA-14	HA-14	HA-14	HA-14	HA-14	HA-14	HA-14	HA-14
Sample Identification		Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface (2)	GW-12607-092315-EM-023	GW-12607-110416-DR-008	GW-12607-012617-SK-043	GW-12607-120417-DS-005	GW-12607-102918-SK-002	GW-12607-102918-SK-003	GW-12607A-102419-SK-010	GW-12607-102720-DR-028
Sample Date					09/23/2015	11/04/2016	01/26/2017	12/04/2017	10/29/2018	10/29/2018	10/24/2019	10/27/2020
Sample Type										Duplicate		
Sample Depth		a	b	c	-	-	-	-	-	-	-	-
Area					Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer							Deep	Deep	Deep	Deep	Deep	Deep
Site					South	South	South	South	South	South	South	South
	Units											
Metals												
Boron	mg/L	0.5	0.5	7.2	--	--	--	--	--	--	--	**3.7[ab]**
Boron (dissolved)	mg/L	0.5	0.5	7.2	--	--	--	--	--	--	--	--
Calcium	mg/L				--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L				--	--	--	--	--	--	--	--
Chromium	mg/L	0.1	0.1	0.1	0.0023 J	0.005 U	0.00085 J	0.005 U	0.005 U	0.005 U	0.00074 J	0.005 U
Chromium (dissolved)	mg/L	0.1	0.1	0.1	--	--	0.0011 J	--	--	--	--	--
Chromium III (trivalent)	mg/L	0.1	0.1	0.1	0.0050 U	0.0050 U	0.0050 U	0.010 U	0.0029 J	0.0021 J	0.010 UJ	0.010 UJ
Chromium VI (hexavalent)	mg/L	0.1	0.1	0.011	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.010 U	0.010 U	0.010 UJ	0.010 UJ
Iron	mg/L	0.3	0.3		--	--	**0.77 B[ab]**	--	--	--	--	--
Iron (dissolved)	mg/L	0.3	0.3		--	--	**0.83 B[ab]**	--	--	--	--	--
Lead	mg/L	0.004	0.004	G,X	--	--	--	--	--	--	--	--
Magnesium	mg/L	400	1100		--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	400	1100		--	--	--	--	--	--	--	--
Manganese	mg/L	0.05	0.05	G,X	--	--	**0.55[ab]**	--	--	--	--	--
Manganese (dissolved)	mg/L	0.05	0.05	G,X	--	--	**0.52[ab]**	--	--	--	--	--
Mercury	mg/L	0.002	0.002	0.0000013	--	--	--	--	--	--	--	--
Nickel	mg/L	0.1	0.1	0.073	**0.12[abc]**	**0.31[abc]**	**0.91[abc]**	**0.47[abc]**	**0.97[abc]**	**0.9[abc]**	**1.5[abc]**	**0.74[abc]**
Nickel (dissolved)	mg/L	0.1	0.1	0.073	--	--	**1[abc]**	--	--	--	--	--
Sodium	mg/L	230	350		--	--	31	--	--	--	--	--
Sodium (dissolved)	mg/L	230	350		--	--	32	--	--	--	--	--
Zinc	mg/L	2.4	5	G	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm				--	0.727	0.854	1.02	0.956	0.956	--	--
Conductivity, field	umhos/cm				0.815	--	--	--	--	--	--	--
Conductivity, field	uS/cm				--	--	--	--	--	--	1.06	0.93
Dissolved oxygen (DO), field	mg/L				0.43	0.21	0.55	0.84	0.96	0.96	0	0.06
Oxidation reduction potential (ORP), field	millivolts				69	-41	-35	-126	-197	-197	-45.9	-34
pH, field	S.U.	6.5 - 8.5	6.5 - 8.5		7.3	7.36	6.99	7.16	7.65	7.65	7.18	7.03
Temperature, field	Deg C				16.51	--	10.2	14.7	14.76	14.76	--	--
Temperature, sample	Deg C				--	14.49	--	--	--	--	15.14	14.33
Turbidity, field	NTU				8.67	1.64	0.85	1.89	2.03	2.03	0.94	0.59

Notes:

U - Not detected at the associated reporting limit.
J - Estimated concentration.
UJ - Not detected; associated reporting limit is estimated.
J- - Estimated concentration, result may be biased low
B - Result detected in associated method blank.
H - Sample was prepped or analyzed beyond the specified holding time.

(1) EGLE - Michigan Department of Environment, Great Lakes and Energy (EGLE) Generic cleanup criteria for residential and nonresidential category, administrative rule R 299.44 effective December 30, 2013, pursuant to Part 201 of 1994 PA 451 as amended
(2) A default hardness of 150 mg/L CaCo3 and pH of 7 was assumed, where required, to calculate a Site-specific groundwater surface water interface protection (GSIP) criterion

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		HA-14	HA-14	HA-15	HA-15	HA-15	HA-16	HA-16	HA-16	HA-16	HA-16	HA-16
Sample Identification		**GW-12607-011921-DA-014**	**GW-12607-011921-DA-018**	**GW-12607-012017-SK-033**	**GW-12607-102320-SK-018**	**GW-12607-020321-DA-010**	**GW-12607-092315-EM-019**	**GW-12607-110416-DR-007**	**GW-12607-120417-DS-006**	**GW-12607-102918-SK-004**	**GW-12607A-102419-SK-012**	**GW-12607-102720-DR-026**
Sample Date		**01/19/2021**	**01/19/2021**	**01/20/2017**	**10/23/2020**	**02/03/2021**	**09/23/2015**	**11/04/2016**	**12/04/2017**	**10/29/2018**	**10/24/2019**	**10/27/2020**
Sample Type			**Duplicate**									
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer		**Deep**	**Deep**	**Deep**	**Deep**	**Deep**			**Deep**	**Deep**	**Deep**	**Deep**
Site		**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**
	Units											
Metals												
Boron	mg/L	**5.1[ab]**	**5.7[ab]**	--	**15[abc]**	**13[abc]**	--	--	--	--	--	**60[abc]**
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.0012 J	0.0012 J	0.0019 J	0.005 U	0.0011 J	--	--	--	0.005 U	0.0017 J	0.005 U
Chromium (dissolved)	mg/L	--	--	0.0011 J	--	--	--	--	--	--	--	--
Chromium III (trivalent)	mg/L	0.010 U	0.010 U	0.0050 U	--	--	--	--	--	--	--	--
Chromium VI (hexavalent)	mg/L	0.010 U	0.010 U	0.0050 U	--	0.010 U	--	--	--	--	--	--
Iron	mg/L	--	--	**1.8[ab]**	--	--	--	--	--	--	--	--
Iron (dissolved)	mg/L	--	--	**1.8[ab]**	--	--	--	--	--	--	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	--	--	**0.38[ab]**	--	--	--	--	--	--	--	--
Manganese (dissolved)	mg/L	--	--	**0.31[ab]**	--	--	--	--	--	--	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**1.1[abc]**	**1.3[abc]**	**11[abc]**	**19[abc]**	**12[abc]**	**350[abc]**	**290[abc]**	**300[abc]**	**190[abc]**	**100[abc]**	**130[abc]**
Nickel (dissolved)	mg/L	--	--	**12 B[abc]**	--	--	--	--	--	--	--	--
Sodium	mg/L	--	--	72	--	--	--	--	--	--	--	--
Sodium (dissolved)	mg/L	--	--	67 B	--	--	--	--	--	--	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	1.05	1.05	1.228	--	3.29	--	4.85	4.94	4.09	--	--
Conductivity, field	umhos/cm	--	--	--	--	--	5.25	--	--	--	--	--
Conductivity, field	uS/cm	--	--	--	3.37	--	--	--	--	--	3.25	3.82
Dissolved oxygen (DO), field	mg/L	0.06	0.06	0.58	0	0.56	0.43	0.38	0.58	1.59	0.16	0.08
Oxidation reduction potential (ORP), field	millivolts	64.9	64.9	-76	-97.4	-3.1	-53	-54	-122	-66	-66.9	-48
pH, field	S.U.	6.94	6.94	6.98	7.03	7.14	**6.38[ab]**	**6.42[ab]**	6.61	6.68	6.65	**6.32[ab]**
Temperature, field	Deg C	--	--	10.95	--	--	15.85	--	14.0	14.49	--	--
Temperature, sample	Deg C	12	12	--	17.22	10.6	--	15.04	--	--	14.94	14.4
Turbidity, field	NTU	2.25	2.25	5.68	1.13	4.25	6.19	1.84	4.07	4.58	5.94	3.66

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		HA-MW-11	MW-004	MW-23D-12	MW-23D-12	MW-23D-12	MW-23D-12	MW-23D-12	MW-23D-12	MW-23D-12	MW-23D-12	MW-23D-12
Sample Identification		**GW-12607-102620-DR-022**	**GW-12607-052120-SK-004**	**GW-12607-051315-DC-025**	**GW-12607-070615-SK-003**	**GW-012607-072015-DT-004**	**GW-12607-090315-EM-023**	**GW-12607-120715-DT-005**	**GW-12607-081516-SK-003**	**GW-12607-011617-SK-005**	**GW-12607-042717-SK-021**	**GW-12607A-052218-SK-012**
Sample Date		**10/26/2020**	**05/21/2020**	**05/13/2015**	**07/06/2015**	**07/20/2015**	**09/03/2015**	**12/07/2015**	**08/15/2016**	**01/16/2017**	**04/27/2017**	**05/22/2018**
Sample Type												
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer		**Shallow**	**Shallow**							**Deep**	**Deep**	**Deep**
Site		**South**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**
	Units											
Metals												
Boron	mg/L	**11[abc]**	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	91
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	98
Chromium	mg/L	0.005 U	0.0072 J	**43[abc]**	**0.2[abc]**	0.05 U	**0.11[abc]**	0.085	0.095	0.032	0.071	0.021
Chromium (dissolved)	mg/L	--	--	**43[abc]**	0.011	0.05 U	0.0091	0.05 U	0.011	0.015	0.0077	0.0052
Chromium III (trivalent)	mg/L	--	--	**22[abc]**	0.0050 U	0.050 U	0.050 U	0.085	0.095	0.032	0.071	0.021
Chromium VI (hexavalent)	mg/L	--	0.010 U	**21[abc]**	**17[abc]**	**2.2[abc]**	**12[abc]**	2.5 U	0.5 U	0.25 U	1.0 U	0.25 U
Iron	mg/L	--	--	0.18	**6.3[ab]**	**1.5[ab]**	**2.2[ab]**	1 U	0.26	0.14	**0.4[ab]**	**2.1[ab]**
Iron (dissolved)	mg/L	--	--	0.1 U	**6[ab]**	**1.2[ab]**	**2.6[ab]**	1 U	0.1 U	0.092 J	0.1 U	**0.4[ab]**
Lead	mg/L	--	**0.0046 J[ab]**	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	14
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	14
Manganese	mg/L	--	--	**0.5[ab]**	0.015 U	0.15 U	0.15 U	0.15 U	**0.097[ab]**	**0.11[ab]**	**0.48[ab]**	**0.82[ab]**
Manganese (dissolved)	mg/L	--	--	**0.52[ab]**	0.015 U	0.15 U	0.015 U	0.15 U	**0.1[ab]**	**0.076[ab]**	**0.49[ab]**	**0.89[ab]**
Mercury	mg/L	--	0.00020 U	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.11[abc]**	**0.92[abc]**	**0.17[abc]**	**0.09[c]**	0.4 U	**0.42[abc]**	0.4 U	**0.31[abc]**	**0.33[abc]**	**0.68[abc]**	0.044
Nickel (dissolved)	mg/L	--	--	**0.18[abc]**	0.069	0.4 U	**0.21[abc]**	0.4 U	0.073	0.05	0.052	0.04 U
Sodium	mg/L	--	--	45	**11000[ab]**	**3500[ab]**	**33000[ab]**	**6000[ab]**	**6600[ab]**	**3100 B[ab]**	**4000[ab]**	**400[ab]**
Sodium (dissolved)	mg/L	--	--	45	**13000[ab]**	**3400[ab]**	**23000[ab]**	**7200[ab]**	**6500[ab]**	**4600 B[ab]**	**4000[ab]**	**440[ab]**
Zinc	mg/L	--	0.022	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	--	--	11.8	14.08	2.73
Conductivity, field	umhos/cm	--	--	1.047	46.6	10.68	10	94.88	22.05	--	--	--
Conductivity, field	uS/cm	1.54	0.89	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.03	2.68	0.86	0.05	-0.2	0.38	-0.01	0.46	0	-0.04	0.2
Oxidation reduction potential (ORP), field	millivolts	-41	73.7	104	-679	-499.8	-728	-611.9	-322	-552	-506.1	-425
pH, field	S.U.	7.01	7.29	7.28	**13.19[ab]**	**11.66[ab]**	**13.35[ab]**	**12.77[ab]**	**10.09[ab]**	**9.68[ab]**	**10.25[ab]**	**8.83[ab]**
Temperature, field	Deg C	--	--	12.12	18.3	21.95	21.62	13.2	17.87	12.5	15.21	16.24
Temperature, sample	Deg C	15.84	15.84	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	1.9	211	0.32	10.9	3.97	162	26.8	4.25	4.35	5.36	18.5

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-24D-10	MW-24D-10	MW-24D-10	MW-24D-10	MW-25D-12	MW-25D-12	MW-25D-12	MW-25D-12	MW-25D-12	MW-25D-12	MW-25D-12
Sample Identification		GW-12607-081616-SK-020	GW-12607-011917-SK-027	GW-12607-042417-SK-006	GW-12607-072619-DA-042	GW-12607-051315-DC-015	GW-012607-061915-DT-009	GW-12607-070615-SK-008	GW-12607-090315-EM-024	GW-12607-121015-DT-033	GW-12607-081516-SK-004	GW-12607-011717-SK-011
Sample Date		08/16/2016	01/19/2017	04/24/2017	07/26/2019	05/13/2015	06/19/2015	07/06/2015	09/03/2015	12/10/2015	08/15/2016	01/17/2017
Sample Type												
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifier			Deep	Deep	Deep							Deep
Site		South	South	South	South	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.005 U	0.0014 J	0.005 U	0.005 U	**1.5[abc]**	0.011	0.011	0.0068	0.0075	0.0069	0.012
Chromium (dissolved)	mg/L	0.005 U	0.0011 J	0.005 U	--	**1.5[abc]**	0.022	0.005 U	0.005 U	0.011	0.005 U	0.0028 J
Chromium III (trivalent)	mg/L	0.005 U	0.0050 U	0.0050 U	0.01 UJ	**0.36[abc]**	0.011	0.011	0.0068	0.0075	0.0069	0.012
Chromium VI (hexavalent)	mg/L	0.005 U	0.0050 U	0.0050 U	0.01 UJ	**1.1[abc]**	0.050 U	0.50 U	5.0 U	5.0 U	0.5 U	0.25 UH
Iron	mg/L	**0.51[ab]**	0.059 J	0.1 U	--	0.1 U	0.17	0.3	0.11	0.19	0.1 U	0.21
Iron (dissolved)	mg/L	**0.45[ab]**	0.1 U	0.1 U	--	0.1 U	0.13	0.1 U	0.1 U	0.11	0.1 U	0.039 J
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.23[ab]**	0.015 U	0.015 U	**0.33[ab]**	**0.12[ab]**	0.015 U	0.015 U	**0.061[ab]**	0.037	0.015 U	0.0058 J
Manganese (dissolved)	mg/L	**0.25[ab]**	0.015 U	0.015 U	--	**0.13[ab]**	0.015 U	0.015 U	0.015 U	0.037	0.015 U	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**4.8[abc]**	**0.23[abc]**	0.066	0.04 U	**1.4[abc]**	0.041	**0.082[c]**	**0.092[c]**	**0.085[c]**	0.04 U	**0.096[c]**
Nickel (dissolved)	mg/L	**6.2[abc]**	0.014 JB	0.04 U	--	**1.4[abc]**	0.041	0.04 U	**0.25[abc]**	0.059	0.04 U	0.057
Sodium	mg/L	41	**810[ab]**	**450[ab]**	230	85	**1900[ab]**	**1300[ab]**	**3400[ab]**	**2600[ab]**	**3200[ab]**	**3000[ab]**
Sodium (dissolved)	mg/L	42	**810 B[ab]**	**470[ab]**	--	86	**2100[ab]**	**1400[ab]**	**8800[ab]**	**3500[ab]**	**3900[ab]**	**3100[ab]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	4.53	3.18	1.83	--	--	--	--	--	--	11.4
Conductivity, field	umhos/cm	1.11	--	--	--	1.224	14.11	6.8	15	10.65	12.8	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.3	0.11	-0.05	0.5	0.2	0.02	0.05	0.82	0	0.16	0
Oxidation reduction potential (ORP), field	millivolts	-18	-539	-406.6	-315.2	112	-587	-616	-637	-568.3	-448	-557
pH, field	S.U.	7.15	**11.42[ab]**	**9.39[ab]**	7.7	6.96	**11.01[ab]**	**12.49[ab]**	**12.43[ab]**	**10.55[ab]**	**10.79[ab]**	**9.71[ab]**
Temperature, field	Deg C	20.45	13.03	15.93	--	11.91	17.71	18.91	22.02	15.72	17.69	12.53
Temperature, sample	Deg C	--	--	--	20.2	--	--	--	--	--	--	--
Turbidity, field	NTU	1.46	4.44	2.36	1.04	4.79	9.21	8.08	27.9		2.62	3.94

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-25D-12	MW-26D-12	MW-26D-12	MW-26D-12	MW-26D-12	MW-26D-12	MW-26D-12	MW-26D-12	MW-26D-12	MW-27	MW-27
Sample Identification		**GW-12607-042617-SK-014**	**GW-12607-051215-DC-009**	**GW-12607-052815-DR-011**	**GW-12607-061115-SK-019**	**GW-12607-090115-EM-010**	**GW-12607-121015-DT-028**	**GW-12607-081516-SK-007**	**GW-12607-011717-SK-012**	**GW-12607-042617-SK-013**	**GW-12607-102320-SK-017**	**GW-12607-011921-DA-016**
Sample Date		**04/26/2017**	**05/12/2015**	**05/28/2015**	**06/11/2015**	**09/01/2015**	**12/10/2015**	**08/15/2016**	**01/17/2017**	**04/26/2017**	**10/23/2020**	**01/19/2021**
Sample Type												
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer		**Deep**							**Deep**	**Deep**	**Deep**	**Deep**
Site		**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**South**	**South**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	**1.6[ab]**	**1.9[ab]**
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.025	0.005 U	0.005 U	0.005 U	0.0066	0.005 U	0.005 U	0.00097 J	0.005 U	0.005 U	0.00095 J
Chromium (dissolved)	mg/L	0.005 U	0.005 U	0.005 U	0.034	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	--	--
Chromium III (trivalent)	mg/L	0.025	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.005 U	0.0050 U	0.0050 U	--	0.010 U
Chromium VI (hexavalent)	mg/L	1.0 U	0.0050 U	5.0 U	0.50 U	**5.2[abc]**	5.0 U	0.05 U	0.25 U	1.0 U	--	0.010 U
Iron	mg/L	**0.38[ab]**	**1.1[ab]**	**2.2[ab]**	0.1 U	**0.78[ab]**	**1.3[ab]**	**2.3[ab]**	0.039 J	**8.3[ab]**	--	--
Iron (dissolved)	mg/L	0.1 U	**0.92[ab]**	0.1 U	**2.9[ab]**	**0.45[ab]**	0.27	**0.85[ab]**	0.027 J	0.3	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	0.015 U	**0.13[ab]**	0.015 U	0.015 U	0.031	**0.24[ab]**	**0.14[ab]**	0.015 U	**0.24[ab]**	--	--
Manganese (dissolved)	mg/L	0.015 U	**0.14[ab]**	0.015 U	0.048	0.015 U	0.015 U	**0.14[ab]**	0.015 U	**0.054[ab]**	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.073	**12[abc]**	**1.7[abc]**	0.04 U	**5.7[abc]**	**1.2[abc]**	**4.1[abc]**	**0.3[abc]**	**1.4[abc]**	**1.4[abc]**	**1.4[abc]**
Nickel (dissolved)	mg/L	0.04 U	**12[abc]**	**0.96[abc]**	**1[abc]**	**3.8[abc]**	**0.34[abc]**	**1.8[abc]**	0.014 J	0.04 U	--	--
Sodium	mg/L	**2700[ab]**	60	**16000[ab]**	**1200[ab]**	**26000[ab]**	**5600[ab]**	**6400[ab]**	**1500[ab]**	**2200[ab]**	--	--
Sodium (dissolved)	mg/L	**2400[ab]**	62	**11000[ab]**	**1200[ab]**	**27000[ab]**	**8000[ab]**	**5700[ab]**	**1400[ab]**	**2000[ab]**	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	9.61	--	--	--	--	--	--	5.75	8.67	--	0.91
Conductivity, field	umhos/cm	--	1.15	98.3	4.66	10	60.33	19.47	--	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	0.93	--
Dissolved oxygen (DO), field	mg/L	-0.04	0.1	0	4.31	0.2	-0.02	0.2	0	-0.04	0	0.81
Oxidation reduction potential (ORP), field	millivolts	-524.79	-34	-742	-519.8	-725	-619.5	-450	-538	-458	-56.8	101.1
pH, field	S.U.	**10.79[ab]**	7.06	**13.46[ab]**	**11.38[ab]**	**13.41[ab]**	**12.68[ab]**	**11.39[ab]**	**9.39[ab]**	**10.39[ab]**	7.07	7.02
Temperature, field	Deg C	17.01	12	14.05	16.6	22.09	14.05	18.5	12.7	17.63	--	--
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	16.52	12.35
Turbidity, field	NTU	5.59	0.75	14.7	61.2	63.5	32.5	7.94	1.45	394	0.94	2.76

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-27D-12	MW-27D-12	MW-27D-12	MW-27D-12	MW-27D-12	MW-27D-12	MW-27D-12	MW-27D-12	MW-27D-12	MW-27D-12	MW-27D-12
Sample Identification		GW-12607-051315-DC-027	GW-12607-070615-SK-002	GW-012607-072015-DT-006	GW-012607-072015-DT-007	GW-12607-090215-EM-013	GW-12607-090215-EM-014	GW-12607-120815-DT-015	GW-12607-081516-SK-009	GW-12607-011617-SK-004	GW-12607-012517-SK-042	GW-12607-042717-SK-019
Sample Date		05/13/2015	07/06/2015	07/20/2015	07/20/2015	09/02/2015	09/02/2015	12/08/2015	08/15/2016	01/16/2017	01/25/2017	04/27/2017
Sample Type					Duplicate		Duplicate					
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer										Deep	Deep	Deep
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	**140**[abc]	**77**[abc]	**170**[abc]	**99**[abc]	**120**[abc]	**120**[abc]	**17**[abc]	**4.4**[abc]	**0.14**[abc]	0.0012 J	0.049
Chromium (dissolved)	mg/L	**150**[abc]	**73**[abc]	**89**[abc]	**93**[abc]	**130**[abc]	**110**[abc]	**13**[abc]	**4.2**[abc]	0.042	0.00065 J	0.037
Chromium III (trivalent)	mg/L	**15**[abc]	**4.0**[abc]	**30**[abc]	0.050 U	**37**[abc]	**24**[abc]	**17**[abc]	**2.9**[abc]	**0.14**[abc]	0.0050 U	0.049
Chromium VI (hexavalent)	mg/L	**130**[abc]	**73**[abc]	**140**[abc]	**170**[abc]	**86**[abc]	**92**[abc]	5.0 U	**1.6**[abc]	0.25 U	0.0050 U	1.0 U
Iron	mg/L	**0.47**[ab]	0.25	1 U	1 U	1 U	1 U	**0.63**[ab]	**1.7**[ab]	**1.5**[ab]	0.11	**2.1**[ab]
Iron (dissolved)	mg/L	0.1 U	0.1 U	1 U	1 U	1 U	1 U	0.1 U	**0.65**[ab]	0.22	0.1 U	0.25
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.4**[ab]	**0.48**[ab]	**0.47**[ab]	**0.52**[ab]	**0.64**[ab]	**0.62**[ab]	**0.95**[ab]	**2.3**[ab]	**0.28**[ab]	0.046	0.019
Manganese (dissolved)	mg/L	**0.43**[ab]	**0.47**[ab]	**0.5**[ab]	**0.5**[ab]	**0.62**[ab]	**0.6**[ab]	**0.72**[ab]	**2.2**[ab]	**0.2**[ab]	0.015 U	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.76**[abc]	**0.54**[abc]	**0.9**[abc]	**0.63**[abc]	**0.65**[abc]	**0.63**[abc]	**0.58**[abc]	**1.4**[abc]	**0.14**[abc]	0.061	**0.38**[abc]
Nickel (dissolved)	mg/L	**0.72**[abc]	**0.52**[abc]	**0.58**[abc]	**0.6**[abc]	**0.68**[abc]	**0.59**[abc]	**0.4**[abc]	**0.66**[abc]	0.055	0.049	**0.085**[c]
Sodium	mg/L	100	72	88	73	130	120	**2000**[ab]	**2900**[ab]	**3500 B**[ab]	3.4 J	**3900**[ab]
Sodium (dissolved)	mg/L	99	70	68	69	120	110	**1700**[ab]	**2900**[ab]	**3400 B**[ab]	3.3 J	**5900**[ab]
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	--	--	14.6	0.522	20.39
Conductivity, field	umhos/cm	1.62	1.185	1.285	1.285	1.81	1.81	13.54	12.22	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.43	0.09	0.39	0.39	0.39	0.39	-0.02	0.02	0.07	1.68	-0.04
Oxidation reduction potential (ORP), field	millivolts	108	120	13.9	13.9	136	136	-10.5	-450.2	-515	73	-512.29
pH, field	S.U.	7.16	6.92	6.9	6.9	6.91	6.91	7.02	7.92	**10.15**[ab]	7.1	**9.94**[ab]
Temperature, field	Deg C	12.5	18.1	21.4	21.4	19.87	19.87	12.59	19.59	11.7	10.33	15.57
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	5.67	4.03	2.88	2.88	--	--	93.2	15.8	14.2	2.52	3.97

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-27D-12	MW-28D-12	MW-28D-12	MW-28D-12	MW-28D-12	MW-28D-12	MW-28D-12	MW-28D-12	MW-28D-12	MW-28D-12	MW-28D-12
Sample Identification		GW-12607-072519-DA-031	GW-12607-051415-DC-034	GW-12607-052815-DR-014	GW-12607-060915-SK-007	GW-12607-090115-EM-012	GW-12607-121015-DT-034	GW-12607-121015-DT-035	GW-12607-081516-SK-011	GW-12607-042617-SK-015	GW-12607-011218-SK-004	GW-12607A-052218-SK-011
Sample Date		07/25/2019	05/14/2015	05/28/2015	06/09/2015	09/01/2015	12/10/2015	12/10/2015	08/15/2016	04/26/2017	01/12/2018	05/22/2018
Sample Type								Duplicate				
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Deep								Deep	Deep	Deep
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	5 U
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	5 U
Chromium	mg/L	0.079	**17**[abc]	**15**[abc]	**17**[abc]	**15**[abc]	**83**[abc]	**82**[abc]	**0.29**[abc]	**0.27**[abc]	**0.28**[abc]	**0.16**[abc]
Chromium (dissolved)	mg/L	--	**16**[abc]	**14**[abc]	**15**[abc]	**6**[abc]	**24**[abc]	**28**[abc]	**0.56**[abc]	**0.15**[abc]	--	0.046
Chromium III (trivalent)	mg/L	0.079	**17**[abc]	**5.5**[abc]	**1.6**[abc]	**5.9**[abc]	**53**[abc]	**61**[abc]	**0.29**[abc]	**0.27**[abc]	**0.28**[abc]	**0.16**[abc]
Chromium VI (hexavalent)	mg/L	0.5 U	**0.024 H**[c]	**9.1 H**[abc]	**15**[abc]	**8.7**[abc]	**29**[abc]	**21**[abc]	0.5 U	1.0 U	2.5 U	1.0 U
Iron	mg/L	--	0.1 U	0.1 U	0.1 U	0.1 U	0.19	0.14	**1.8**[ab]	**3.8**[ab]	--	**1.1**[ab]
Iron (dissolved)	mg/L	--	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**2.1**[ab]	**3.5**[ab]	--	**1.1**[ab]
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	5 U
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	5 U
Manganese	mg/L	0.025	**0.15**[ab]	**0.15**[ab]	**0.14**[ab]	**0.15**[ab]	**0.13**[ab]	**0.12**[ab]	0.015 U	0.015 U	0.015 U	0.015 U
Manganese (dissolved)	mg/L	--	**0.15**[ab]	**0.16**[ab]	**0.13**[ab]	**0.17**[ab]	**0.2**[ab]	**0.2**[ab]	0.015 U	0.015 U	--	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.12**[abc]	**0.36**[abc]	**0.34**[abc]	**0.39**[abc]	**0.36**[abc]	**1.1**[abc]	**1**[abc]	0.065	**0.32**[abc]	**1.7**[abc]	**0.9**[abc]
Nickel (dissolved)	mg/L	--	**0.34**[abc]	**0.34**[abc]	**0.33**[abc]	**0.26**[abc]	**0.53**[abc]	**0.6**[abc]	**0.087**[c]	**0.24**[abc]	--	**0.2**[abc]
Sodium	mg/L	**3000**[ab]	140	130	160	140	**460**[ab]	**440**[ab]	**2700**[ab]	**11000**[ab]	**13000**[ab]	**8700**[ab]
Sodium (dissolved)	mg/L	--	130	110	150	120	**290**[a]	**340**[a]	**3000**[ab]	**11000**[ab]	--	**9100**[ab]
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	12.73	--	--	--	--	--	--	--	38.54	46.15	32.9
Conductivity, field	umhos/cm	--	1.69	1.66	1.48	1.546	6.04	6.04	12.21	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	3.93	0.22	0.62	0.27	1.62	0.02	0.02	0.02	-0.03	0	0.12
Oxidation reduction potential (ORP), field	millivolts	-241	115	-96	-89	32.5	-127.8	-127.8	572.2	-583.4	-591.4	-608
pH, field	S.U.	**10.15**[ab]	7.39	7.23	7.18	6.96	**11.45**[ab]	**11.45**[ab]	**10.6**[ab]	**11.73**[ab]	**12.07**[ab]	**11.85**[ab]
Temperature, field	Deg C	--	13.38	15.77	16.6	19.54	15.36	15.36	19.28	17.48	10.73	15.58
Temperature, sample	Deg C	20	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	3.99	0.62	5.62	5.62	3.07			3.62	2.47	3.63	13.6

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-28D-12	MW-29D-12	MW-29D-12	MW-29D-12	MW-29D-12	MW-29D-12	MW-29D-12	MW-29D-12	MW-29D-12	MW-29D-12	MW-29D-12
Sample Identification		GW-12607-072519-DA-032	GW-12607-051215-DC-002	GW-12607-052915-EM-018	GW-12607-052915-EM-019	GW-12607-060915-SK-002	GW-12607-090115-EM-011	GW-12607-121015-DT-030	GW-12607-081516-SK-012	GW-12607-011717-SK-009	GW-12607-011717-SK-010	GW-12607-042517-SK-012
Sample Date		07/25/2019	05/12/2015	05/29/2015	05/29/2015	06/09/2015	09/01/2015	12/10/2015	08/15/2016	01/17/2017	01/17/2017	04/25/2017
Sample Type					Duplicate						Duplicate	
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Deep								Deep	Deep	Deep
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	**0.28[abc]**	0.028	0.024	0.023	0.043	0.017	0.063	0.025	0.012	0.012	0.0055
Chromium (dissolved)	mg/L	--	0.015	0.005 U	0.005 U	0.03	0.013	0.021	0.012	0.004 J	0.0029 J	0.005 U
Chromium III (trivalent)	mg/L	**0.28[abc]**	0.022	0.024	0.023	0.043	0.017	0.063	0.025	0.012	0.012	0.0055
Chromium VI (hexavalent)	mg/L	0.5 U	0.0067	5.0 U	5.0 U	0.50 U	0.050 U	0.0050 U	0.005 U	0.25 U	0.25 U	0.25 U
Iron	mg/L	--	**0.34[ab]**	0.26	0.26	0.29	**0.44[ab]**	**0.51[ab]**	**0.59[ab]**	0.14	0.11	0.1 U
Iron (dissolved)	mg/L	--	0.29	0.1 U	0.1 U	0.23	**0.37[ab]**	**0.41[ab]**	**0.47[ab]**	0.031 J	0.032 J	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	0.015 U	**1.4[ab]**	**1.4[ab]**	**1.3[ab]**	**1.6[ab]**	**1.2[ab]**	**10[ab]**	**1.6[ab]**	**0.23[ab]**	**0.25[ab]**	0.015 U
Manganese (dissolved)	mg/L	--	**1.4[ab]**	**1.3[ab]**	**1.3[ab]**	**1.6[ab]**	**1.1[ab]**	**1.9[ab]**	**1.3[ab]**	**0.1[ab]**	0.028	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.41[abc]**	**7[abc]**	**6.9[abc]**	**6.3[abc]**	**7.6[abc]**	**5.8[abc]**	**9.4[abc]**	**6.5[abc]**	**0.25[abc]**	**0.13[abc]**	0.043
Nickel (dissolved)	mg/L	--	**7[abc]**	**6.3[abc]**	**6.2[abc]**	**7.2[abc]**	**5.3[abc]**	**8.9[abc]**	**5.4[abc]**	0.034 J	0.046	0.04 U
Sodium	mg/L	**6800[ab]**	180	180	150	200	150	**250[a]**	**600[ab]**	**3200[ab]**	**3200[ab]**	**4000[ab]**
Sodium (dissolved)	mg/L	--	190	160	160	190	150	**250[a]**	**480[ab]**	**3200[ab]**	**3200[ab]**	**4400[ab]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	22.63	--	--	--	--	--	--	--	12.75	12.75	15.85
Conductivity, field	umhos/cm	--	2.82	3.16	3.16	3.06	2.71	4.06	3.92	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.14	0	0	0	0.18	0.43	0.03	0.43	0.34	0.34	-0.04
Oxidation reduction potential (ORP), field	millivolts	-619.7	10	39.9	39.9	104.9	-213	33.5	-156	-529	-529	-495.2
pH, field	S.U.	**8.89[ab]**	**5.23[ab]**	6.57	6.57	6.65	6.6	6.5	7.04	**9.59[ab]**	**9.59[ab]**	**10.73[ab]**
Temperature, field	Deg C	--	13.15	16.6	16.6	18.1	20.61	14.65	17.62	13.32	13.32	16.2
Temperature, sample	Deg C	19.4	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	3.66	2.33	1.72	1.72	1.59	1.45	16.9	2.12	30.5	30.5	7.4

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-29D-12	MW-30D-12	MW-30D-12	MW-30D-12	MW-30D-12	MW-30D-12	MW-30D-12	MW-30D-12	MW-30D-12	MW-30D-12	MW-30D-12
Sample Identification		**GW-12607-072519-DA-033**	**GW-12607-051215-DC-001**	**GW-12607-052915-EM-017**	**GW-12607-060915-SK-001**	**GW-12607-091015-SK-001**	**GW-12607-121015-DT-029**	**GW-12607-081516-SK-010**	**GW-12607-011717-SK-013**	**GW-12607-042517-SK-009**	**GW-12607-011218-SK-003**	**GW-12607A-052218-SK-010**
Sample Date		**07/25/2019**	**05/12/2015**	**05/29/2015**	**06/09/2015**	**09/10/2015**	**12/10/2015**	**08/15/2016**	**01/17/2017**	**04/25/2017**	**01/12/2018**	**05/22/2018**
Sample Type												
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer		**Deep**							**Deep**	**Deep**	**Deep**	**Deep**
Site		**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	100
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	100
Chromium	mg/L	0.0097	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.003 J	0.05 U	0.005 U	0.005 U
Chromium (dissolved)	mg/L	--	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0015 J	0.005 U	--	0.005 U
Chromium III (trivalent)	mg/L	0.01 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.005 U	0.0030 J	0.050 U	0.0050 U	0.0050 U
Chromium VI (hexavalent)	mg/L	0.01 U	0.0050 U	5.0 U	0.50 U	0.050 U	0.0050 U	0.005 U	0.25 U	1.0 U	2.5 U	0.25 U
Iron	mg/L	--	**6.4[ab]**	**9.3[ab]**	**7.5[ab]**	**7.9[ab]**	**3.6[ab]**	**6.2[ab]**	**2.9[ab]**	**5.1[ab]**	--	**0.65[ab]**
Iron (dissolved)	mg/L	--	**6.5[ab]**	0.1 U	**7.3[ab]**	**8[ab]**	**3.6[ab]**	**6.9[ab]**	**0.44[ab]**	**1.3[ab]**	--	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	15
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	15
Manganese	mg/L	0.015 U	**0.83[ab]**	**1.2[ab]**	**0.92[ab]**	**0.91[ab]**	**0.53[ab]**	**0.84[ab]**	0.014 J	**0.25[ab]**	**0.093[ab]**	**0.084[ab]**
Manganese (dissolved)	mg/L	--	**0.86[ab]**	**1[ab]**	**0.9[ab]**	**0.92[ab]**	**0.52[ab]**	**0.88[ab]**	0.015 U	0.048	--	**0.075[ab]**
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.04 U	**100[abc]**	**170[abc]**	**120[abc]**	**57[abc]**	**51[abc]**	**88[abc]**	**0.13[abc]**	**1.7[abc]**	**1[abc]**	**1[abc]**
Nickel (dissolved)	mg/L	--	**110[abc]**	**140[abc]**	**110[abc]**	**56[abc]**	**51[abc]**	**96[abc]**	**0.09[c]**	**0.25[abc]**	--	0.04 U
Sodium	mg/L	**1700[ab]**	120	140	110	110	76	87	**5600[ab]**	**25000[ab]**	**6800[ab]**	**3400[ab]**
Sodium (dissolved)	mg/L	--	130	110	110	110	73	95	**5400[ab]**	**14000[ab]**	--	**3400[ab]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	6.66	--	--	--	--	--	--	22.7	76.14	23.68	14.34
Conductivity, field	umhos/cm	--	2.51	2.71	2.14	2.551	3.2	2.263	--	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.08	0	0	0.2	0.64	-0.03	0.47	0	-0.03	0	0.11
Oxidation reduction potential (ORP), field	millivolts	-542.9	-40	27.6	-43.6	-23.4	-202.1	-152	-665	-695.6	-507	-549
pH, field	S.U.	8.39	6.56	**6.46[ab]**	6.62	6.55	6.56	7.25	**11.26[ab]**	**12.74[ab]**	**11.46[ab]**	**10.24[ab]**
Temperature, field	Deg C	--	13.22	17.54	17	22.62	15.12	18.55	13.8	17.36	9.42	16.73
Temperature, sample	Deg C	19.7	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	22.3	0.73	2.02	1.32	2		9.99	78.7	36.29	8.49	16.5

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-30D-12	MW-30D-12	MW-31D-12	MW-31D-12	MW-31D-12	MW-31D-12	MW-31D-12	MW-32D-12	MW-32D-12	MW-32D-12	MW-32D-12
Sample Identification		GW-12607-072519-DA-034	GW-12607-072519-DA-035	GW-12607-081616-SK-023	GW-12607-011717-SK-015	GW-12607-042717-SK-018	GW-12607-072219-DA-002	GW-12607-072219-DA-003	GW-12607-081616-SK-021	GW-12607-012617-SK-046	GW-12607-012617-SK-047	GW-12607-042617-SK-017
Sample Date		07/25/2019	07/25/2019	08/16/2016	01/17/2017	04/27/2017	07/22/2019	07/22/2019	08/16/2016	01/26/2017	01/26/2017	04/26/2017
Sample Type			Duplicate					Duplicate				
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Deep	Deep		Deep	Deep	Deep	Deep		Deep	Deep	Deep
Site		North	North	South/North	South/North	South/North	South/North	South/North	South/North	South/North	South/North	South/North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.05 U	0.005 U	**5.7**[abc]	**13**[abc]	**0.95**[abc]	**9**[abc]	**12**[abc]	**83**[abc]	**0.29**[abc]	**0.24**[abc]	**0.11**[abc]
Chromium (dissolved)	mg/L	--	--	**5.7**[abc]	**7.6**[abc]	**0.44**[abc]	--	--	**81**[abc]	0.065	0.035	0.005 U
Chromium III (trivalent)	mg/L	0.01 U	0.01 U	0.005 U	**7.6**[abc]	**0.95**[abc]	**9**[abc]	**12**[abc]	0.05 U	**0.29**[abc]	**0.24**[abc]	**0.11**[abc]
Chromium VI (hexavalent)	mg/L	1 U	1 U	**7.8**[abc]	**5.5**[abc]	1.0 U	0.5 U	0.5 U	**86**[abc]	0.50 U	0.50 U	0.50 U
Iron	mg/L	--	--	0.24	**0.9**[ab]	**1.9**[ab]	--	--	0.1 U	0.15 B	0.14 B	0.11
Iron (dissolved)	mg/L	--	--	0.1 U	0.23	0.1 U	--	--	0.1 U	0.041 JB	0.035 JB	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	0.15 U	**0.15**[ab]	**0.3**[ab]	**0.67**[ab]	**0.3**[ab]	**0.49**[ab]	**1.2**[ab]	**0.29**[ab]	0.015 U	0.015 U	0.015 U
Manganese (dissolved)	mg/L	--	--	**0.3**[ab]	**0.63**[ab]	**0.29**[ab]	--	--	**0.29**[ab]	0.015 U	0.015 U	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**2.4 J**[abc]	**4.8 J**[abc]	0.05	0.065	**0.085**[c]	**0.84**[abc]	**1.3**[abc]	**0.82**[abc]	**0.12**[abc]	**0.15**[abc]	**0.25**[abc]
Nickel (dissolved)	mg/L	--	--	0.05	0.06	0.04 U	--	--	**0.79**[abc]	**0.078**[c]	**0.093**[c]	0.04 U
Sodium	mg/L	**6800**[ab]	**10000**[ab]	65	**310**[a]	**1100**[ab]	**3100**[ab]	**4400**[ab]	130	**8100**[ab]	**8000**[ab]	**1800**[ab]
Sodium (dissolved)	mg/L	--	--	65	**300**[a]	**1100**[ab]	--	--	120	**7700**[ab]	**7800**[ab]	**1800**[ab]
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	36.3	36.3	--	3.07	4.66	12	12	--	40.2	40.2	7.67
Conductivity, field	umhos/cm	--	--	0.91	--	--	--	--	1.551	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.06	0.06	0	0.87	-0.04	24.46	24.46	0.42	0.06	0.06	-0.03
Oxidation reduction potential (ORP), field	millivolts	-624.8	-624.8	20.8	-160	-392.2	-485	-485	174.9	-683	-683	-434.2
pH, field	S.U.	8.44	8.44	7.42	6.82	8.08	**10.22**[ab]	**10.22**[ab]	7.24	**12.98**[ab]	**12.98**[ab]	**11.8**[ab]
Temperature, field	Deg C	--	--	18.97	11.15	13.95	--	--	16.33	11.05	11.05	16.89
Temperature, sample	Deg C	19.4	19.4	--	--	--	19.11	19.11	--	--	--	--
Turbidity, field	NTU	23.8	23.8	2.34	61.2	5.11	13.49	13.49	2.93	11	11	5.45

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-32D-12	MW-32D-12	MW-32D-12	MW-33D-12	MW-33D-12	MW-33D-12	MW-34D-12	MW-34D-12	MW-34D-12	MW-34D-12	MW-34D-12	MW-35D-13
Sample Identification		**GW-12607-011218-SK-005**	**GW-12607A-052318-SK-018**	**GW-12607-072519-DA-038**	**GW-12607-081616-SK-018**	**GW-12607-012617-SK-045**	**GW-12607-042617-SK-016**	**GW-12607-081616-SK-014**	**GW-12607-011817-SK-018**	**GW-12607-042517-SK-007**	**GW-12607-072519-DA-039**	**GW-12607-051315-DC-016**
Sample Date		**01/12/2018**	**05/23/2018**	**07/25/2019**	**08/16/2016**	**01/26/2017**	**04/26/2017**	**08/16/2016**	**01/18/2017**	**04/25/2017**	**07/25/2019**	**05/13/2015**
Sample Type												
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer		**Deep**	**Deep**	**Deep**		**Deep**	**Deep**		**Deep**	**Deep**	**Deep**	
Site		**South/North**	**South/North**	**South/North**	**South/North**	**South/North**	**South/North**	**South/North**	**South/North**	**South/North**	**South/North**	**North**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	70	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	68	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.087	**0.13[abc]**	**0.13[abc]**	**67[abc]**	**0.25[abc]**	0.093	0.005 U	0.003 J	0.0089	0.005 U	0.005 U
Chromium (dissolved)	mg/L	--	0.019	--	**58[abc]**	0.036	0.005 U	0.005 U	0.0011 J	0.005 U	--	0.005 U
Chromium III (trivalent)	mg/L	0.087	**0.13[abc]**	**0.13[abc]**	**110[abc]**	**0.25[abc]**	0.093	0.005 U	0.0030 J	0.0089	0.01 U	0.0050 U
Chromium VI (hexavalent)	mg/L	2.5 U	0.25 U	0.01 U	**55[abc]**	0.025 U	0.50 U	0.005 U	0.025 U	0.50 U	0.01 U	0.0050 U
Iron	mg/L	--	0.19	--	0.1 U	0.12 B	**0.43[ab]**	**3.7[ab]**	0.24	**2.7[ab]**	--	0.11
Iron (dissolved)	mg/L	--	0.1 U	--	0.1 U	0.039 JB	0.1 U	**3.4[ab]**	0.1 U	0.1 U	--	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	13	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	12	--	--	--	--	--	--	--	--	--
Manganese	mg/L	0.015 U	0.03	0.018	**0.38[ab]**	**0.14[ab]**	**0.52[ab]**	**0.71[ab]**	**0.3[ab]**	**0.51[ab]**	**0.42[ab]**	**0.25[ab]**
Manganese (dissolved)	mg/L	--	0.026	--	**0.38[ab]**	**0.11[ab]**	**0.5[ab]**	**0.67[ab]**	0.015 U	**0.12[ab]**	--	**0.24[ab]**
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.83[abc]**	**0.15[abc]**	**1.3[abc]**	**3.2[abc]**	0.061	0.058	**93[abc]**	**2.4[abc]**	**0.59[abc]**	**1.3[abc]**	**11[abc]**
Nickel (dissolved)	mg/L	--	0.057	--	**3.3[abc]**	0.02 J	0.04 U	**87[abc]**	0.025 JB	0.04 U	--	**11[abc]**
Sodium	mg/L	**2100[ab]**	**2400[ab]**	**4000[ab]**	180	**1800[ab]**	**970[ab]**	96	**1200[ab]**	**1100[ab]**	**570[ab]**	13
Sodium (dissolved)	mg/L	--	**2400[ab]**	--	180	**1700[ab]**	**920[ab]**	92	**1200 B[ab]**	**1100[ab]**	--	12
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	9.58	9.61	15.2	--	8.56	4.53	--	6.68	4.87	2.46	--
Conductivity, field	umhos/cm	--	--	--	2.068	--	--	1.935	--	--	--	0.84
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0	0.31	1.45	0.43	0.16	-0.03	0.73	0.13	-0.04	0.2	0.08
Oxidation reduction potential (ORP), field	millivolts	-431.2	-467	-253	169.5	-552	-404	24.8	-576	-480	-456.6	11.5
pH, field	S.U.	**10.47[ab]**	**9.65[ab]**	**9.99[ab]**	7.15	**10.13[ab]**	**8.85[ab]**	6.95	**11.7[ab]**	**9.08[ab]**	7.51	7.18
Temperature, field	Deg C	8.56	14.62	--	17.99	10.01	16.77	18.5	12.04	15.23	--	11.2
Temperature, sample	Deg C	--	--	18.36	--	--	--	--	--	--	18.9	--
Turbidity, field	NTU	23.3	11.1	15.3	3.21	21.4	6.61	4.62	203	215	23.2	1.72

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-35D-13	MW-35D-13	MW-35D-13	MW-35D-13	MW-35D-13	MW-38D-13	MW-39D-13	MW-40D-13	MW-40D-13	MW-40D-13	MW-40D-13
Sample Identification		**GW-12607-052915-EM-016**	**GW-12607-060915-SK-008**	**GW-12607-090315-EM-029**	**GW-12607-090315-EM-030**	**GW-12607-120915-DT-020**	**GW-12607-072419-DA-018**	**GW-12607-072419-DA-019**	**GW-12607-051215-DC-008**	**GW-12607-052915-EM-015**	**GW-12607-060915-SK-009**	**GW-12607-083115-EM-005**
Sample Date		**05/29/2015**	**06/09/2015**	**09/03/2015**	**09/03/2015**	**12/09/2015**	**07/24/2019**	**07/24/2019**	**05/12/2015**	**05/29/2015**	**06/09/2015**	**08/31/2015**
Sample Type					**Duplicate**							
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer							**Deep**	**Deep**				
Site		**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.015	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chromium (dissolved)	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	--	--	0.005 U	0.005 U	0.005 U	0.005 U
Chromium III (trivalent)	mg/L	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.015	0.01 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chromium VI (hexavalent)	mg/L	5.0 U	0.50 U	0.50 U	0.50 U	0.050 U	0.01 U	0.01 U	0.0067	5.0 U	0.50 U	**0.10 H[c]**
Iron	mg/L	0.1 U	0.1 U	**0.57[ab]**	**0.57[ab]**	**1[ab]**	--	--	**1.2[ab]**	**1.8[ab]**	**1.7[ab]**	**1.4[ab]**
Iron (dissolved)	mg/L	0.1 U	0.1 U	0.2	0.14	0.1 U	--	--	**0.8[ab]**	0.1 U	**0.98[ab]**	**1.3[ab]**
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	0.015 U	0.039	**0.13[ab]**	**0.13[ab]**	**0.12[ab]**	**0.26[ab]**	**0.12[ab]**	**0.058[ab]**	**0.092[ab]**	**0.066[ab]**	**0.068[ab]**
Manganese (dissolved)	mg/L	0.015 U	0.02	0.019	**0.068[ab]**	0.015 U	--	--	**0.058[ab]**	**0.087[ab]**	**0.058[ab]**	**0.072[ab]**
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.069	0.051	0.04 U	0.04 U	**0.23[abc]**	0.048	**0.28[abc]**	**2.6[abc]**	**4.8[abc]**	**3.1[abc]**	**3.3[abc]**
Nickel (dissolved)	mg/L	0.04 U	0.04 U	0.04 U	0.04 U	0.055	--	--	**2.6[abc]**	**4.3[abc]**	**2.7[abc]**	**3.5[abc]**
Sodium	mg/L	**1000[ab]**	230	**250[a]**	**320[a]**	**1700[ab]**	24	15	64	94	77	60
Sodium (dissolved)	mg/L	**940[ab]**	220	**290[a]**	230	**640[ab]**	--	--	64	82	70	65
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	0.65	0.44	--	--	--	--
Conductivity, field	umhos/cm	6.44	1.07	0.941	0.941	0.5	--	--	0.707	1.03	0.65	0.622
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0	0.32	0.39	0.39	0	0.69	0.41	0.1	0.01	0.34	0.15
Oxidation reduction potential (ORP), field	millivolts	-441.1	-215.7	-502	-502	-371.1	-1	-10	-143	17.2	-197.5	-99
pH, field	S.U.	**12.23[ab]**	**10.72[ab]**	**9.68[ab]**	**9.68[ab]**	7.39	**6.09[ab]**	6.56	7.29	7.05	7.32	7.12
Temperature, field	Deg C	15.53	16.8	19.69	19.69	13.44	--	--	11.92	16.62	16.1	20.44
Temperature, sample	Deg C	--	--	--	--	--	18.47	18.75	--	--	--	--
Turbidity, field	NTU	4.02	8	138	138		12.3	55.2	2.78	4.75	13.2	1.78

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-40D-13	MW-40D-13	MW-41D-13	MW-42D-15	MW-42D-15	MW-42D-15	MW-42D-15	MW-42D-15	MW-42D-15	MW-42D-15	MW-42D-15
Sample Identification		GW-12607-120915-DT-025	GW-12607-072519-DA-029	GW-12607-072419-DA-023	GW-12607-051415-DC-032	GW-012607-061815-DT-002	GW-12607-070715-SK-009	GW-12607-090115-EM-008	GW-12607-120715-DT-001	GW-12607-081516-SK-001	GW-12607-011617-SK-001	GW-12607-042717-SK-022
Sample Date		12/09/2015	07/25/2019	07/24/2019	05/14/2015	06/18/2015	07/07/2015	09/01/2015	12/07/2015	08/15/2016	01/16/2017	04/27/2017
Sample Type												
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer			Deep	Deep							Deep	Deep
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.005 U	0.005 U	0.02	**14[abc]**	**24[abc]**	**21[abc]**	**50[abc]**	**95[abc]**	**19[abc]**	**14[abc]**	**1.5[abc]**
Chromium (dissolved)	mg/L	0.005 U	--	--	**14[abc]**	**30[abc]**	**24[abc]**	**48[abc]**	**82[abc]**	**13[abc]**	**14[abc]**	**0.45[abc]**
Chromium III (trivalent)	mg/L	0.0050 U	0.01 U	0.02	**14[abc]**	**24[abc]**	**21[abc]**	**43[abc]**	**73[abc]**	**13[abc]**	**14[abc]**	**1.5[abc]**
Chromium VI (hexavalent)	mg/L	0.0050 U	0.01 U	0.01 U	**0.015 H[c]**	0.50 U	0.50 U	**6.7[abc]**	**22[abc]**	**5[abc]**	0.25 U	0.25 U
Iron	mg/L	**1.6[ab]**	--	--	0.1 U	**6.2[ab]**	**3.3[ab]**	**2.8[ab]**	**1.3[ab]**	**0.33[ab]**	**16[ab]**	**0.33[ab]**
Iron (dissolved)	mg/L	**1.4[ab]**	--	--	0.1 U	**9.3[ab]**	**1.4[ab]**	**1.5[ab]**	**0.41[ab]**	0.1 U	**17[ab]**	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.071[ab]**	**0.056[ab]**	**0.49[ab]**	**0.18[ab]**	**0.19[ab]**	**0.12[ab]**	**0.093[ab]**	0.019	0.015 U	**3.4 B[ab]**	**0.15[ab]**
Manganese (dissolved)	mg/L	**0.074[ab]**	--	--	**0.18[ab]**	**0.25[ab]**	**0.13[ab]**	**0.079[ab]**	0.015 U	0.015 U	**3.7 B[ab]**	**0.14[ab]**
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**3.6[abc]**	**2.4[abc]**	0.04 U	**0.18[abc]**	**0.84[abc]**	**0.51[abc]**	**0.79[abc]**	**0.14[abc]**	**0.18[abc]**	**2.6[abc]**	0.066
Nickel (dissolved)	mg/L	**3.9[abc]**	--	--	**0.19[abc]**	**1.1[abc]**	**0.28[abc]**	**0.27[abc]**	0.04 U	0.053	**2.7[abc]**	0.04 U
Sodium	mg/L	67	61	26	18	**2500[ab]**	**1500[ab]**	**1200[ab]**	**740[ab]**	**3000[ab]**	**3100 B[ab]**	**330[a]**
Sodium (dissolved)	mg/L	68	--	--	18	**2800[ab]**	**1800[ab]**	**1200[ab]**	**700[ab]**	**2900[ab]**	**3400 B[ab]**	**470[ab]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	0.739	0.93	--	--	--	--	--	--	8.78	0.81
Conductivity, field	umhos/cm	1	--	--	0.668	11.5	5.92	4.475	4.05	14.46	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	-0.03	1.75	0.06	0.28	0.55	0.18	0.37	-0.01	34	0.06	7.00
Oxidation reduction potential (ORP), field	millivolts	-187.9	130	-390.3	158	-470	-533	-430	27.3	-489.6	-89	-258.8
pH, field	S.U.	7.05	**6.03[ab]**	7.61	7.25	**10.69[ab]**	**10.76[ab]**	**11.02[ab]**	**10.51[ab]**	**12.01[ab]**	6.55	8.19
Temperature, field	Deg C	12.38	--	--	11.29	20.05	18.62	19.69	15.25	18.7	12.65	22.31
Temperature, sample	Deg C	--	17.69	16.6	--	--	--	--	--	--	--	--
Turbidity, field	NTU	58	4.97	4.45	2.44	79	14.3	76	139	26.5	30.8	27.2

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-42D-15	MW-42D-15	MW-43D-15	MW-43D-15	MW-43D-15	MW-43D-15	MW-43D-15	MW-43D-15	MW-44D-15	MW-44D-15	MW-44D-15
Sample Identification		GW-12607A-052218-SK-013	GW-12607-072419-DA-024	GW-12607-051415-DC-028	GW-12607-051415-DC-029	GW-012607-061815-DT-004	GW-12607-070715-SK-010	GW-12607-083115-EM-001	GW-12607-120715-DT-002	GW-12607-051415-DC-030	GW-012607-061815-DT-001	GW-12607-070715-SK-012
Sample Date		05/22/2018	07/24/2019	05/14/2015	05/14/2015	06/18/2015	07/07/2015	08/31/2015	12/07/2015	05/14/2015	06/18/2015	07/07/2015
Sample Type					Duplicate							
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Deep	Deep									
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	40	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	42	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	**1.4**[abc]	**1.4**[abc]	**66**[abc]	**65**[abc]	**0.77**[abc]	**1.5**[abc]	**4.6**[abc]	**4.2**[abc]	**61**[abc]	**21**[abc]	**64**[abc]
Chromium (dissolved)	mg/L	0.046	--	**69**[abc]	**67**[abc]	**6**[abc]	**0.55**[abc]	**2.1**[abc]	**4**[abc]	**60**[abc]	**30**[abc]	**52**[abc]
Chromium III (trivalent)	mg/L	**1.4**[abc]	**1.4**[abc]	**66**[abc]	**65**[abc]	**0.77**[abc]	**1.5**[abc]	**4.6**[abc]	**4.2**[abc]	**61**[abc]	**12**[abc]	**38**[abc]
Chromium VI (hexavalent)	mg/L	0.0050 U	0.01 U	**0.093 H**[c]	**0.19 H**[abc]	0.50 U	0.50 U	5.0 UH	0.50 U	**0.084 H**[c]	**9.3**[abc]	**25**[abc]
Iron	mg/L	0.21	--	0.1 U	0.1 U	0.1 U	**2.6**[ab]	**2.3**[ab]	**5.9**[ab]	0.1 U	0.24	**1.1**[ab]
Iron (dissolved)	mg/L	0.1 U	--	0.1 U	0.1 U	**0.39**[ab]	**0.91**[ab]	**0.75**[ab]	**0.55**[ab]	0.1 U	**0.76**[ab]	**0.31**[ab]
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	8	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	8.3	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.071**[ab]	**0.071**[ab]	**0.22**[ab]	**0.22**[ab]	0.015 U	**0.099**[ab]	**0.11**[ab]	**0.1**[ab]	**0.18**[ab]	0.021	0.029
Manganese (dissolved)	mg/L	**0.064**[ab]	--	**0.22**[ab]	**0.22**[ab]	0.016	0.035	0.041	0.016	**0.17**[ab]	**0.06**[ab]	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.04 U	0.04 U	**0.48**[abc]	**0.48**[abc]	**0.32**[abc]	**1.4**[abc]	**0.84**[abc]	**0.67**[abc]	**0.24**[abc]	**0.29**[abc]	**0.65**[abc]
Nickel (dissolved)	mg/L	0.04 U	--	**0.47**[abc]	**0.47**[abc]	**0.93**[abc]	**0.77**[abc]	**0.24**[abc]	**0.21**[abc]	**0.23**[abc]	**0.47**[abc]	**0.31**[abc]
Sodium	mg/L	54	62	19	19	**8600**[ab]	**5000**[ab]	**2800**[ab]	**2200**[ab]	24	230	**760**[ab]
Sodium (dissolved)	mg/L	58	--	19	19	**8700**[ab]	**5900**[ab]	**3000**[ab]	**2800**[ab]	23	**250**[a]	**750**[ab]
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	0.52	0.51	--	--	--	--	--	--	--	--	--
Conductivity, field	umhos/cm	--	--	0.831	0.831	23.6	3.21	11.11	16.03	0.89	1.235	3.21
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.19	1.05	0.63	0.63	0.34	0	0.16	-0.02	0.33	0.09	0.12
Oxidation reduction potential (ORP), field	millivolts	-343	-197	170	170	-656	-653	-558.6	-432	252	-85	-435
pH, field	S.U.	8.01	7.24	7.16	7.16	**12.79**[ab]	**13.07**[ab]	**12.41**[ab]	**12.71**[ab]	6.93	8.49	**10.35**[ab]
Temperature, field	Deg C	15.47	--	12.48	12.48	20.3	17.83	18.78	14.1	11.9	18.5	15.81
Temperature, sample	Deg C	--	18.06	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	16.3	10.9	6.18	6.18	112	13.6	17.4	23.2	5.51	525	538

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-44D-15	MW-44D-15	MW-44D-15	MW-44D-15	MW-44D-15	MW-45D-15	MW-45D-15	MW-45D-15	MW-45D-15	MW-45D-15	MW-45D-15	MW-45D-15
Sample Identification		**GW-12607-070715-SK-013**	**GW-12607-090115-EM-007**	**GW-12607-120715-DT-004**	**GW-12607-081516-SK-002**	**GW-12607-042717-SK-023**	**GW-12607-051415-DC-031**	**GW-012607-061815-DT-003**	**GW-12607-070715-SK-011**	**GW-12607-090115-EM-006**	**GW-12607-120715-DT-003**	**GW-12607-011617-SK-002**	
Sample Date		**07/07/2015**	**09/01/2015**	**12/07/2015**	**08/15/2016**	**04/27/2017**	**05/14/2015**	**06/18/2015**	**07/07/2015**	**09/01/2015**	**12/07/2015**	**01/16/2017**	
Sample Type		**Duplicate**											
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	
Aquifer						**Deep**						**Deep**	
Site		**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	
	Units												
Metals													
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--	
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--	
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--	
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--	
Chromium	mg/L	**59[abc]**	**200[abc]**	**290[abc]**	**140[abc]**	**110[abc]**	**87[abc]**	**59[abc]**	**53[abc]**	**88[abc]**	**660[abc]**	**90[abc]**	
Chromium (dissolved)	mg/L	**46[abc]**	**170[abc]**	**180[abc]**	**120[abc]**	**84[abc]**	**86[abc]**	**79[abc]**	**57[abc]**	**80[abc]**	**630[abc]**	**62[abc]**	
Chromium III (trivalent)	mg/L	**32[abc]**	**23[abc]**	0.25 U	**1100[abc]**	**110[abc]**	**87[abc]**	**59[abc]**	**6.1[abc]**	**79[abc]**	**140[abc]**	**90[abc]**	
Chromium VI (hexavalent)	mg/L	**26[abc]**	**180[abc]**	**310[abc]**	**26[abc]**	1.0 U	**0.15 H[abc]**	0.50 U	**47[abc]**	**8.7[abc]**	**520[abc]**	0.25 U	
Iron	mg/L	**1[ab]**	1 U	1 U	0.2 U	1 U	0.1 U	0.1 U	**0.87[ab]**	**1[ab]**	**7.4[ab]**	**1[ab]**	
Iron (dissolved)	mg/L	0.1	1 U	1 U	0.2 U	1 U	0.1 U	0.16	**0.54[ab]**	1 U	1 U	0.08 J	
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--	
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--	
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--	
Manganese	mg/L	0.026	0.15 U	0.15 U	**0.063[ab]**	0.15 U	**0.15[ab]**	0.015 U	**0.11[ab]**	0.15 U	**0.5[ab]**	**0.069[ab]**	
Manganese (dissolved)	mg/L	0.015 U	0.15 U	0.15 U	0.03 U	0.15 U	**0.14[ab]**	0.04	**0.081[ab]**	0.15 U	0.15 U	0.15 U	
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--	
Nickel	mg/L	**0.6[abc]**	0.4 U	0.4 U	**0.7[abc]**	**0.86[abc]**	**0.36[abc]**	**0.11[abc]**	0.04 U	0.4 U	**0.64[abc]**	**1.8[abc]**	
Nickel (dissolved)	mg/L	**0.21[abc]**	0.4 U	0.4 U	**0.096[c]**	0.4 U	**0.35[abc]**	**0.18[abc]**	0.04 U	0.4 U	0.4 U	**0.14[abc]**	
Sodium	mg/L	**710[ab]**	**650[ab]**	**1200[ab]**	**2100[ab]**	**2800[ab]**	24	**6900[ab]**	120	**740[ab]**	**2900[ab]**	**9000 B[ab]**	
Sodium (dissolved)	mg/L	**660[ab]**	**610[ab]**	**1300[ab]**	**1900[ab]**	**2600[ab]**	25	**5000[ab]**	130	**800[ab]**	**3000[ab]**	**8200 B[ab]**	
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--	
Field Parameters													
Conductivity, field	mS/cm	--	--	--	--	9.26	--	--	--	--	--	19.8	
Conductivity, field	umhos/cm	3.21	2.764	3.37	8.42	--	0.936	15.1	1.51	1.733	11.17	--	
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--	
Dissolved oxygen (DO), field	mg/L	0.12	0.09	0.33	0.02	-7.00	0.36	0.36	0.13	0.24	-0.02	0	
Oxidation reduction potential (ORP), field	millivolts	-435	-313.5	65.9	-406.7	-333.5	187	-597	-292	140.5	-312.9	-531	
pH, field	S.U.	**10.35[ab]**	**9.62[ab]**	7.23	**9.99[ab]**	**10.43[ab]**	6.71	**11.25[ab]**	**9.52[ab]**	8.34	**9.97[ab]**	**10.08[ab]**	
Temperature, field	Deg C	15.81	19.92	13.63	19.37	20.39	11.74	19.51	16.24	18.6	14.92	12.06	
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	--	--	
Turbidity, field	NTU	538	134	208	43.1	127	3.35	569	21.7	34.7	181	172	

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-46D-15	MW-46D-15	MW-46D-15	MW-46D-15	MW-46D-15	MW-46D-15	MW-47D-15	MW-47D-15	MW-47D-15	MW-47D-15	MW-47D-15
Sample Identification		**GW-12607-051315-DC-023**	**GW-12607-070615-SK-004**	**GW-012607-072015-DT-003**	**GW-12607-090215-EM-017**	**GW-12607-120815-DT-008**	**GW-12607-072419-DA-025**	**GW-12607-051415-DC-033**	**GW-12607-070615-SK-005**	**GW-012607-072015-DT-002**	**GW-12607-090215-EM-015**	**GW-12607-120815-DT-006**
Sample Date		**05/13/2015**	**07/06/2015**	**07/20/2015**	**09/02/2015**	**12/08/2015**	**07/24/2019**	**05/14/2015**	**07/06/2015**	**07/20/2015**	**09/02/2015**	**12/08/2015**
Sample Type												
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer							**Deep**					
Site		**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	**6.6[abc]**	**0.25[abc]**	0.048	0.038	0.043	**0.28[abc]**	**32[abc]**	**0.38[abc]**	**0.37[abc]**	**2.9[abc]**	**3.1[abc]**
Chromium (dissolved)	mg/L	**6.4[abc]**	0.016	0.005 U	0.0089	0.012	--	**32[abc]**	**0.22[abc]**	**0.13[abc]**	**1.7[abc]**	0.063
Chromium III (trivalent)	mg/L	**3.9[abc]**	**0.25[abc]**	0.048	0.038	0.043	**0.28[abc]**	**32[abc]**	**0.38[abc]**	**0.37[abc]**	**2.9[abc]**	**3.1[abc]**
Chromium VI (hexavalent)	mg/L	**2.7[abc]**	0.50 U	0.50 U	0.50 U	10 U	0.01 U	**0.050 H[c]**	0.50 U	0.50 U	0.10 U	10 U
Iron	mg/L	0.19	**0.52[ab]**	**0.47[ab]**	**1.7[ab]**	**0.98[ab]**	--	0.1 U	0.1 U	0.18	**1.5[ab]**	**3.8[ab]**
Iron (dissolved)	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.11	--	0.1 U	0.1 U	0.1 U	0.11	0.3
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.42[ab]**	**0.23[ab]**	**0.71[ab]**	**0.79[ab]**	**0.23[ab]**	**0.4[ab]**	**0.36[ab]**	0.015 U	**0.28[ab]**	**0.71[ab]**	0.032
Manganese (dissolved)	mg/L	**0.44[ab]**	**0.25[ab]**	**0.69[ab]**	**0.75[ab]**	**0.16[ab]**	--	**0.37[ab]**	0.015 U	**0.2[ab]**	**0.75[ab]**	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.11[abc]**	0.04 U	0.04 U	0.04 U	**0.33[abc]**	0.04 U	**0.26[abc]**	**0.096[c]**	0.04 U	0.055	**0.36[abc]**
Nickel (dissolved)	mg/L	**0.11[abc]**	0.04 U	0.04 U	0.04 U	0.044	--	**0.27[abc]**	0.04 U	0.04 U	0.04 U	0.04 U
Sodium	mg/L	34	140	83	**610[ab]**	**3200[ab]**	30	26	**940[ab]**	200	**330[a]**	**890[ab]**
Sodium (dissolved)	mg/L	36	110	84	**2000[ab]**	**3700[ab]**	--	26	**920[ab]**	200	**340[a]**	**1000[ab]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	0.575	--	--	--	--	--
Conductivity, field	umhos/cm	0.755	0.833	0.821	3.344	8.59	--	0.872	4.19	1.14	2.075	2.27
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.51	0.06	0.02	0.76	0.08	1.26	0.41	0.07	0.02	2.34	0
Oxidation reduction potential (ORP), field	millivolts	122	-433	-261.8	-413.4	-556.1	-173	123	-525	-285.4	-240.7	-375.3
pH, field	S.U.	6.89	**9.55[ab]**	7.61	**8.95[ab]**	**10.51[ab]**	**6.16[ab]**	6.89	**10.99[ab]**	**8.9[ab]**	7.33	**10.51[ab]**
Temperature, field	Deg C	11.74	20.03	23.39	19.82	14.3	--	12.48	18.27	22.77	20.98	9.16
Temperature, sample	Deg C	--	--	--	--	--	19.54	--	--	--	--	--
Turbidity, field	NTU	3.03	6.5	4.72	51		22.6	6.87	4.12	11.7	100	

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-48D-15	MW-48D-15	MW-48D-15	MW-48D-15	MW-48D-15	MW-49D-15	MW-49D-15	MW-49D-15	MW-49D-15	MW-49D-15	MW-49D-15
Sample Identification		GW-12607-051315-DC-024	GW-12607-070615-SK-006	GW-012607-072015-DT-001	GW-12607-090215-EM-016	GW-12607-120815-DT-007	GW-12607-051315-DC-022	GW-12607-070615-SK-007	GW-012607-072015-DT-005	GW-12607-090215-EM-020	GW-12607-090215-EM-021	GW-12607-120815-DT-009
Sample Date		05/13/2015	07/06/2015	07/20/2015	09/02/2015	12/08/2015	05/13/2015	07/06/2015	07/20/2015	09/02/2015	09/02/2015	12/08/2015
Sample Type											Duplicate	
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer												
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	**21**[abc]	**0.72**[abc]	**0.43**[abc]	**0.45**[abc]	**0.65**[abc]	**2.3**[abc]	0.012	0.0091	0.0056	0.005 U	0.028
Chromium (dissolved)	mg/L	**21**[abc]	**0.12**[abc]	0.017	0.079	0.033	**2.2**[abc]	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chromium III (trivalent)	mg/L	0.093	**0.72**[abc]	**0.43**[abc]	0.0050 U	**0.65**[abc]	**0.79**[abc]	0.012	0.0091	0.0056	0.0050 U	0.028
Chromium VI (hexavalent)	mg/L	**20**[abc]	0.50 U	0.50 U	**1.7**[abc]	10 U	**1.5**[abc]	0.50 U	0.50 U	0.050 U	0.050 U	0.025 U
Iron	mg/L	**0.55**[ab]	**2.9**[ab]	**4.9**[ab]	**1.1**[ab]	**1.7**[ab]	**0.56**[ab]	0.1 U	0.1 U	0.1 U	0.1 U	0.13
Iron (dissolved)	mg/L	0.1 U	**0.79**[ab]	**3.2**[ab]	0.13	0.1 U	0.21	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.47**[ab]	**0.7**[ab]	**0.72**[ab]	**0.38**[ab]	**0.29**[ab]	**0.49**[ab]	0.015 U	0.015 U	**0.061**[ab]	**0.056**[ab]	0.015 U
Manganese (dissolved)	mg/L	**0.48**[ab]	**0.66**[ab]	**0.73**[ab]	**0.39**[ab]	**0.25**[ab]	**0.49**[ab]	0.015 U	0.015 U	**0.062**[ab]	**0.058**[ab]	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.22**[abc]	0.04 U	0.046	0.04 U	**0.28**[abc]	**0.12**[abc]	0.04 U	0.04 U	0.04 U	0.04 U	**0.094**[c]
Nickel (dissolved)	mg/L	**0.22**[abc]	0.04 U	0.04 U	0.04 U	**0.094**[c]	**0.12**[abc]	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Sodium	mg/L	24	55	92	**290**[a]	**770**[ab]	38	**2000**[ab]	**500**[ab]	**450**[ab]	**430**[ab]	**3800**[ab]
Sodium (dissolved)	mg/L	25	57	93	210	**770**[ab]	39	**2000**[ab]	**510**[ab]	**430**[ab]	**560**[ab]	**3200**[ab]
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	umhos/cm	0.786	0.778	0.988	1.176	2.25	0.75	9.33	2.404	2.207	2.207	6.44
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.53	0.2	0.08	1.65	0.02	0.15	0.04	-0.02	0.78	0.78	0.05
Oxidation reduction potential (ORP), field	millivolts	101	-360	-257	-280.8	-399.6	-219	-611	-455.4	-369.5	-369.5	-540.1
pH, field	S.U.	7.17	7.81	7.01	7.53	7.84	7.04	**12.28**[ab]	**11.19**[ab]	**8.87**[ab]	**8.87**[ab]	**11.82**[ab]
Temperature, field	Deg C	11.38	17.79	19.8	20.63	14.3	11.5	18.43	22.98	20.28	20.28	15.21
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	4.11	6.6	31.3	3.88		3.4	4.97	2.6	2.5	2.5	

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-50D-15	MW-50D-15	MW-50D-15	MW-50D-15	MW-50D-15	MW-51D-15	MW-51D-15	MW-51D-15	MW-51D-15	MW-51D-15	MW-51D-15
Sample Identification		GW-12607-051315-DC-019	GW-012607-061915-DT-007	GW-12607-070715-SK-015	GW-12607-090315-EM-033	GW-12607-120815-DT-013	GW-12607-051315-DC-020	GW-12607-051315-DC-021	GW-12607-061915-DT-005	GW-12607-070715-SK-014	GW-12607-090315-EM-034	GW-12607-120815-DT-011
Sample Date		05/13/2015	06/19/2015	07/07/2015	09/03/2015	12/08/2015	05/13/2015	05/13/2015	06/19/2015	07/07/2015	09/03/2015	12/08/2015
Sample Type								Duplicate				
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer												
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	**0.59^{abc}**	0.016	0.036	0.015	0.013	**0.92^{abc}**	**1^{abc}**	**7.8^{abc}**	**0.37^{abc}**	**0.23^{abc}**	**0.18^{abc}**
Chromium (dissolved)	mg/L	**0.22^{abc}**	0.005 U	0.02	0.0094	0.005 U	**0.83^{abc}**	**0.8^{abc}**	**4^{abc}**	0.043	0.0064	0.005 U
Chromium III (trivalent)	mg/L	**0.22^{abc}**	0.016	0.036	0.015	0.013	**0.33^{abc}**	**0.41^{abc}**	**7.5^{abc}**	0.0050 U	0.0050 U	**0.18^{abc}**
Chromium VI (hexavalent)	mg/L	0.0067	0.0050 U	0.50 U	5.0 U	10 U	**0.60^{abc}**	**0.60^{abc}**	**0.27 H^{abc}**	**11^{abc}**	**0.40^{abc}**	0.025 U
Iron	mg/L	**2^{ab}**	0.23	**0.75^{ab}**	**0.69^{ab}**	**1.3^{ab}**	**1^{ab}**	**0.98^{ab}**	**0.85^{ab}**	**0.96^{ab}**	0.16	0.11
Iron (dissolved)	mg/L	**0.77^{ab}**	0.1 U	0.25	0.19	0.12	**0.35^{ab}**	**0.35^{ab}**	**0.43^{ab}**	0.1 U	0.1 U	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.39^{ab}**	**0.15^{ab}**	**0.24^{ab}**	**0.27^{ab}**	**0.36^{ab}**	**0.75^{ab}**	**0.77^{ab}**	**0.43^{ab}**	**0.16^{ab}**	0.015 U	**0.06^{ab}**
Manganese (dissolved)	mg/L	**0.4^{ab}**	**0.082^{ab}**	**0.22^{ab}**	**0.079^{ab}**	**0.31^{ab}**	**0.73^{ab}**	**0.75^{ab}**	**0.25^{ab}**	0.015 U	0.015 U	0.024
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**4.6^{abc}**	0.04 U	0.04 U	0.04 U	**0.28^{abc}**	**0.49^{abc}**	**0.52^{abc}**	**0.48^{abc}**	**0.11^{abc}**	**0.082^{c}**	0.04 U
Nickel (dissolved)	mg/L	**4.9^{abc}**	0.04 U	0.04 U	0.04 U	0.04 U	**0.49^{abc}**	**0.49^{abc}**	**0.27^{abc}**	0.07	0.04 U	0.04 U
Sodium	mg/L	37	170	**310^{a}**	**1400^{ab}**	**1000^{ab}**	22	23	**350^{a}**	**3100^{ab}**	**2100^{ab}**	210
Sodium (dissolved)	mg/L	37	170	**300^{a}**	**1600^{ab}**	**1100^{ab}**	21	22	**390^{ab}**	**3300^{ab}**	**2000^{ab}**	**300^{a}**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	umhos/cm	0.83	0.926	1.587	5.897	10.91	0.866	0.866	2.08	16.12	12.11	0.95
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.11	0.12	-0.6	0.48	-0.02	0.223	0.223	0.81	-0.5	0.17	1.36
Oxidation reduction potential (ORP), field	millivolts	-40	-442	-364.2	-580.1	-564.1	-34	-34	-411	-520.9	-611	-342.3
pH, field	S.U.	7.03	**9.57^{ab}**	**8.84^{ab}**	**11.21^{ab}**	**10.96^{ab}**	7.2	7.2	8.04	**12.78^{ab}**	**12.72^{ab}**	**9.43^{ab}**
Temperature, field	Deg C	11.3	21.69	15.9	18.78	12.25	11.35	11.35	17.73	16.34	19.04	10.91
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	9.45	76.9	5.54	55.5	16.6	4.75	4.75	273	14.7	10	16.9

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-52D-15	MW-52D-15	MW-52D-15	MW-52D-15	MW-52D-15	MW-53D-15	MW-53D-15	MW-53D-15	MW-53D-15	MW-53D-15	MW-53D-15
Sample Identification		**GW-12607-051315-DC-017**	**GW-012607-061915-DT-008**	**GW-12607-070715-SK-017**	**GW-12607-090315-EM-031**	**GW-12607-120815-DT-014**	**GW-12607-051315-DC-018**	**GW-012607-061915-DT-006**	**GW-12607-070715-SK-016**	**GW-12607-090315-EM-032**	**GW-12607-120815-DT-012**	**GW-12607-072419-DA-026**
Sample Date		**05/13/2015**	**06/19/2015**	**07/07/2015**	**09/03/2015**	**12/08/2015**	**05/13/2015**	**06/19/2015**	**07/07/2015**	**09/03/2015**	**12/08/2015**	**07/24/2019**
Sample Type												
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer												**Deep**
Site		**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	**1**[abc]	0.06	0.027	0.013	0.0059	**0.37**[abc]	**0.65**[abc]	**0.13**[abc]	0.029	**0.14**[abc]	0.033
Chromium (dissolved)	mg/L	**0.96**[abc]	0.035	0.013	0.005 U	0.005 U	**0.22**[abc]	0.094	0.021	0.005 U	0.014	--
Chromium III (trivalent)	mg/L	0.0050 U	0.048	0.027	0.013	0.0059	**0.24**[abc]	**0.65**[abc]	**0.13**[abc]	0.029	**0.14**[abc]	0.033
Chromium VI (hexavalent)	mg/L	**8.6**[abc]	**0.012**[c]	0.50 U	0.050 U	0.025 U	**0.13**[abc]	0.050 UH	0.50 U	0.050 U	0.025 U	0.01 U
Iron	mg/L	0.21	**0.76**[ab]	**1.6**[ab]	**1.8**[ab]	**1.7**[ab]	**0.7**[ab]	**0.62**[ab]	**0.35**[ab]	**2**[ab]	**2.6**[ab]	--
Iron (dissolved)	mg/L	0.1 U	**0.39**[ab]	**1.4**[ab]	**1.7**[ab]	0.1	0.26	0.11	0.1 U	0.1 U	**0.56**[ab]	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.47**[ab]	**0.55**[ab]	**0.6**[ab]	**0.48**[ab]	**0.41**[ab]	**0.52**[ab]	**0.23**[ab]	**0.18**[ab]	**0.35**[ab]	**0.44**[ab]	**0.37**[ab]
Manganese (dissolved)	mg/L	**0.46**[ab]	**0.52**[ab]	**0.59**[ab]	**0.49**[ab]	**0.4**[ab]	**0.52**[ab]	**0.2**[ab]	**0.17**[ab]	**0.37**[ab]	**0.42**[ab]	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**1.1**[abc]	0.04 U	0.04 U	0.055	**0.078**[c]	**1.7**[abc]	**0.098**[c]	0.041	0.04 U	0.04 U	**0.24**[abc]
Nickel (dissolved)	mg/L	**0.93**[abc]	0.04 U	0.04 U	0.04 U	0.062	**1.8**[abc]	0.047	0.04 U	0.04 U	0.04 U	--
Sodium	mg/L	42	100	65	58	84	50	200	150	81	78	46
Sodium (dissolved)	mg/L	42	100	64	56	100	48	200	150	76	73	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	--	--	--	--	0.86
Conductivity, field	umhos/cm	0.822	0.896	0.812	0.696	0.91	0.835	1.094	0.823	0.82	0.85	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.29	0.11	0.35	0.36	-0.02	0.36	0.57	-0.7	0.19	-0.01	0.05
Oxidation reduction potential (ORP), field	millivolts	-40	-320	-337	-283	-353.5	22	-389	-313.9	-393	-303.2	-409.4
pH, field	S.U.	7.31	7.92	7.64	7.11	7.23	6.91	7.91	**8.63**[ab]	7.64	7.18	7.76
Temperature, field	Deg C	11.08	18.8	16.34	18.79	13.8	11.36	16.63	15.6	18.06	12.81	--
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	--	17.1
Turbidity, field	NTU	1.27	5.22	2.49	21.2	46.1	6.71	70.1	11.7	5.11	19.2	3.41

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-54D-15	MW-54D-15	MW-54D-15	MW-54D-15	MW-54D-15	MW-54D-15	MW-55D-15	MW-55D-15	MW-55D-15	MW-55D-15	MW-55D-15
Sample Identification		GW-12607-051315-DC-011	GW-12607-052715-DR-005	GW-12607-052715-DR-006	GW-12607-061015-SK-011	GW-12607-090315-EM-028	GW-12607-120915-DT-017	GW-12607-051315-DC-010	GW-12607-052715-DR-007	GW-12607-061015-SK-013	GW-12607-090315-EM-025	GW-12607-120915-DT-026
Sample Date		05/13/2015	05/27/2015	05/27/2015	06/10/2015	09/03/2015	12/09/2015	05/13/2015	05/27/2015	06/10/2015	09/03/2015	12/09/2015
Sample Type				Duplicate								
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer												
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.005 U	0.005 U	0.005 U	0.014	0.005 U	**0.13[abc]**	0.005 U	0.005 U	0.018	0.021	0.005 U
Chromium (dissolved)	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chromium III (trivalent)	mg/L	0.0050 U	0.0050 U	0.0050 U	0.014	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.018	0.021	0.0050 U
Chromium VI (hexavalent)	mg/L	0.0050 U	5.0 U	5.0 U	0.50 U	0.50 U	**0.28 H[abc]**	0.0050 U	5.0 U	0.50 U	0.50 U	**0.21 H[abc]**
Iron	mg/L	0.1 U	0.1 U	0.1 U	**0.45[ab]**	0.1 U	**1.4[ab]**	0.1 U	0.1 U	0.13	0.3	0.1 U
Iron (dissolved)	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.21[ab]**	0.015 U	0.015 U	0.031	0.015 U	**0.26[ab]**	**0.34[ab]**	0.015 U	0.027	**0.056[ab]**	0.015 U
Manganese (dissolved)	mg/L	**0.21[ab]**	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	**0.41[ab]**	0.015 U	0.015 U	0.022	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**7.1[abc]**	0.04 U	0.04 U	**0.16[abc]**	0.04 U	**1[abc]**	**19[abc]**	0.04 U	**0.13[abc]**	**0.57[abc]**	**0.079[c]**
Nickel (dissolved)	mg/L	**7.1[abc]**	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	**18[abc]**	0.04 U	0.04 U	0.04	0.04 U
Sodium	mg/L	37	**12000[ab]**	**13000[ab]**	**2200[ab]**	**1900[ab]**	**3000[ab]**	30	**10000[ab]**	**2800[ab]**	**1900[ab]**	**2900[ab]**
Sodium (dissolved)	mg/L	37	**12000[ab]**	**11000[ab]**	**2300[ab]**	**1500[ab]**	**2500[ab]**	40	**12000[ab]**	**2900[ab]**	**1600[ab]**	**2800[ab]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	umhos/cm	0.813	85.5	85.5	7.14	9.02	13.3	1.116	74	13.92	6.83	10.64
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.24	0	0	0.45	0.5	0	0.29	0.01	0.17	0.75	0
Oxidation reduction potential (ORP), field	millivolts	-10	-738	-738	-606.3	-572.8	-593.2	-171	-701	-626.4	-482.5	-585.2
pH, field	S.U.	7.33	**13.55[ab]**	**13.55[ab]**	**12.13[ab]**	**12.41[ab]**	**12.35[ab]**	6.9	**12.41[ab]**	**12.77[ab]**	**11.22[ab]**	**11.72[ab]**
Temperature, field	Deg C	11.35	15.08	15.08	17.6	17.56	13.84	11.44	16.61	16.1	19.6	14.21
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	0.66	4.29	4.29	11.1	4.92		1.76	3.74	16.8	19	

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-56D-15	MW-56D-15	MW-56D-15	MW-56D-15	MW-56D-15	MW-57D-15	MW-57D-15	MW-57D-15	MW-57D-15	MW-57D-15	MW-57D-15
Sample Identification		**GW-12607-051315-DC-014**	**GW-12607-052715-DR-008**	**GW-12607-061015-SK-010**	**GW-12607-090315-EM-027**	**GW-12607-120915-DT-019**	**GW-12607-051315-DC-012**	**GW-12607-051315-DC-013**	**GW-12607-052715-DR-009**	**GW-12607-061015-SK-012**	**GW-12607-090315-EM-026**	**GW-12607-120915-DT-018**
Sample Date		**05/13/2015**	**05/27/2015**	**06/10/2015**	**09/03/2015**	**12/09/2015**	**05/13/2015**	**05/13/2015**	**05/27/2015**	**06/10/2015**	**09/03/2015**	**12/09/2015**
Sample Type								**Duplicate**				
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer												
Site		**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.005 U	0.00506 J	0.031	0.0082	0.005 U	0.005 U	0.005 U	0.000553 J	0.005 U	0.005 U	**0.24[abc]**
Chromium (dissolved)	mg/L	0.005 U	0.00908 J	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.00362 J	0.005 U	0.005 U	0.005 U
Chromium III (trivalent)	mg/L	0.0050 U	5.0 U	0.031	0.0082	0.0050 U	0.0050 U	0.0050 U	5.0 U	0.0050 U	0.0050 U	**0.11[abc]**
Chromium VI (hexavalent)	mg/L	0.0050 U	5.0 U	0.50 U	0.050 U	0.050 U	0.0050 U	0.0050 U	5.0 U	0.50 U	0.50 U	**0.13 H[abc]**
Iron	mg/L	0.1 U	0.075 J	0.19	0.1 U	**0.77[ab]**	0.1 U	0.1 U	0.0433 J	0.1 U	**0.6[ab]**	**3.3[ab]**
Iron (dissolved)	mg/L	0.1 U	0.1	0.1 U	0.1 U	0.14	0.1 U	0.1 U	0.0641 J	0.1 U	0.1 U	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.24[ab]**	0.0207 J	0.028	**0.066[ab]**	**0.15[ab]**	**0.48[ab]**	**0.5[ab]**	0.0366 J	0.015 U	**0.2[ab]**	**0.43[ab]**
Manganese (dissolved)	mg/L	**0.24[ab]**	0.00012 J	0.015 U	**0.092[ab]**	**0.075[ab]**	**0.49[ab]**	**0.49[ab]**	0.0179 J	0.015 U	0.015 U	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**6[abc]**	0.05 U	**0.27[abc]**	**0.23[abc]**	**1.1[abc]**	**5.8[abc]**	**6[abc]**	0.05 U	0.04 U	**0.55[abc]**	**2.4[abc]**
Nickel (dissolved)	mg/L	**5.8[abc]**	0.05 U	**0.14[abc]**	**0.087[c]**	**0.24[abc]**	**5.8[abc]**	**5.9[abc]**	0.05 U	0.04 U	0.04 U	**0.19[abc]**
Sodium	mg/L	50	**42700 B[ab]**	**9100[ab]**	**2800[ab]**	**1800[ab]**	60	61	**64100 B[ab]**	**2700[ab]**	**3500[ab]**	**3600[ab]**
Sodium (dissolved)	mg/L	52	**45400 B[ab]**	**9400[ab]**	**1800[ab]**	**1800[ab]**	61	61	**61700 B[ab]**	25	**3400[ab]**	**4200[ab]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	umhos/cm	1.083	99.9	41.9	7.09	4.31	1.18	1.18	10.01	12.54	16.58	9.03
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	1.86	0	0.58	0.46	0.01	0.12	0.12	0.07	0.21	0.49	0
Oxidation reduction potential (ORP), field	millivolts	-18	-775	-583.6	-530.2	-464.2	-241	-241	-746	-625.1	-611.5	-595.3
pH, field	S.U.	7.29	**13.9[ab]**	**13.07[ab]**	**10.75[ab]**	**10.18[ab]**	7.13	7.13	**12.57[ab]**	**12.56[ab]**	**12.52[ab]**	**11.86[ab]**
Temperature, field	Deg C	12.61	14.09	18	19.52	13.96	11.5	11.5	15.95	18.3	19.89	14.95
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	1.16	3.4	15.7	4.54		1.78	1.78	5.35	20.9	22	

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-57D-15	MW-57D-15	MW-57D-15	MW-58D-15	MW-58D-15	MW-58D-15	MW-58D-15	MW-58D-15	MW-59D-15	MW-59D-15	MW-59D-15
Sample Identification		GW-12607-050117-SK-034	GW-12607A-052218-SK-014	GW-12607-072419-DA-027	GW-12607-051215-DC-007	GW-12607-052715-DR-003	GW-12607-061015-SK-015	GW-12607-090115-EM-009	GW-12607-120915-DT-023	GW-12607-051215-DC-005	GW-12607-052715-DR-004	GW-12607-061015-SK-014
Sample Date		05/01/2017	05/22/2018	07/24/2019	05/12/2015	05/27/2015	06/10/2015	09/01/2015	12/09/2015	05/12/2015	05/27/2015	06/10/2015
Sample Type												
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Deep	Deep	Deep								
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	41	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	51	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005	0.005 U	0.0069	0.005 U	0.005 U	0.005 U
Chromium (dissolved)	mg/L	0.005 U	0.005 U	--	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chromium III (trivalent)	mg/L	0.0050 U	0.0050 U	0.01 U	0.0050 U	0.0050 U	0.0050	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Chromium VI (hexavalent)	mg/L	0.0050 U	0.025 U	0.01 U	0.011	5.0 U	0.50 U	0.50 U	**0.35 H[abc]**	0.0050 U	5.0 U	0.50 U
Iron	mg/L	0.14	**0.4[ab]**	--	0.26	**8[ab]**	**0.99[ab]**	**0.46[ab]**	**0.97[ab]**	**2[ab]**	0.1 U	0.15
Iron (dissolved)	mg/L	0.1 U	0.1 U	--	0.26	0.1 U	0.1	**0.41[ab]**	**0.35[ab]**	**2[ab]**	0.1 U	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	17	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	22	--	--	--	--	--	--	--	--	--
Manganese	mg/L	0.015 U	0.024	0.015 U	**0.26[ab]**	**0.47[ab]**	**0.13[ab]**	**0.053[ab]**	**0.083[ab]**	**0.32[ab]**	0.015 U	0.015 U
Manganese (dissolved)	mg/L	0.015 U	0.019	--	**0.27[ab]**	**0.48[ab]**	0.015 U	0.018	0.027	**0.32[ab]**	0.015 U	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.32[abc]**	**0.29[abc]**	0.055	**5.8[abc]**	**30[abc]**	**1.5[abc]**	**2.3[abc]**	**4.2[abc]**	**12[abc]**	**0.41[abc]**	**0.24[abc]**
Nickel (dissolved)	mg/L	0.0054 J	0.04 U	--	**5.9[abc]**	**29[abc]**	**0.24[abc]**	**0.15[abc]**	**0.11[abc]**	**12[abc]**	**0.32[abc]**	0.04 U
Sodium	mg/L	**940[ab]**	**380[ab]**	**940[ab]**	57	190	**4300[ab]**	**4400[ab]**	**2700[ab]**	82	**11000[ab]**	**1300[ab]**
Sodium (dissolved)	mg/L	**930[ab]**	200	--	58	180	**3900[ab]**	**4200[ab]**	**2500[ab]**	82	**14000[ab]**	**1300[ab]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	4.16	2.72	3.25	--	--	--	--	--	--	--	--
Conductivity, field	umhos/cm	--	--	--	0.82	2.75	20.66	21.7	40.11	1.19	68.61	5.9
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	-0.05	0.17	1.07	0.14	0.09	0.12	0.17	-0.02	0.09	0	0.19
Oxidation reduction potential (ORP), field	millivolts	-408.1	-393	-364	-93	-61	-650.9	-617	-547	-68	-635.4	-555.7
pH, field	S.U.	**10.52[ab]**	**10.37[ab]**	**10.29[ab]**	7.18	7.76	**12.55[ab]**	**12.23[ab]**	**11.55[ab]**	7.1	**13.1[ab]**	**12.14[ab]**
Temperature, field	Deg C	13.99	14.78	--	11.9	14.84	22.2	19.7	13.63	12	16.76	19.5
Temperature, sample	Deg C	--	--	18.55	--	--	--	--	--	--	--	--
Turbidity, field	NTU	5.71	4.76	3.08	1.05	9.01	16.6	38.9	42.5	4.15	5.03	22.3

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-59D-15	MW-59D-15	MW-60D-15	MW-60D-15	MW-60D-15	MW-60D-15	MW-60D-15	MW-60D-15	MW-60D-15	MW-61D-15	MW-61D-15
Sample Identification		**GW-12607-083115-EM-004**	**GW-12607-120915-DT-021**	**GW-12607-051215-DC-003**	**GW-12607-051215-DC-004**	**GW-12607-052715-DR-002**	**GW-12607-061115-SK-017**	**GW-12607-061115-SK-018**	**GW-12607-083115-EM-002**	**GW-12607-120915-DT-024**	**GW-12607-051215-DC-006**	**GW-12607-052715-DR-001**
Sample Date		**08/31/2015**	**12/09/2015**	**05/12/2015**	**05/12/2015**	**05/27/2015**	**06/11/2015**	**06/11/2015**	**08/31/2015**	**12/09/2015**	**05/12/2015**	**05/27/2015**
Sample Type					**Duplicate**			**Duplicate**				
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer												
Site		**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005	0.0066	0.005 U	0.005 U
Chromium (dissolved)	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chromium III (trivalent)	mg/L	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050	0.0066	0.0050 U	0.0050 U
Chromium VI (hexavalent)	mg/L	**0.25**[abc]	0.050 U	0.0055	0.0050 U	5.0 U	0.50 U	0.50 U	0.050 UH	0.050 U	0.0050 U	5.0 U
Iron	mg/L	**0.72**[ab]	**2**[ab]	0.26	0.23	**0.78**[ab]	0.12	0.1 U	**1.2**[ab]	**1.5**[ab]	**1.3**[ab]	0.24
Iron (dissolved)	mg/L	**0.41**[ab]	0.1 U	0.23	0.23	0.1 U	**1.1**[ab]	**0.99**[ab]	0.1 U	0.1 U	**1.2**[ab]	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.14**[ab]	**0.18**[ab]	**0.25**[ab]	**0.26**[ab]	0.049	**0.061**[ab]	**0.057**[ab]	**0.11**[ab]	**0.14**[ab]	**0.23**[ab]	0.015 U
Manganese (dissolved)	mg/L	0.015 U	**0.18**[ab]	**0.25**[ab]	**0.25**[ab]	0.015 U	**0.1**[ab]	**0.096**[ab]	**0.055**[ab]	**0.083**[ab]	**0.22**[ab]	0.015 U
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**1.1**[abc]	**0.45**[abc]	**6.5**[abc]	**6.7**[abc]	**1.1**[abc]	0.047	0.04 U	**5.5**[abc]	**6**[abc]	**9.5**[abc]	**0.36**[abc]
Nickel (dissolved)	mg/L	**0.17**[abc]	0.04 U	**6.3**[abc]	**6.3**[abc]	**0.15**[abc]	**1.7**[abc]	**1.5**[abc]	**0.23**[abc]	**0.19**[abc]	**9**[abc]	**0.24**[abc]
Sodium	mg/L	**5000**[ab]	**1800**[ab]	69	72	**1700**[ab]	**1000**[ab]	**1000**[ab]	**750**[ab]	**280**[a]	76	**8700**[ab]
Sodium (dissolved)	mg/L	**5200**[ab]	**1800**[ab]	69	70	**1500**[ab]	**1000**[ab]	**1000**[ab]	**700**[ab]	**300**[a]	73	**9200**[ab]
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	umhos/cm	20.8	12.44	0.987	0.987	6.88	3.61	3.61	3.07	2.8	1.275	55.7
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.08	-0.02	0.16	0.16	0	6.1	6.1	0.11	-0.02	0.32	0
Oxidation reduction potential (ORP), field	millivolts	-621	-467.5	-170	-170	-596	-492.6	-492.6	-474	-425	-134	-605.2
pH, field	S.U.	**10.43**[ab]	**10.4**[ab]	7.1	7.1	**11.38**[ab]	**10.12**[ab]	**10.12**[ab]	**9.39**[ab]	**9.34**[ab]	7.09	**12.94**[ab]
Temperature, field	Deg C	20.54	12.48	11.41	11.41	15.36	15.8	15.8	21.01	14.18	11.76	17.14
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	39.6	19.5	0.78	0.78	5.9	34.4	34.4	192	34.3	0.61	4.43

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-61D-15	MW-61D-15	MW-61D-15	MW-61D-15	MW-61D-15	MW-61D-15	MW-62D-15	MW-62D-15	MW-62D-15	MW-62D-15	MW-62D-15
Sample Identification		GW-12607-061115-SK-016	GW-12607-083115-EM-003	GW-12607-120915-DT-022	GW-12607-050117-SK-033	GW-12607A-052318-SK-015	GW-12607-072419-DA-028	GW-12607-051315-DC-026	GW-12607-070615-SK-001	GW-012607-072015-DT-008	GW-12607-090215-EM-018	GW-12607-120815-DT-010
Sample Date		06/11/2015	08/31/2015	12/09/2015	05/01/2017	05/23/2018	07/24/2019	05/13/2015	07/06/2015	07/20/2015	09/02/2015	12/08/2015
Sample Type												
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer					Deep	Deep	Deep					
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	70	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	72	--	--	--	--	--	--
Chromium	mg/L	0.005 U	0.005 U	0.0055	0.005 U	0.005 U	0.005 U	**2.7**^{abc}	**0.54**^{abc}	**0.11**^{abc}	**0.61**^{abc}	0.079
Chromium (dissolved)	mg/L	0.014	0.005 U	0.005 U	0.005 U	0.005 U	--	**2.1**^{abc}	0.069	0.047	**0.28**^{abc}	0.0063
Chromium III (trivalent)	mg/L	0.0050 U	0.0050 U	0.0055	0.0050 U	0.0050 U	0.01 U	**1.7**^{abc}	**0.54**^{abc}	**0.11**^{abc}	**0.61**^{abc}	0.079
Chromium VI (hexavalent)	mg/L	0.50 U	**0.30**^{abc}	0.050 U	0.010 U	0.25 U	0.01 U	**0.91**^{abc}	0.50 U	0.50 U	0.10 U	0.0050 U
Iron	mg/L	0.1 U	**0.7**^{ab}	**1.7**^{ab}	**2**^{ab}	**1.5**^{ab}	--	**2**^{ab}	**4.1**^{ab}	**3.1**^{ab}	**2.7**^{ab}	**1.2**^{ab}
Iron (dissolved)	mg/L	0.26	0.2	**0.36**^{ab}	0.1 U	0.1 U	--	**0.65**^{ab}	**2.5**^{ab}	**2.5**^{ab}	**0.82**^{ab}	**0.84**^{ab}
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	14	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	15	--	--	--	--	--	--
Manganese	mg/L	0.015 U	**0.21**^{ab}	**0.33**^{ab}	**0.15**^{ab}	**0.18**^{ab}	**0.16**^{ab}	**0.83**^{ab}	**0.7**^{ab}	**0.75**^{ab}	**0.77**^{ab}	**0.69**^{ab}
Manganese (dissolved)	mg/L	0.021	**0.071**^{ab}	**0.23**^{ab}	**0.12**^{ab}	**0.18**^{ab}	--	**0.86**^{ab}	**0.75**^{ab}	**0.7**^{ab}	**0.72**^{ab}	**0.63**^{ab}
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.04 U	**0.44**^{abc}	**0.44**^{abc}	**5.3**^{abc}	**1.7**^{abc}	**2.5**^{abc}	**0.24**^{abc}	**0.12**^{abc}	**0.12**^{abc}	**0.14**^{abc}	**0.17**^{abc}
Nickel (dissolved)	mg/L	**0.25**^{abc}	0.068	**0.095**^{c}	0.02 J	0.044	--	**0.24**^{abc}	**0.12**^{abc}	**0.12**^{abc}	**0.13**^{abc}	**0.093**^{c}
Sodium	mg/L	**700**^{ab}	**1900**^{ab}	**1100**^{ab}	**350**^{a}	160	99	24	19	19	24	100
Sodium (dissolved)	mg/L	**780**^{ab}	**2000**^{ab}	**1100**^{ab}	**360**^{ab}	150	--	24	20	18	24	**240**^{a}
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	1.8	1.073	1	--	--	--	--	--
Conductivity, field	umhos/cm	3.58	8.36	5.49	--	--	--	0.869	0.723	0.698	0.837	0.86
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	6.68	0.1	-0.02	-0.05	0.12	0.19	0.16	0.09	0.05	0.22	0.56
Oxidation reduction potential (ORP), field	millivolts	-458.2	-559	-430.9	-413.8	-400	-417.2	-293	-117	-65.2	-82	-269.5
pH, field	S.U.	**12.25**^{ab}	**11.23**^{ab}	**10.22**^{ab}	**9.48**^{ab}	8.07	7.85	6.85	6.82	7	6.98	7.12
Temperature, field	Deg C	15.7	20.16	15.11	13.95	16.22	--	11.78	18.81	20.83	22.8	12.17
Temperature, sample	Deg C	--	--	--	--	--	18.2	--	--	--	--	--
Turbidity, field	NTU	16.6	29.2	38.8	10.7	10.2	4.21	11.7	16.2	2.4	10.7	

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-62D-15	MW-62D-15	MW-63D-15	MW-63D-15	MW-63D-15	MW-63D-15	MW-63D-15	MW-63D-15	MW-64D-15	MW-64D-15	MW-64D-15
Sample Identification		GW-12607-120815-DT-016	GW-12607-011617-SK-006	GW-12607-051415-DC-035	GW-12607-052815-DR-013	GW-12607-060915-SK-006	GW-12607-090215-EM-019	GW-12607-121015-DT-031	GW-12607-011617-SK-007	GW-12607-051415-DC-036	GW-12607-052815-DR-012	GW-12607-060915-SK-005
Sample Date		12/08/2015	01/16/2017	05/14/2015	05/28/2015	06/09/2015	09/02/2015	12/10/2015	01/16/2017	05/14/2015	05/28/2015	06/09/2015
Sample Type		Duplicate										
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer			Deep						Deep			
Site		North	North	North	North	North	North	North	North	North	North	North
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	**0.12^{abc}**	0.038	**2.4^{abc}**	**2.6^{abc}**	**3.8^{abc}**	**7.8^{abc}**	0.0054	**2.3^{abc}**	0.036	0.005 U	**0.52^{abc}**
Chromium (dissolved)	mg/L	0.0067	0.019	**2.1^{abc}**	**2.3^{abc}**	**3.5^{abc}**	0.098	0.005 U	0.035	0.007	0.005 U	0.009
Chromium III (trivalent)	mg/L	**0.12^{abc}**	0.038	**2.4^{abc}**	**2.6^{abc}**	**1.5^{abc}**	**7.8^{abc}**	0.0054	**2.3^{abc}**	0.036	0.0050 U	**0.52^{abc}**
Chromium VI (hexavalent)	mg/L	0.025 U	0.25 U	0.011 H	5.0 U	**2.4^{abc}**	5.0 U	5.0 U	0.25 U	0.0050 U	5.0 U	0.50 U
Iron	mg/L	**1^{ab}**	**5.7^{ab}**	0.1 U	0.15	**0.57^{ab}**	**0.45^{ab}**	0.17	0.15	0.11	0.1 U	**4^{ab}**
Iron (dissolved)	mg/L	**1.3^{ab}**	**1.3^{ab}**	0.1 U	0.1 U	0.1 U	0.28	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.69^{ab}**	**0.081^{ab}**	**0.26^{ab}**	**0.3^{ab}**	**0.24^{ab}**	0.03	0.046	0.032	**0.36^{ab}**	**0.19^{ab}**	**0.59^{ab}**
Manganese (dissolved)	mg/L	**0.7^{ab}**	**0.068^{ab}**	**0.25^{ab}**	**0.3^{ab}**	**0.25^{ab}**	0.015 U	0.015 U	0.015 U	**0.36^{ab}**	0.015 U	0.034
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.25^{abc}**	**0.17^{abc}**	**0.33^{abc}**	**0.28^{abc}**	**0.28^{abc}**	0.066	**9.5^{abc}**	**0.085^{c}**	**13^{abc}**	0.057	**4.4^{abc}**
Nickel (dissolved)	mg/L	**0.097^{c}**	0.013 J	**0.31^{abc}**	**0.26^{abc}**	**0.27^{abc}**	0.04 U	**0.079^{c}**	0.016 J	**14^{abc}**	0.04 U	0.04 U
Sodium	mg/L	110	**280 B^{a}**	44	50	62	**750^{ab}**	**4800^{ab}**	**2400 B^{ab}**	53	**13000^{ab}**	**420^{ab}**
Sodium (dissolved)	mg/L	98	**300 B^{a}**	44	49	62	**800^{ab}**	**2000^{ab}**	**2100 B^{ab}**	53	**11000^{ab}**	**2100^{ab}**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	1.21	--	--	--	--	--	8.56	--	--	--
Conductivity, field	umhos/cm	0.86	--	0.9	0.898	0.84	3.51	2.85	--	1.61	69.6	20.02
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.56	0	0.12	0.33	0.24	0.13	0.01	0.36	0.2	0	0.18
Oxidation reduction potential (ORP), field	millivolts	-269.5	-450	81	-261	-128.6	-514	-451	-591	-104	-687	-638.8
pH, field	S.U.	7.12	**8.68^{ab}**	7.24	7.58	7.34	**10.09^{ab}**	8.45	**11.52^{ab}**	6.89	**13.7^{ab}**	**12.86^{ab}**
Temperature, field	Deg C	12.17	12.07	13.1	15.13	18	22.99	14.77	11.2	12.64	14.91	16.4
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU		9.49	4.83	7.9	8.36	187		22.6	3.75	47.5	45

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-64D-15	MW-64D-15	MW-64D-15	MW-65D-15	MW-65D-15	MW-65D-15	MW-65D-15	MW-65D-15	MW-65D-15	MW-65D-15	MW-66D-16
Sample Identification		**GW-12607-090215-EM-022**	**GW-12607-121015-DT-032**	**GW-12607-011717-SK-008**	**GW-12607-051415-DC-037**	**GW-12607-052815-DR-010**	**GW-12607-060915-SK-003**	**GW-12607-060915-SK-004**	**GW-12607-091015-SK-002**	**GW-12607-121015-DT-027**	**GW-12607-042717-SK-020**	**GW-12607-081916-SK-032**
Sample Date		**09/02/2015**	**12/10/2015**	**01/17/2017**	**05/14/2015**	**05/28/2015**	**06/09/2015**	**06/09/2015**	**09/10/2015**	**12/10/2015**	**04/27/2017**	**08/19/2016**
Sample Type								**Duplicate**				
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer				**Deep**							**Deep**	
Site		**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**South**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.005 U	**7.3[abc]**	0.0031 J	0.0074	0.005 U	0.0072	0.0072	0.005 U	0.005 U	0.0064	**46[abc]**
Chromium (dissolved)	mg/L	0.005 U	**1.8[abc]**	0.0013 J	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	**55[abc]**
Chromium III (trivalent)	mg/L	0.0050 U	**7.3[abc]**	0.0031 J	0.0074	0.0050 U	0.0072	0.0072	0.0050 U	0.0050 U	0.0064	**1.1[abc]**
Chromium VI (hexavalent)	mg/L	0.50 U	5.0 U	0.25 UH	0.0050 U	5.0 U	0.50 U	0.50 U	0.050 U	0.0050 U	0.25 U	**46[abc]**
Iron	mg/L	**0.67[ab]**	0.24	**2.1[ab]**	0.1 U	0.1 U	0.21	0.25	0.1 U	0.1 U	**6.5[ab]**	0.1 U
Iron (dissolved)	mg/L	0.1 U	0.1	0.1 U	0.1 U	0.1 U	0.13	0.13	0.1 U	0.19	**5.9[ab]**	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.35[ab]**	0.033	**0.12[ab]**	**0.32[ab]**	**0.32[ab]**	**0.61[ab]**	**0.65[ab]**	0.015 U	0.022	**0.51[ab]**	**0.25[ab]**
Manganese (dissolved)	mg/L	0.015 U	0.015 U	0.02	**0.31[ab]**	**0.32[ab]**	**0.61[ab]**	**0.61[ab]**	0.015 U	0.015 U	**0.5[ab]**	**0.27[ab]**
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**5.1[abc]**	0.071	**8.1[abc]**	**8.6[abc]**	**9.6[abc]**	**18[abc]**	**19[abc]**	**0.18[abc]**	**0.46[abc]**	0.04 U	**0.14[abc]**
Nickel (dissolved)	mg/L	0.04 U	0.04 U	0.049	**8.4[abc]**	**9.2[abc]**	**18[abc]**	**18[abc]**	0.04 U	**0.2[abc]**	0.04 U	**0.16[abc]**
Sodium	mg/L	**960[ab]**	**930[ab]**	**990[ab]**	61	82	130	130	**810[ab]**	**2500[ab]**	22	90
Sodium (dissolved)	mg/L	**910[ab]**	**960[ab]**	**880[ab]**	60	71	130	130	**810[ab]**	**6700[ab]**	22	88
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	3.44	--	--	--	--	--	--	0.78	--
Conductivity, field	umhos/cm	4.12	3.79	--	1.58	1.49	2.26	2.26	6.371	6.07	--	1.052
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.13	0	0.48	0.31	0.23	0.21	0.21	0.2	-0.02	-0.03	0.58
Oxidation reduction potential (ORP), field	millivolts	-544	-522.9	-493	65	13	48.1	48.1	-460.9	-440.7	-271.60	90.3
pH, field	S.U.	**9.87[ab]**	**10.79[ab]**	**9.5[ab]**	7.49	7.07	6.81	6.81	**10.46[ab]**	**10.55[ab]**	7.05	7.36
Temperature, field	Deg C	21.11	15.36	12.07	13.44	15.33	18.8	18.8	22.17	12.35	14.47	18.24
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	--	--
Turbidity, field	NTU	601		133	4.7	4.91	9.15	9.15	3.7	18.2	4.17	2.21

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-66D-16	MW-66D-16	MW-66D-16	MW-66D-16	MW-66D-16	MW-67D-16	MW-67D-16	MW-67D-16	MW-67D-16	MW-67D-16	MW-67D-16
Sample Identification		**GW-12607-121316-DR-005**	**GW-12607-012017-SK-031**	**GW-12607-050217-SK-038**	**GW-12607A-052118-SK-001**	**GW-12607-072519-DA-041**	**GW-12607-081916-SK-033**	**GW-12607-081916-SK-034**	**GW-12607-121316-DR-004**	**GW-12607-012317-SK-034**	**GW-12607-050217-SK-035**	**GW-12607-050217-SK-036**
Sample Date		**12/13/2016**	**01/20/2017**	**05/02/2017**	**05/21/2018**	**07/25/2019**	**08/19/2016**	**08/19/2016**	**12/13/2016**	**01/23/2017**	**05/02/2017**	**05/02/2017**
Sample Type								**Duplicate**				**Duplicate**
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer			**Deep**	**Deep**	**Deep**	**Deep**				**Deep**	**Deep**	**Deep**
Site		**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	100	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	100	--	--	--	--	--	--	--
Chromium	mg/L	**8**[abc]	**7.5**[abc]	**3.9**[abc]	0.061	0.031	**93**[abc]	**67**[abc]	**4.4**[abc]	**0.2**[abc]	**0.87**[abc]	**0.8**[abc]
Chromium (dissolved)	mg/L	--	**7.3**[abc]	**3.7**[abc]	0.029	--	**72**[abc]	**74**[abc]	--	0.079	**0.7**[abc]	**0.69**[abc]
Chromium III (trivalent)	mg/L	**8.0**[abc]	**7.5**[abc]	**3.6**[abc]	0.061	0.016	**250**[abc]	0.05 U	**4.4**[abc]	**0.20**[abc]	**0.87**[abc]	**0.80**[abc]
Chromium VI (hexavalent)	mg/L	0.050 U	0.010 U	**0.30**[abc]	0.0050 U	**0.014**[c]	**68**[abc]	**67**[abc]	0.050 U	0.25 U	0.0050 U	0.0050 U
Iron	mg/L	--	**1.8**[ab]	**2.5**[ab]	**0.85**[ab]	--	**1**[ab]	**0.89**[ab]	--	**1**[ab]	**0.72**[ab]	**0.46**[ab]
Iron (dissolved)	mg/L	--	**0.41**[ab]	**2.4**[ab]	**0.39**[ab]	--	0.1 U	0.1 U	--	**0.82**[ab]	**0.37**[ab]	**0.39**[ab]
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	19	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	19	--	--	--	--	--	--	--
Manganese	mg/L	--	**5.8**[ab]	**3**[ab]	**0.52**[ab]	**1.4**[ab]	**0.56**[ab]	**0.56**[ab]	--	**6.4**[ab]	**9.1**[ab]	**8.8**[ab]
Manganese (dissolved)	mg/L	--	**5.7**[ab]	**3.1**[ab]	**0.52**[ab]	--	**0.58**[ab]	**0.57**[ab]	--	**5.8**[ab]	**8.8**[ab]	**8.7**[ab]
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.31**[abc]	**1.1**[abc]	**0.56**[abc]	0.061	0.044	**2.9**[abc]	**2.7**[abc]	**7.2**[abc]	**15**[abc]	**45**[abc]	**44**[abc]
Nickel (dissolved)	mg/L	--	**1.4 B**[abc]	**0.55**[abc]	0.04 U	--	**2.6**[abc]	**2.6**[abc]	--	**15**[abc]	**43**[abc]	**43**[abc]
Sodium	mg/L	--	**1100**[ab]	**960**[ab]	**450**[ab]	**1400**[ab]	210	180	--	**1600 B**[ab]	**1700**[ab]	**1700**[ab]
Sodium (dissolved)	mg/L	--	**1300 B**[ab]	**990**[ab]	**450**[ab]	--	190	200	--	**1700 B**[ab]	**1700**[ab]	**1600**[ab]
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	5.01	7.21	5.53	2.42	6.23	--	--	16.8	9.09	8.31	--
Conductivity, field	umhos/cm	--	--	--	--	--	2.444	2.444	--	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.06	0.36	-0.05	0.3	0.43	0.78	0.78	0.09	0.24	-0.03	--
Oxidation reduction potential (ORP), field	millivolts	5.0	1	-20.10	130	-394.2	104.4	104.4	48	-245	-5.9	--
pH, field	S.U.	7.03	6.72	6.97	7.78	7.85	7.07	7.07	6.72	6.51	**4.45**[ab]	--
Temperature, field	Deg C	--	12.5	12.49	14.28	--	16.25	16.25	--	12.1	11.75	--
Temperature, sample	Deg C	--	--	--	--	18.8	--	--	--	--	--	--
Turbidity, field	NTU	4.86	14.4	2.96	10.8	2	50.7	50.7	22.9	11.8	14.2	--

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-67D-16	MW-67D-16	MW-67D-16	MW-67D-16	MW-67S-19	MW-67S-19	MW-68D-16	MW-68D-16	MW-68D-16	MW-68D-16	MW-69D-16
Sample Identification		GW-12607A-052118-SK-002	GW-12607-072319-DA-011	GW-12607-102720-DR-030	GW-12607-102720-DR-031	GW-12607-072319-DA-010	GW-12607-102720-DR-032	GW-12607-012317-SK-035	GW-12607-012317-SK-036	GW-12607-102320-SK-014	GW-12607-011921-DA-013	GW-12607-081716-SK-028
Sample Date		05/21/2018	07/23/2019	10/27/2020	10/27/2020	07/23/2019	10/27/2020	01/23/2017	01/23/2017	10/23/2020	01/19/2021	08/17/2016
Sample Type					Duplicate							
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Deep	Deep	Deep	Deep	Shallow	Shallow	Deep	Deep	Deep	Deep	
Site		South	South	South	South	South	South	South	South	South	South	South
	Units											
Metals												
Boron	mg/L	--	--	**6.8[ab]**	--	--	**0.52[ab]**	--	--	--	**9.7[abc]**	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	310	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	300	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	**0.25[abc]**	**0.38[abc]**	**0.14[abc]**	**0.14[abc]**	0.069	0.027	**0.19[abc]**	**0.17[abc]**	0.042	0.031	**9[abc]**
Chromium (dissolved)	mg/L	0.043	--	--	--	--	--	0.098	0.1	0.0069	--	**11[abc]**
Chromium III (trivalent)	mg/L	**0.25[abc]**	**0.38[abc]**	**0.14[abc]**	**0.14[abc]**	0.01 U	0.0022 J	**0.19[abc]**	**0.17[abc]**	--	0.031	0.25 U
Chromium VI (hexavalent)	mg/L	0.025 U	0.01 U	0.010 U	0.010 U	**0.061[c]**	**0.025[c]**	0.0050 U	0.0050 U	--	0.010 U	**10[abc]**
Iron	mg/L	**0.47[ab]**	--	--	--	--	--	**1.2[ab]**	**1.1[ab]**	--	--	5 U
Iron (dissolved)	mg/L	0.14	--	--	--	--	--	**0.74[ab]**	**0.63[ab]**	--	--	5 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	9.4	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	8.9	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.9[ab]**	**0.73[ab]**	--	--	0.033	--	**1.2[ab]**	**1.1[ab]**	--	--	**6[ab]**
Manganese (dissolved)	mg/L	**0.8[ab]**	--	--	--	--	--	**1.2[ab]**	**1.1[ab]**	--	--	**4.7[ab]**
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**2.9[abc]**	**0.34[abc]**	**0.24[abc]**	**0.24[abc]**	0.04 U	0.0071 J	0.013 J	0.017 J	0.033	0.031	**2600[abc]**
Nickel (dissolved)	mg/L	**0.65[abc]**	--	--	--	--	--	0.012 J	0.016 J	0.032 J	--	**1500[abc]**
Sodium	mg/L	**11000[ab]**	**870[ab]**	--	--	97	--	76 B	74 B	--	--	**360[ab]**
Sodium (dissolved)	mg/L	**12000[ab]**	--	--	--	--	--	79 B	77 B	--	--	**330[a]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	33.3	3.61	--	--	0.775	--	1.75	1.75	--	3.84	--
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	8.78
Conductivity, field	uS/cm	--	--	6.83	6.83	--	1.4	--	--	3.59	--	--
Dissolved oxygen (DO), field	mg/L	0.14	0.61	0	0	4.72	0.73	0.21	0.21	0	0.05	0
Oxidation reduction potential (ORP), field	millivolts	-482	-41	-282	-282	164	-157	-131	-131	-109	156.2	87.7
pH, field	S.U.	**8.91[ab]**	6.76	7.73	7.73	6.56	7.34	6.94	6.94	7.27	7.74	**6.33[ab]**
Temperature, field	Deg C	13.78	--	--	--	--	--	10.63	10.63	--	--	16.29
Temperature, sample	Deg C	--	17.67	12.89	12.89	18.26	13.9	--	--	16.82	11.52	--
Turbidity, field	NTU	10.8	24.8	2.71	2.71	16.2	0.61	19	19	10.9	2.96	5.48

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-69D-16	MW-69D-16	MW-69D-16	MW-69D-16	MW-69D-16	MW-69D-16	MW-69S-19	MW-69S-19	MW-70D-16	MW-70D-16	MW-70D-16
Sample Identification		GW-12607-121316-DR-003	GW-12607-012317-SK-037	GW-12607-042817-SK-026	GW-12607A-052118-SK-003	GW-12607-072319-DA-009	GW-12607-102620-DR-024	GW-12607-072319-DA-008	GW-12607-102620-DR-025	GW-12607-081716-SK-027	GW-12607-121316-DR-001	GW-12607-121316-DR-002
Sample Date		12/13/2016	01/23/2017	04/28/2017	05/21/2018	07/23/2019	10/26/2020	07/23/2019	10/26/2020	08/17/2016	12/13/2016	12/13/2016
Sample Type												Duplicate
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifier			Deep	Deep	Deep	Deep	Deep	Shallow	Shallow			
Site		South	South	South	South	South	South	South	South	South	South	South
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	**680[abc]**	--	**0.54[ab]**	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	700	610	570	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	660	650	530	--	--	--	--	--	--	--
Chromium	mg/L	**4.6[abc]**	**11[abc]**	**2.5[abc]**	0.5 U	0.0054	0.1 U	0.0062	0.016	**12[abc]**	**18[abc]**	**19[abc]**
Chromium (dissolved)	mg/L	--	**7.9[abc]**	**2.9[abc]**	0.5 U	--	--	--	--	**11[abc]**	--	--
Chromium III (trivalent)	mg/L	0.010 U	**1.6[abc]**	**2.4[abc]**	0.0050 U	0.01 U	0.010 U	0.01 U	0.016	0.005 U	**2.9[abc]**	**2.5[abc]**
Chromium VI (hexavalent)	mg/L	**8.0[abc]**	**9.1[abc]**	**0.042[c]**	0.050 U	**0.035[c]**	0.20 U	0.01 U	0.010 U	**12[abc]**	**15[abc]**	**16[abc]**
Iron	mg/L	--	0.5 U	2 U	10 U	--	--	--	--	0.2	--	--
Iron (dissolved)	mg/L	--	0.29 J	2 U	10 U	--	--	--	--	0.1 U	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	500 U	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	500 U	--	--	--	--	--	--	--
Manganese	mg/L	--	**3.8[ab]**	**8.3[ab]**	**9.1[ab]**	**3[ab]**	--	**1.3[ab]**	--	**0.82[ab]**	--	--
Manganese (dissolved)	mg/L	--	**8[ab]**	**6.7[ab]**	**8[ab]**	--	--	--	--	**0.79[ab]**	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**3800[abc]**	**1200[abc]**	**4000[abc]**	**4000[abc]**	**560[abc]**	**4000[abc]**	0.04 U	0.023	**32[abc]**	**48[abc]**	**52[abc]**
Nickel (dissolved)	mg/L	--	**3500[abc]**	**3100[abc]**	**3500[abc]**	--	--	--	--	**28[abc]**	--	--
Sodium	mg/L	--	**300 B[a]**	**550[ab]**	**1200[ab]**	**2600[ab]**	--	79	--	76	--	--
Sodium (dissolved)	mg/L	--	**420 B[ab]**	**540[ab]**	**1100[ab]**	--	--	--	--	69	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	16.8	7.54	17.11	13.75	12.01	--	0.53	--	--	3.34	3.34
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	2.38	--	--
Conductivity, field	uS/cm	--	--	--	--	--	17.91	--	0.75	--	--	--
Dissolved oxygen (DO), field	mg/L	0.27	1.5	-0.01	0.41	0.01	0.01	0.1	0.17	0.01	0.26	0.26
Oxidation reduction potential (ORP), field	millivolts	100	50	62.2	-187	1	67	39.4	-22	78.6	143	143
pH, field	S.U.	**6.06[ab]**	**6.03[ab]**	**6.03[ab]**	**6.15[ab]**	6.5	**6.35[ab]**	7.33	7.26	6.69	**6.33[ab]**	**6.33[ab]**
Temperature, field	Deg C	--	11.34	13.69	13.61	--	--	--	--	18.12	--	--
Temperature, sample	Deg C	--	--	--	--	17.26	13.65	19.76	15	--	--	--
Turbidity, field	NTU	5.95	2.14	17.7	9.64	3.19	0.79	13.91	5.95	9.37	4.02	4.02

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-70D-16	MW-70D-16	MW-70D-16	MW-70D-16	MW-70D-16	MW-70D-16	MW-71D-16	MW-71D-16	MW-71D-16	MW-72D-16	MW-72D-16
Sample Identification		GW-12607-012517-SK-041	GW-12607-042817-SK-024	GW-12607-042817-SK-025	GW-12607A-052118-SK-004	GW-12607A-052118-SK-005	GW-12607-102720-DR-029	GW-12607-081616-SK-022	GW-12607-011817-SK-017	GW-12607-042517-SK-010	GW-12607-081616-SK-019	GW-12607-011917-SK-025
Sample Date		01/25/2017	04/28/2017	04/28/2017	05/21/2018	05/21/2018	10/27/2020	08/16/2016	01/18/2017	04/25/2017	08/16/2016	01/19/2017
Sample Type				Duplicate		Duplicate						
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Deep	Deep	Deep	Deep	Deep	Deep		Deep	Deep		Deep
Site		South	South	South	South	South	South	South	South	South	South	South
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	**12**[abc]	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	480	520	500	160	150	--	--	--	--	--	--
Calcium (dissolved)	mg/L	450	500	500	150	140	--	--	--	--	--	--
Chromium	mg/L	**14**[abc]	**17**[abc]	**16**[abc]	0.013	0.011	0.0045 J	0.092	**0.14**[abc]	**0.11**[abc]	0.0074	0.0055
Chromium (dissolved)	mg/L	**13**[abc]	**16**[abc]	**16**[abc]	0.0088	0.0082	--	0.05	**0.11**[abc]	**0.11**[abc]	0.005 U	0.003 J
Chromium III (trivalent)	mg/L	**0.93**[abc]	**16**[abc]	**15**[abc]	0.013	0.011	0.0045 J-	0.052	0.042	0.018	0.0074	0.0055
Chromium VI (hexavalent)	mg/L	**13**[abc]	**0.079**[c]	**0.063**[c]	0.0050 U	0.0050 U	0.010 UJ	**0.039**[c]	**0.098**[c]	**0.091**[c]	0.005 U	0.0050 U
Iron	mg/L	0.18	0.1 U	0.1 U	0.1 U	0.1 U	--	0.23	0.25	0.1 U	**2.8**[ab]	**1.6**[ab]
Iron (dissolved)	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	--	0.1 U	0.1 U	0.1 U	**2.5**[ab]	**1.3**[ab]
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	11	11	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	11	11	--	--	--	--	--	--
Manganese	mg/L	**1.1**[ab]	**1.3**[ab]	**1.2**[ab]	**0.084**[ab]	**0.098**[ab]	--	**0.69**[ab]	**1.3**[ab]	**0.94**[ab]	**0.99**[ab]	**0.56**[ab]
Manganese (dissolved)	mg/L	**1**[ab]	**1.2**[ab]	**1.2**[ab]	**0.096**[ab]	**0.097**[ab]	--	**0.66**[ab]	**1.1**[ab]	**0.98**[ab]	**1**[ab]	**0.49**[ab]
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**41**[abc]	**55**[abc]	**50**[abc]	**0.11**[abc]	**0.12**[abc]	**0.12**[abc]	**4.1**[abc]	**8.8**[abc]	**5.1**[abc]	**120**[abc]	**9.1**[abc]
Nickel (dissolved)	mg/L	**36**[abc]	**55**[abc]	**53**[abc]	0.072	0.067	--	**4**[abc]	**9.2 B**[abc]	**5.3**[abc]	**120**[abc]	**6.1 B**[abc]
Sodium	mg/L	110	220	210	**930**[ab]	**860**[ab]	--	35	210	**400**[ab]	100	**700**[ab]
Sodium (dissolved)	mg/L	100	210	200	**860**[ab]	**860**[ab]	--	34	190 B	**370**[ab]	100	**740 B**[ab]
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	3.05	3.57	3.57	4.27	4.27	--	--	2.3	2.92	--	4.51
Conductivity, field	umhos/cm	--	--	--	--	--	--	1.58	--	--	3.16	--
Conductivity, field	uS/cm	--	--	--	--	--	3.37	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.77	0	0	0.18	0.18	0	0.03	0.81	-0.02	0.03	0.98
Oxidation reduction potential (ORP), field	millivolts	96	103.3	103.3	-435	-435	-326	36.6	-101	6.4	7.9	-205
pH, field	S.U.	**6.1**[ab]	**6.4**[ab]	**6.4**[ab]	**9.56**[ab]	**9.56**[ab]	8.03	7.04	6.69	7.16	6.63	6.9
Temperature, field	Deg C	11.64	14.8	14.8	12.77	12.77	--	19.1	10.95	15.57	20.39	11.07
Temperature, sample	Deg C	--	--	--	--	--	14.3	--	--	--	--	--
Turbidity, field	NTU	8.6	10.4	10.4	2.47	2.47	0.94	17.1	9.86	3.85	21.1	18.3

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-72D-16	MW-72D-16	MW-72D-16	MW-72D-16	MW-72D-16	MW-73D-16	MW-73D-16	MW-73D-16	MW-73D-16	MW-74D-16	MW-74D-16
Sample Identification		GW-12607-011917-SK-026	GW-12607-042417-SK-004	GW-12607-042417-SK-005	GW-12607-011218-SK-002	GW-12607A-052118-SK-006	GW-12607-081516-SK-008	GW-12607-011717-SK-014	GW-12607-042517-SK-008	GW-12607-072519-DA-036	GW-12607-081616-SK-016	GW-12607-011817-SK-019
Sample Date		01/19/2017	04/24/2017	04/24/2017	01/12/2018	05/21/2018	08/15/2016	01/17/2017	04/25/2017	07/25/2019	08/16/2016	01/18/2017
Sample Type		Duplicate		Duplicate								
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Deep	Deep	Deep	Deep	Deep		Deep	Deep	Deep		Deep
Site		South	South	South	South	South	North	North	North	North	South	South
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	300	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	300	--	--	--	--	--	--
Chromium	mg/L	0.0057	0.005 U	0.005 U	0.005 U	0.005 U	0.0093	0.0022 J	0.005 U	0.005 U	0.005 U	0.0046 J
Chromium (dissolved)	mg/L	0.0016 J	0.005 U	0.005 U	--	0.005 U	0.005 U	0.005 U	0.005 U	--	0.005 U	0.00087 J
Chromium III (trivalent)	mg/L	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0093	0.0022 J	0.0050 U	0.01 U	0.005 U	0.0046 J
Chromium VI (hexavalent)	mg/L	**0.012[c]**	0.010 U	0.010 U	0.0050 U	0.0050 U	0.005 U	0.25 U	0.25 U	0.01 U	0.005 U	0.0050 U
Iron	mg/L	**1.6[ab]**	**2[ab]**	**2.2[ab]**	--	0.19	**11[ab]**	0.19	0.13	--	**0.36[ab]**	**0.51[ab]**
Iron (dissolved)	mg/L	**1.3[ab]**	**1.5[ab]**	**1.7[ab]**	--	0.1 U	**8.1[ab]**	0.035 J	0.1 U	--	**0.31[ab]**	**0.31[ab]**
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	39	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	39	--	--	--	--	--	--
Manganese	mg/L	**0.57[ab]**	**0.62[ab]**	**0.64[ab]**	**0.37[ab]**	**0.16[ab]**	**0.98[ab]**	0.019	**0.085[ab]**	**0.1[ab]**	**0.18[ab]**	**0.17[ab]**
Manganese (dissolved)	mg/L	**0.48[ab]**	**0.63[ab]**	**0.64[ab]**	--	**0.16[ab]**	**0.85[ab]**	0.015 U	**0.089[ab]**	--	**0.17[ab]**	**0.13[ab]**
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**9.1[abc]**	**43[abc]**	**48[abc]**	**2.6[abc]**	**0.82[abc]**	**170[abc]**	**3.3[abc]**	**2.1[abc]**	**0.66[abc]**	**1.5[abc]**	**1[abc]**
Nickel (dissolved)	mg/L	**5.3 B[abc]**	**23[abc]**	**25[abc]**	--	**0.12[abc]**	**150[abc]**	**0.1[c]**	0.04 U	--	**1.4[abc]**	**0.95 B[abc]**
Sodium	mg/L	**710[ab]**	**800[ab]**	**770[ab]**	**550[ab]**	**500[ab]**	110	**2200[ab]**	**1300[ab]**	**600[ab]**	30	34
Sodium (dissolved)	mg/L	**730 B[ab]**	**800[ab]**	**810[ab]**	--	**500[ab]**	98	**2300[ab]**	**1400[ab]**	--	30	29 B
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	4.51	4.63	4.63	3.74	3.72	--	9.22	5.77	2.89	--	0.803
Conductivity, field	umhos/cm	--	--	--	--	--	2.14	--	--	--	0.95	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.98	7.00	7.00	0	0.11	0.6	0	-0.04	0.08	0.03	0.85
Oxidation reduction potential (ORP), field	millivolts	-205	-304.10	-304.10	-213.2	-364	-202	-594	-514.6	-442.1	-29	-346
pH, field	S.U.	6.9	6.77	6.77	8.29	**8.56[ab]**	8.31	**10.65[ab]**	**10.34[ab]**	8.15	7.28	7.18
Temperature, field	Deg C	11.07	14.94	14.94	9.75	13.79	18.69	13.16	16.96	--	19.93	11.72
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	22.3	--	--
Turbidity, field	NTU	18.3	129	129	4.67	10.6	19.5	28.3	5.09	9.97	4.73	8.54

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-74D-16	MW-74D-16	MW-74S-19	MW-74S-19	MW-75D-16	MW-75D-16	MW-75D-16	MW-75D-16	MW-76D-16	MW-76D-16	MW-76D-16
Sample Identification		**GW-12607-042417-SK-002**	**GW-12607-072319-DA-012**	**GW-12607-072319-DA-013**	**GW-12607-072319-DA-014**	**GW-12607-081716-SK-026**	**GW-12607-012517-SK-040**	**GW-12607-050117-SK-032**	**GW-12607A-052118-SK-007**	**GW-12607-081716-SK-025**	**GW-12607-012517-SK-039**	**GW-12607-050117-SK-031**
Sample Date		**04/24/2017**	**07/23/2019**	**07/23/2019**	**07/23/2019**	**08/17/2016**	**01/25/2017**	**05/01/2017**	**05/21/2018**	**08/17/2016**	**01/25/2017**	**05/01/2017**
Sample Type					**Duplicate**							
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifier		**Deep**	**Deep**	**Shallow**	**Shallow**		**Deep**	**Deep**	**Deep**		**Deep**	**Deep**
Site		**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	140	170	130	--	240	350
Calcium (dissolved)	mg/L	--	--	--	--	--	140	170	130	--	240	340
Chromium	mg/L	0.005 U	0.014	0.005 U	0.005 U	0.005 U	0.0045 J	0.00094 J	0.005 U	0.005 U	0.0022 J	0.005 U
Chromium (dissolved)	mg/L	0.005 U	--	--	--	0.005 U	0.0012 J	0.005 U	0.005 U	0.005 U	0.0012 J	0.005 U
Chromium III (trivalent)	mg/L	0.0050 U	0.014	0.01 U	0.01 U	0.005 U	0.0045 J	0.0050 U	0.0050 U	0.005 U	0.0022 J	0.0050 U
Chromium VI (hexavalent)	mg/L	0.0050 U	0.01 U	0.01 U	0.01 U	0.005 U	0.0050 U	0.0050 U	0.0050 U	0.005 U	0.0050 U	0.0050 U
Iron	mg/L	**0.81[ab]**	--	--	--	**1[ab]**	**0.42[ab]**	**1.5[ab]**	**0.56[ab]**	**3.9[ab]**	**3.3[ab]**	**7.7[ab]**
Iron (dissolved)	mg/L	**0.46[ab]**	--	--	--	**1.4[ab]**	0.12	**1.4[ab]**	0.16	**3.7[ab]**	**3.1[ab]**	**6.4[ab]**
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	13	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	12	--	--	--
Manganese	mg/L	**0.18[ab]**	**0.14[ab]**	**0.66[ab]**	**0.67[ab]**	**0.34[ab]**	**0.3[ab]**	**0.63[ab]**	**0.52[ab]**	**0.75[ab]**	**0.69[ab]**	**0.9[ab]**
Manganese (dissolved)	mg/L	**0.18[ab]**	--	--	--	**0.4[ab]**	**0.3[ab]**	**0.51[ab]**	**0.36[ab]**	**0.75[ab]**	**0.7[ab]**	**0.91[ab]**
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**1.4[abc]**	**0.81[abc]**	**0.089[c]**	**0.087[c]**	**15[abc]**	**2.8[abc]**	**4[abc]**	**0.78[abc]**	**45[abc]**	**24[abc]**	**46[abc]**
Nickel (dissolved)	mg/L	**1.2[abc]**	--	--	--	**26[abc]**	**2.6[abc]**	**3.4[abc]**	**0.6[abc]**	**47[abc]**	**25[abc]**	**49[abc]**
Sodium	mg/L	30	42	10	10	23	33	68	120	58	50	65
Sodium (dissolved)	mg/L	30	--	--	--	28	34	74	120	58	51	64
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	0.94	0.664	0.48	0.48	--	0.895	1.14	1.355	--	1.51	1.99
Conductivity, field	umhos/cm	--	--	--	--	0.8	--	--	--	1.58	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	-0.02	0	0	0	0.15	0.73	0.17	0.1	0.01	1.29	-0.01
Oxidation reduction potential (ORP), field	millivolts	-86.1	-103	-23	-23	-6.1	-31	-14	-317	-36.3	-88	4.2
pH, field	S.U.	7.41	7.34	7.41	7.41	7.3	6.93	7.13	7.32	7	6.81	6.77
Temperature, field	Deg C	16.47	--	--	--	19.88	11.34	14.29	11.84	19.32	9.53	14.69
Temperature, sample	Deg C	--	19.07	20.49	20.49	--	--	--	--	--	--	--
Turbidity, field	NTU	5.21	9.8	9.16	9.16	6.69	9.63	6.1	6.76	11.6	6.56	--

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-76D-16	MW-76D-16	MW-77D-16	MW-77D-16	MW-77D-16	MW-78D-16	MW-78D-16	MW-79D-16	MW-80D-16	MW-80D-16	MW-80D-16
Sample Identification		GW-12607A-052218-SK-008	GW-12607-072619-DA-045	GW-12607-012017-SK-028	GW-12607-012517-SK-028	GW-12607-020321-DA-007	GW-12607-081716-SK-024	GW-12607-050117-SK-030	GW-12607-012017-SK-029	GW-12607-081916-SK-031	GW-12607-121316-DR-006	GW-12607-012017-SK-030
Sample Date		05/22/2018	07/26/2019	01/20/2017	01/25/2017	02/03/2021	08/17/2016	05/01/2017	01/20/2017	08/19/2016	12/13/2016	01/20/2017
Sample Type												
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Deep	Deep	Deep	Deep	Deep		Deep	Deep			Deep
Site		South	South	South	South	South	South	South	South	South	South	South
	Units											
Metals												
Boron	mg/L	--	--	--	--	**0.65[ab]**	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	23	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	21	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.0067	0.005 U	0.0017 J	--	0.0011 J	0.0065	0.005 U	0.0036 J	**2.8[abc]**	**0.81[abc]**	**59[abc]**
Chromium (dissolved)	mg/L	0.005 U	--	0.00081 J	--	--	0.005 U	0.005 U	0.0013 J	**2.5[abc]**	--	**2.7[abc]**
Chromium III (trivalent)	mg/L	0.0067	0.01 UJ	--	0.0050 U	--	0.0065	0.0050 U	0.0036 J	0.005 U	**0.81[abc]**	**59[abc]**
Chromium VI (hexavalent)	mg/L	0.050 U	0.01 UJ	--	0.0050 U	0.010 U	0.005 U	0.0050 U	0.0050 U	**2.8[abc]**	0.020 U	0.0050 U
Iron	mg/L	**4.2[ab]**	--	**2.1[ab]**	--	--	0.1 U	0.18	**6[ab]**	**1.1[ab]**	--	**180[ab]**
Iron (dissolved)	mg/L	**0.77[ab]**	--	**1.4[ab]**	--	--	0.1 U	0.085 J	**4.7[ab]**	0.26	--	**12[ab]**
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	5 U	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	5 U	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.14[ab]**	**0.14[ab]**	**0.37[ab]**	--	--	**0.2[ab]**	**0.24[ab]**	**0.58[ab]**	**0.24[ab]**	--	**8.5[ab]**
Manganese (dissolved)	mg/L	0.015 U	--	**0.33[ab]**	--	--	**0.2[ab]**	**0.22[ab]**	**0.51[ab]**	**0.24[ab]**	--	**0.69[ab]**
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.91[abc]**	**0.21[abc]**	**0.25[abc]**	--	0.019 J	**0.16[abc]**	0.07	**34[abc]**	0.049	0.067	**3.7[abc]**
Nickel (dissolved)	mg/L	0.064	--	**0.092 B[c]**	--	--	**0.15[abc]**	0.069	**38 B[abc]**	0.044	--	**0.21 B[abc]**
Sodium	mg/L	**530[ab]**	**250[a]**	110	--	--	15	16	67	30	--	**3500[ab]**
Sodium (dissolved)	mg/L	**560[ab]**	--	110 B	--	--	15	17	65 B	31	--	**240 B[a]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	2.99	1.93	1.05	1.05	0.64	--	0.68	1.273	--	1.25	1.7
Conductivity, field	umhos/cm	--	--	--	--	--	0.67	--	--	0.702	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.08	0.25	0.15	0.15	0	0.05	0.03	0.2	0.65	0.10	0.31
Oxidation reduction potential (ORP), field	millivolts	-544	-416.5	-266	-266	211.2	11.1	7.5	-137	80	-78	6
pH, field	S.U.	**11.86[ab]**	7.94	7.11	7.11	7.11	7.36	7.3	6.87	7.37	7.00	6.75
Temperature, field	Deg C	17.91	--	12.84	12.84	--	18.5	14.46	11.17	17.31	--	11.7
Temperature, sample	Deg C	--	16.2	--	--	7.35	--	--	--	--	--	--
Turbidity, field	NTU	20.5	2.49	25.3	25.3	4.12	10.7	12.6	72	15.5	13	15.9

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-80D-16	MW-80D-16	MW-81D-16	MW-81D-16	MW-81D-16	MW-81D-16	MW-81D-16	MW-82D-18	MW-82D-18	MW-82D-18	MW-82S-19
Sample Identification		**GW-12607-050217-SK-037**	**GW-12607-072519-DA-040**	**GW-12607-081516-SK-005**	**GW-12607-081516-SK-006**	**GW-12607-011617-SK-003**	**GW-12607-011717-SK-003**	**GW-12607-072519-DA-030**	**GW-12607-011918-SK-012**	**GW-12607A-052418-SK-023**	**GW-12607-072319-DA-016**	**GW-12607-072319-DA-015**
Sample Date		**05/02/2017**	**07/25/2019**	**08/15/2016**	**08/15/2016**	**01/16/2017**	**01/17/2017**	**07/25/2019**	**01/19/2018**	**05/24/2018**	**07/23/2019**	**07/23/2019**
Sample Type					**Duplicate**							
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifier		**Deep**	**Deep**			**Deep**	**Deep**	**Deep**	**Deep**	**Deep**	**Deep**	**Shallow**
Site		**South**	**South**	**North**	**North**	**North**	**North**	**North**	**South**	**South**	**South**	**South**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	87	140	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	140	--	--
Chromium	mg/L	**0.52^{abc}**	**0.17^{abc}**	0.0075	0.0065	**0.93^{abc}**	--	0.013	0.005 U	0.005 U	0.005 U	0.005 U
Chromium (dissolved)	mg/L	0.022	--	0.005 U	0.005 U	**0.72^{abc}**	--	--	--	0.005 U	--	--
Chromium III (trivalent)	mg/L	**0.52^{abc}**	**0.17^{abc}**	0.005 U	0.005 U	**0.93^{abc}**	--	0.013	--	0.0050 U	0.01 U	0.01 U
Chromium VI (hexavalent)	mg/L	0.010 U	0.01 U	0.01	**0.013^{c}**	--	0.25 U	0.01 U	0.0050 U	0.0050 U	0.01 U	0.01 U
Iron	mg/L	**2.5^{ab}**	--	**3.3^{ab}**	**3.1^{ab}**	**21^{ab}**	--	--	**0.49^{ab}**	**2^{ab}**	--	--
Iron (dissolved)	mg/L	**2^{ab}**	--	**3.2^{ab}**	**3.1^{ab}**	**15^{ab}**	--	--	--	**1.6^{ab}**	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	14	17	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	18	--	--
Manganese	mg/L	**0.3^{ab}**	**0.46^{ab}**	**0.54^{ab}**	**0.52^{ab}**	**0.75 B^{ab}**	--	**0.53^{ab}**	**1.1^{ab}**	**1.2^{ab}**	**0.16^{ab}**	0.024
Manganese (dissolved)	mg/L	**0.29^{ab}**	--	**0.55^{ab}**	**0.53^{ab}**	**0.67 B^{ab}**	--	--	--	**1^{ab}**	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.04 U	0.04 U	0.04 U	0.04 U	**0.084^{c}**	--	0.04 U	0.042	0.057	0.04 U	0.04 U
Nickel (dissolved)	mg/L	0.04 U	--	0.04 U	0.04 U	0.067	--	--	--	0.047	--	--
Sodium	mg/L	52	**770^{ab}**	23	22	130 B	--	29	32	51	12	45
Sodium (dissolved)	mg/L	53	--	23	22	120 B	--	--	--	49	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	1.04	3.38	--	--	1.419	1.419	0.775	0.64	1.024	0.249	0.566
Conductivity, field	umhos/cm	--	--	0.77	0.77	--	--	--	--	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	-0.03	0.5	0.02	0.02	0.12	0.12	0.9	0	0.2	0.41	1.64
Oxidation reduction potential (ORP), field	millivolts	-74.7	-291.6	-164.6	-164.6	-171	-171	96	16.5	-107	38	116
pH, field	S.U.	7.29	7.35	7.19	7.19	6.64	6.64	6.76	7.51	7.6	7.15	6.68
Temperature, field	Deg C	12.21	--	19.59	19.59	11.87	11.87	--	10.33	13.56	--	--
Temperature, sample	Deg C	--	19.2	--	--	--	--	20.28	--	--	16.59	20.3
Turbidity, field	NTU	5.76	3.93	6.04	6.04	36.5	36.5	4.86	14	10.8	12.5	14.9

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-83D-18	MW-83D-18	MW-83D-18	MW-84D-18	MW-84D-18	MW-84S-17	MW-84S-17	MW-85D-18	MW-85S-17	MW-101	MW-31S-19
Sample Identification		**GW-12607-011818-SK-008**	**GW-12607-011818-SK-009**	**GW-12607A-052418-SK-022**	**GW-12607-011818-SK-007**	**GW-12607A-052318-SK-019**	**GW-12607-011818-SK-006**	**GW-12607A-052318-SK-020**	**GW-12607-011818-SK-010**	**GW-12607-011818-SK-011**	**GW-12607-052120-SK-005**	**GW-12607-072219-DA-001**
Sample Date		**01/18/2018**	**01/18/2018**	**05/24/2018**	**01/18/2018**	**05/23/2018**	**01/18/2018**	**05/23/2018**	**01/18/2018**	**01/18/2018**	**05/21/2020**	**07/22/2019**
Sample Type			**Duplicate**									
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer		**Deep**	**Deep**	**Deep**	**Deep**	**Deep**	**Shallow**	**Shallow**	**Deep**	**Shallow**	**Shallow**	**Deep**
Site		**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**North**	**South/North**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	130	130	150	160	160	140	130	86	120	--	--
Calcium (dissolved)	mg/L	--	--	150	--	150	--	130	--	--	--	--
Chromium	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.00083 J	0.1
Chromium (dissolved)	mg/L	--	--	0.005 U	--	0.005 U	--	0.005 U	--	--	--	--
Chromium III (trivalent)	mg/L	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	--	0.01 U
Chromium VI (hexavalent)	mg/L	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.010 U	**0.11[abc]**
Iron	mg/L	0.26	0.19	0.16	**0.38[ab]**	**0.6[ab]**	**0.99[ab]**	0.1 U	**0.52[ab]**	**0.75[ab]**	--	--
Iron (dissolved)	mg/L	--	--	0.1 U	--	0.13	--	0.1 U	--	--	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	0.050 U	--
Magnesium	mg/L	11	11	13	11	11	12	11	14	20	--	--
Magnesium (dissolved)	mg/L	--	--	13	--	10	--	11	--	--	--	--
Manganese	mg/L	**0.31[ab]**	**0.31[ab]**	**0.3[ab]**	**0.47[ab]**	**0.32[ab]**	**0.079[ab]**	**0.23[ab]**	**0.63[ab]**	**0.58[ab]**	--	**0.29[ab]**
Manganese (dissolved)	mg/L	--	--	**0.29[ab]**	--	**0.29[ab]**	--	**0.23[ab]**	--	--	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	0.00020 U	--
Nickel	mg/L	0.06	0.058	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.12[abc]**	0.04 U	0.0027 J	**0.4[abc]**
Nickel (dissolved)	mg/L	--	--	0.04 U	--	0.04 U	--	0.04 U	--	--	--	--
Sodium	mg/L	11	11	13	6.4	10	16	18	56	7.2	--	18
Sodium (dissolved)	mg/L	--	--	13	--	8.8	--	19	--	--	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	0.020 U	--
Field Parameters												
Conductivity, field	mS/cm	0.69	0.69	0.769	0.79	0.845	0.75	0.785	0.73	0.69	--	0.858
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	0.55	--
Dissolved oxygen (DO), field	mg/L	0	0	0.19	0	0.31	4.6	0.22	0.46	0.51	0.7	0.56
Oxidation reduction potential (ORP), field	millivolts	32.9	32.9	76	93.9	-53	51.6	73	28.5	28.7	-6.7	207
pH, field	S.U.	7.11	7.11	7.14	7.12	7.14	7.00	7.01	7.54	7.25	7.24	7.29
Temperature, field	Deg C	10.01	10.01	14.38	11.61	14.14	9.13	14.81	9.16	8.33	--	--
Temperature, sample	Deg C	--	--	--	--	--	--	--	--	--	15.7	19.94
Turbidity, field	NTU	9.59	9.59	7.41	17.6	16.1	26.3	4.31	13.9	24.2	6.14	8.19

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-A1-12S	MW-A1-19	MW-A1-19	MW-A1-19	MW-OS-4D	MW-OS-4D	MW-OS-4D	MW-OS-4D	MW-OS-4D	MW-OS-4D	MW-OS-4D
Sample Identification		GW-12607-072219-DA-006	GW-12607-081916-SK-030	GW-12607-012317-SK-038	GW-12607-050217-SK-039	GW-12607-092315-EM-013	GW-12607-092315-EM-014	GW-12607-110416-DR-005	GW-12607-120417-DS-003	GW-12607-102918-SK-005	GW-12607A-102519-SK-013	GW-12607-102620-DR-020
Sample Date		07/22/2019	08/19/2016	01/23/2017	05/02/2017	09/23/2015	09/23/2015	11/04/2016	12/04/2017	10/29/2018	10/25/2019	10/26/2020
Sample Type							Duplicate					
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Shallow		Deep	Deep				Deep	Deep	Deep	Deep
Site		South/North	South	South	South	South	South	South	South	South	South	South
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	**14[abc]**
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.045	**190[abc]**	**20[abc]**	**1.8[abc]**	--	--	--	--	0.005 U	0.0011 J	--
Chromium (dissolved)	mg/L	--	**180[abc]**	**18[abc]**	0.055	--	--	--	--	--	--	--
Chromium III (trivalent)	mg/L	0.045	**240[abc]**	**19[abc]**	**1.8[abc]**	--	--	--	--	--	--	--
Chromium VI (hexavalent)	mg/L	0.01 U	**170[abc]**	**1.5[abc]**	0.025 U	--	--	--	--	--	--	--
Iron	mg/L	--	0.1 U	0.15	0.17	--	--	--	--	--	--	--
Iron (dissolved)	mg/L	--	0.1 U	0.1 U	0.1 U	--	--	--	--	--	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	**0.41[ab]**	**0.19[ab]**	0.011 J	0.015 U	--	--	--	--	--	--	--
Manganese (dissolved)	mg/L	--	**0.19[ab]**	0.015 U	0.015 U	--	--	--	--	--	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.04 U	**13[abc]**	**0.43[abc]**	**0.17[abc]**	**410[abc]**	**390[abc]**	**330[abc]**	**150[abc]**	**37[abc]**	**21[abc]**	**14[abc]**
Nickel (dissolved)	mg/L	--	**13[abc]**	**0.28[abc]**	0.072	--	--	--	--	--	--	--
Sodium	mg/L	5 U	170	**4600 B[ab]**	**4500[ab]**	--	--	--	--	--	--	--
Sodium (dissolved)	mg/L	--	170	**4400 B[ab]**	**4500[ab]**	--	--	--	--	--	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	0.371	--	20.8	18.07	--	--	5.01	4.34	3.83	--	--
Conductivity, field	umhos/cm	--	3.136	--	--	4.41	4.41	--	--	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	--	--	--	2.68	2.99
Dissolved oxygen (DO), field	mg/L	2.67	1.52	0	-0.05	0.4	0.4	1.22	0.17	1.05	0	0.09
Oxidation reduction potential (ORP), field	millivolts	272	124.8	-606	-447.3	-86	-86	-53	-119	-56	-63.9	-75
pH, field	S.U.	**6.43[ab]**	6.93	**12.8[ab]**	**11.77[ab]**	**6.31[ab]**	**6.31[ab]**	**6.49[ab]**	**5.92[ab]**	7	6.96	6.74
Temperature, field	Deg C	--	17.61	13.15	13.27	18.85	18.85	--	17.7	17.8	--	--
Temperature, sample	Deg C	19.73	--	--	--	--	--	17.47	--	--	17.36	17.8
Turbidity, field	NTU	15.6	3.05	87.5	40.9	3.54	3.54	1.01	4.45	4.3	1.63	1.28

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-OS-4S	MW-OS-4S	MW-OS-4S	MW-OS-4S	MW-OS-4S	MW-OS-4S	MW-OS-5D	MW-OS-5D	MW-OS-5D	MW-OS-5D	MW-OS-5D
Sample Identification		**GW-12607-092315-EM-015**	**GW-12607-110416-DR-006**	**GW-12607-120417-DS-004**	**GW-12607-102918-SK-006**	**GW-12607A-102519-SK-014**	**GW-12607-102620-DR-021**	**GW-12607-092315-EM-017**	**GW-12607-110416-DR-004**	**GW-12607-120417-DS-002**	**GW-12607-103018-SK-008**	**GW-12607A-102519-SK-016**
Sample Date		**09/23/2015**	**11/04/2016**	**12/04/2017**	**10/29/2018**	**10/25/2019**	**10/26/2020**	**09/23/2015**	**11/04/2016**	**12/04/2017**	**10/30/2018**	**10/25/2019**
Sample Type												
Sample Depth		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifer				**Shallow**	**Shallow**	**Shallow**				**Deep**	**Deep**	**Deep**
Site		**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	0.35	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	--	--	--	0.005 U	0.0014 J	--	--	--	--	0.0015 J	0.00081 J
Chromium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium III (trivalent)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium VI (hexavalent)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Iron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Iron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**13[abc]**	**9.2[abc]**	**32[abc]**	**5.3[abc]**	**2.2[abc]**	**2.2[abc]**	0.02 J	0.04 U	0.011 J	0.012 J	0.012 J
Nickel (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Sodium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Sodium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	1.53	3.89	3.15	--	--	--	4.86	3.79	4.93	--
Conductivity, field	umhos/cm	1.483	--	--	--	--	--	5	--	--	--	--
Conductivity, field	uS/cm	--	--	--	--	2.36	2.61	--	--	--	--	5.58
Dissolved oxygen (DO), field	mg/L	0.31	0.47	0.17	0.91	0.67	0.05	0.29	1.91	0.26	0.43	0.01
Oxidation reduction potential (ORP), field	millivolts	-101	-77	-136	-30	27.5	-7	-81	-83	-91	-50	-41.4
pH, field	S.U.	6.84	6.97	6.57	7.26	7.25	6.89	6.56	6.74	**5.97[ab]**	6.91	6.68
Temperature, field	Deg C	19.98	--	17.8	18.76	--	--	17.29	--	15.6	15.59	--
Temperature, sample	Deg C	--	18.71	--	--	18.38	18.72	--	15.86	--	--	16.06
Turbidity, field	NTU	4.19	1.82	4.77	4.71	15.5	2.11	5.5	1.04	4.51	3.95	0.63

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-OS-5D	MW-OS-6D	MW-OS-6D	MW-OS-7D	MW-OS-7D	MW-OS-7D	MW-OS-8D	MW-OS-8D	MW-OS-8D	MW-OS-8D	MW-OS-8D
Sample Identification		GW-12607-102820-DR-034	GW-12607-092315-EM-021	GW-12607-110416-DR-001	GW-12607-092315-EM-020	GW-12607-110416-DR-002	GW-12607-120417-DS-009	GW-12607-092315-EM-016	GW-12607-110416-DR-003	GW-12607-120417-DS-001	GW-12607-103018-SK-007	GW-12607A-102519-SK-015
Sample Date		10/28/2020	09/23/2015	11/04/2016	09/23/2015	11/04/2016	12/04/2017	09/23/2015	11/04/2016	12/04/2017	10/30/2018	10/25/2019
Sample Type												
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifer		Deep					Deep			Deep	Deep	Deep
Site		South	South	South	South	South	South	South	South	South	South	South
	Units											
Metals												
Boron	mg/L	**59[abc]**	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	--	--	--	--	--	--	--	--	--	0.0018 J	0.00064 J
Chromium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium III (trivalent)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium VI (hexavalent)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Iron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Iron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.014 J	0.017 J	0.04 U	0.027 J	0.04 U	0.028	0.018 J	0.04 U	0.0089 J	0.0085 J	0.009 J
Nickel (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Sodium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Sodium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	1.96	--	2.4	2.75	--	1.7	2.43	3.17	--
Conductivity, field	umhos/cm	--	1.682	--	1.88	--	--	1.86	--	--	--	--
Conductivity, field	uS/cm	5.94	--	--	--	--	--	--	--	--	--	3.04
Dissolved oxygen (DO), field	mg/L	0.06	0.03	1.42	0.02	1.35	0.26	0.3	1.03	0.57	0.59	0
Oxidation reduction potential (ORP), field	millivolts	-46	-80.7	-127	6.3	-66	-161	-51	-28	-102	-42	36.6
pH, field	S.U.	**6.33[ab]**	7.15	7.38	6.92	7.25	7.95	7	7.1	6.65	7.13	6.95
Temperature, field	Deg C	--	19.1	--	14.94	--	12.9	14.21	--	12.8	12.8	--
Temperature, sample	Deg C	15.71	--	15.24	--	13.43	--	--	13.3	--	--	12.53
Turbidity, field	NTU	1.65	2.75	3.33	0.95	1.22	4.29	7.64	3.24	4.53	8.76	0.97

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		MW-OS-8D	MW-S-8D	MW-S-8D	MW-S-8D	MW-S-8S	OW-24	OW-24	OW-24	OW-24	OW-24	OW-24
Sample Identification		GW-12607-102820-DR-033	GW-12607-012017-SK-032	GW-12607-080718-SK-007	GW-12607-020321-DA-009	GW-12607-020321-DA-008	GW-12607-092315-EM-022	GW-12607-081916-SK-029	GW-12607-110416-DR-009	GW-12607-110416-DR-010	GW-12607-011917-SK-022	GW-12607-042817-SK-027
Sample Date		10/28/2020	01/20/2017	08/07/2018	02/03/2021	02/03/2021	09/23/2015	08/19/2016	11/04/2016	11/04/2016	01/19/2017	04/28/2017
Sample Type										Duplicate		
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifier		Deep	Deep	Deep	Deep	Shallow					Deep	Deep
Site		South	South	South	South	South	South	South	South	South	South	South
	Units											
Metals												
Boron	mg/L	0.14	--	--	**5.2[ab]**	0.067 J	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	560
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	570
Chromium	mg/L	--	0.002 J	--	0.001 J	0.0013 J	**84[abc]**	**63[abc]**	**460[abc]**	**460[abc]**	**350[abc]**	**64[abc]**
Chromium (dissolved)	mg/L	--	0.0016 J	--	--	--	--	**64[abc]**	--	--	**320[abc]**	**66[abc]**
Chromium III (trivalent)	mg/L	--	0.0020 J	--	--	--	**19[abc]**	**7.2[abc]**	0.0050 U	0.0050 U	**44[abc]**	**64[abc]**
Chromium VI (hexavalent)	mg/L	--	0.0050 U	--	0.010 U	0.010 U	**65[abc]**	**62[abc]**	**490[abc]**	**480[abc]**	**300[abc]**	**0.11[abc]**
Iron	mg/L	--	**3.2[ab]**	--	--	--	--	0.1 U	--	--	1 U	0.1 U
Iron (dissolved)	mg/L	--	**1.2[ab]**	--	--	--	--	0.1 U	--	--	1 U	0.1 U
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	--	**0.58[ab]**	--	--	--	--	**0.13[ab]**	--	--	**0.21[ab]**	**0.21[ab]**
Manganese (dissolved)	mg/L	--	**0.5[ab]**	--	--	--	--	**0.12[ab]**	--	--	**0.17[ab]**	**0.21[ab]**
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.0088 J	**6.1[abc]**	--	**2.5[abc]**	0.02 U	**11[abc]**	**12[abc]**	**15[abc]**	**14[abc]**	**8.3[abc]**	**4.4[abc]**
Nickel (dissolved)	mg/L	--	**6.3 B[abc]**	--	--	--	--	**12[abc]**	--	--	**8.4 B[abc]**	**4.6[abc]**
Sodium	mg/L	--	39	--	--	--	--	140	--	--	**1500[ab]**	**3000[ab]**
Sodium (dissolved)	mg/L	--	36 B	--	--	--	--	140	--	--	**1300 B[ab]**	**3100[ab]**
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	0.928	0.89	0.68	0.57	--	--	5	5	9.03	12.79
Conductivity, field	umhos/cm	--	--	--	--	--	3.21	2.654	--	--	--	--
Conductivity, field	uS/cm	2.89	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.06	0.13	0.31	0	3.5	0.32	1.6	0.18	0.18	0.75	-0.01
Oxidation reduction potential (ORP), field	millivolts	24	-109	120.4	37.6	199.5	38	113	198	198	-11	42.8
pH, field	S.U.	6.71	7	7.19	7.15	7.13	6.74	7.14	6.66	6.66	6.68	6.96
Temperature, field	Deg C	--	11.13	19.25	--	--	17.87	16.19	--	--	12.13	13.94
Temperature, sample	Deg C	12.32	--	--	9.48	9	--	--	15.54	15.54	--	--
Turbidity, field	NTU	2.42	18.4	3.61	4.02	3.76	2.57	2	1	1	20.2	4.75

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		OW-24	OW-24	OW-24	OW-24	OW-24	PZ-SW-6	PZ-SW-9	PZ-SW-10	PZ-SW-10	PZ-SW-18	TW68S-20
Sample Identification		GW-12607-120417-DS-007	GW-12607-120417-DS-008	GW-12607-102918-SK-001	GW-12607A-102419-SK-011	GW-12607-102620-DR-023	GW-12607A-052418-SK-024	GW-12607-102320-SK-019	GW-12607-102320-SK-015	GW-12607-011921-DA-012	GW-12607-102720-DR-027	GW-12607-102020-SK-001
Sample Date		12/04/2017	12/04/2017	10/29/2018	10/24/2019	10/26/2020	05/24/2018	10/23/2020	10/23/2020	01/19/2021	10/27/2020	10/20/2020
Sample Type			Duplicate									
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifier		Deep	Deep	Deep	Deep	Deep	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Site		South	South	South	South	South	South	South	South	South	South	South
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	**3.2[ab]**	0.24	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	140	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	140	--	--	--	--	--
Chromium	mg/L	**3.2 B[abc]**	**3.7 B[abc]**	0.025	0.019	0.085	0.005 U	0.005 U	0.005 U	0.0016 J	0.00086 J	0.0068
Chromium (dissolved)	mg/L	--	--	--	--	--	0.005 U	--	--	--	--	0.005 U
Chromium III (trivalent)	mg/L	**3.2[abc]**	**3.7[abc]**	0.025	0.019 J	0.072	0.0050 U	0.010 U	--	0.010 U	0.010 UJ	--
Chromium VI (hexavalent)	mg/L	**0.014[c]**	**0.013[c]**	0.010 U	0.010 UJ	**0.012[c]**	0.0050 U	0.010 U	--	0.010 U	0.010 UJ	--
Iron	mg/L	--	--	--	--	--	**4.2[ab]**	--	--	--	--	--
Iron (dissolved)	mg/L	--	--	--	--	--	**3.4[ab]**	--	--	--	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	9	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	8.9	--	--	--	--	--
Manganese	mg/L	--	--	--	--	--	**3.4[ab]**	--	--	--	--	--
Manganese (dissolved)	mg/L	--	--	--	--	--	**3.5[ab]**	--	--	--	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.24[abc]**	**0.24[abc]**	0.042	0.03	**0.13[abc]**	0.04 U	0.039	0.015 J	0.014 J	**0.22[abc]**	0.03
Nickel (dissolved)	mg/L	--	--	--	--	--	0.04 U	--	--	--	--	0.029 J
Sodium	mg/L	--	--	--	--	--	30	--	--	--	--	--
Sodium (dissolved)	mg/L	--	--	--	--	--	30	--	--	--	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	12.34	12.34	12.56	--	--	0.851	--	--	1.86	--	--
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	--	--	--	9.51	5.03	--	1.87	1.68	--	0.51	0.98
Dissolved oxygen (DO), field	mg/L	0.27	0.27	0.44	0	0.08	0.21	0	0	0.07	0.2	0
Oxidation reduction potential (ORP), field	millivolts	-169	-169	-292	-224.6	57	-81	11.6	1	168.3	45	-148.2
pH, field	S.U.	7.84	7.84	**8.83[ab]**	8.12	7.38	7.06	7.2	7.27	7.1	7.03	7.38
Temperature, field	Deg C	15.1	15.1	15.34	--	--	14.62	--	--	--	--	--
Temperature, sample	Deg C	--	--	--	17.22	15.75	--	18.4	16.46	9.9	15.83	15.97
Turbidity, field	NTU	3.75	3.75	1.3	1.01	1.19	22.3	2.44	1.37	2.96	4.76	23.7

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		TW83D-20	TW83S-20	TW83S-20	TW84D-20	TW84S-20	TW85D-20	TW85S-20	TW86D-20	TW86S-20	TW87D-20	TW87S-20
Sample Identification		GW-12607-102220-SK-011	GW-12607-102220-SK-009	GW-12607-102220-SK-010	GW-12607-102220-SK-013	GW-12607-102220-SK-012	GW-12607-102120-SK-006	GW-12607-102120-SK-005	GW-12607-102120-SK-008	GW-12607-102120-SK-007	GW-12607-102020-SK-004	GW-12607-102020-SK-003
Sample Date		10/22/2020	10/22/2020	10/22/2020	10/22/2020	10/22/2020	10/21/2020	10/21/2020	10/21/2020	10/21/2020	10/20/2020	10/20/2020
Sample Type				Duplicate								
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifier		Deep	Shallow	Shallow	Deep	Shallow	Deep	Shallow	Deep	Shallow	Deep	Shallow
Site		North	North	North	North	North	North	North	North	North	South	South
	Units											
Metals												
Boron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Boron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	**0.35[abc]**	0.0017 J	0.00085 J	**0.29[abc]**	0.0011 J	0.011	0.00086 J	**0.22[abc]**	**0.22[abc]**	0.0072	0.005 U
Chromium (dissolved)	mg/L	**0.14[abc]**	--	--	0.018	--	0.0014 J	--	0.032	--	0.005 U	--
Chromium III (trivalent)	mg/L	**0.35[abc]**	0.010 UJ	0.010 UJ	**0.29[abc]**	0.010 U	0.011	0.010 U	**0.22[abc]**	0.017	0.0072 J	0.010 U
Chromium VI (hexavalent)	mg/L	0.010 U	0.010 UJ	0.010 UJ	0.050 U	0.010 U	0.010 U	0.010 U	0.010 U	**0.20[abc]**	0.010 U	0.010 U
Iron	mg/L	--	--	--	--	--	--	--	--	--	--	--
Iron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	--	--	--	--	--	--	--	--	--	--	--
Manganese (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	**0.092[c]**	0.014 J	0.014 J	**0.11[abc]**	0.0031 J	0.0057 J	0.0033 J	**0.08[c]**	0.017 J	0.013 J	0.0097 J
Nickel (dissolved)	mg/L	0.04	--	--	0.012 J	--	0.0034 J	--	0.017 J	--	0.012 J	--
Sodium	mg/L	--	--	--	--	--	--	--	--	--	--	--
Sodium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	0.95	0.83	0.83	0.71	0.43	0.44	0.79	0.8	0.61	0.96	1.21
Dissolved oxygen (DO), field	mg/L	0	0.02	0.02	0	0	0	0	0	0.1	0.02	1.26
Oxidation reduction potential (ORP), field	millivolts	-210.4	-53.8	-53.8	-204.7	-143.7	-200.3	-54.8	-197.9	5.2	-187.4	-104.2
pH, field	S.U.	7.36	6.83	6.83	7.37	7.51	7.41	6.9	7.35	7.01	7.29	7.05
Temperature, field	Deg C	--	--	--	--	--	--	--	--	--	--	--
Temperature, sample	Deg C	16.69	15.97	15.97	16.21	16.54	17.29	15.64	17.66	18.92	14.71	15.47
Turbidity, field	NTU	1000	9.21	9.21	1000	9.32	30.8	5.74	1000	8.4	79.5	3.53

Table B.1

Analytical Results of Groundwater Samples
Area 1 - Metals
Eckles Road Site
Livonia, Michigan

Sample Location		TW88S-20	TW-OS-11D	TW-OS-11S	TW-OS-12D	TW-OS-12S	TW-OS-13D	TW-OS-13D	TW-OS-13S	TW-OS-14D	TW-OS-14S
Sample Identification		**GW-12607-102020-SK-002**	**GW-12607-011321-DA-004**	**GW-12607-011321-DA-001**	**GW-12607-011421-DA-006**	**GW-12607-011321-DA-005**	**GW-12607-011421-DA-008**	**GW-12607-011421-DA-009**	**GW-12607-011421-DA-007**	**GW-12607-011821-DA-011**	**GW-12607-011821-DA-010**
Sample Date		**10/20/2020**	**01/13/2021**	**01/13/2021**	**01/14/2021**	**01/13/2021**	**01/14/2021**	**01/14/2021**	**01/14/2021**	**01/18/2021**	**01/18/2021**
Sample Type								**Duplicate**			
Sample Depth		**-**	**(21-21) ft BGS**	**(11-11) ft BGS**	**(21-21) ft BGS**	**(12-12) ft BGS**	**(19-19) ft BGS**	**(19-19) ft BGS**	**(11-11) ft BGS**	**(21-21) ft BGS**	**(14-14) ft BGS**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifier		**Shallow**	**Deep**	**Shallow**	**Deep**	**Shallow**	**Deep**	**Deep**	**Shallow**	**Deep**	**Shallow**
Site		**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**
	Units										
Metals											
Boron	mg/L	0.2	0.33	**1.4[ab]**	**2.4[ab]**	**1.1[ab]**	**4.6[ab]**	**4.7[ab]**	**0.97[ab]**	--	0.41
Boron (dissolved)	mg/L	--	0.33	--	**2.4[ab]**	**1.1[ab]**	--	--	**0.99[ab]**	**3.2[ab]**	--
Calcium	mg/L	--	--	--	--	--	--	--	--	--	--
Calcium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--
Chromium	mg/L	0.0075	0.026	0.0024 J	0.0023 J	0.0027 J	0.0023 J	0.0023 J	0.002 J	--	0.002 J
Chromium (dissolved)	mg/L	0.005 U	0.013	--	0.0018 J	0.0015 J	--	--	0.0018 J	0.0028 J	--
Chromium III (trivalent)	mg/L	--	--	--	--	--	--	--	--	--	0.0020 J-
Chromium VI (hexavalent)	mg/L	--	--	--	--	--	--	--	--	0.010 UJ	0.010 UJ
Iron	mg/L	--	--	--	--	--	--	--	--	--	--
Iron (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--
Lead	mg/L	--	--	--	--	--	--	--	--	--	--
Magnesium	mg/L	--	--	--	--	--	--	--	--	--	--
Magnesium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--
Manganese	mg/L	--	--	--	--	--	--	--	--	--	--
Manganese (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--
Mercury	mg/L	--	--	--	--	--	--	--	--	--	--
Nickel	mg/L	0.013 J	0.036	0.0065 J	0.0031 J	0.0037 J	0.0063 J	0.0067 J	0.0033 J	--	0.0038 J
Nickel (dissolved)	mg/L	0.014 J	0.014 J	--	0.0038 J	0.0038 J	--	--	0.0039 J	0.013 J	--
Sodium	mg/L	--	--	--	--	--	--	--	--	--	--
Sodium (dissolved)	mg/L	--	--	--	--	--	--	--	--	--	--
Zinc	mg/L	--	--	--	--	--	--	--	--	--	--
Field Parameters											
Conductivity, field	mS/cm	--	1.42	1	1.82	1.29	2.64	2.64	1.22	1.81	1.38
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	0.68	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.04	0.06	0.12	0.02	0.01	0	0	0.04	0	0.32
Oxidation reduction potential (ORP), field	millivolts	-121.2	-68.7	99.9	81.9	0.8	21	21	-15.9	57.1	62.3
pH, field	S.U.	7.28	7.42	7.71	7.42	7.49	7.51	7.51	7.52	7.4	7.11
Temperature, field	Deg C	--	--	--	--	--	--	--	--	--	--
Temperature, sample	Deg C	15.74	10.72	--	11.66	11.18	12.41	12.41	12.07	10.61	11.7
Turbidity, field	NTU	24.8	796	8.56	12.15	42.5	4.9	4.9	16.56	94.67	8.54

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		EGLE Generic Groundwater Cleanup Criteria(1)			HA-14	HA-14	HA-14	HA-14	HA-14	HA-15	HA-15	HA-15	HA-16
Sample Identification		Residential	Non-Residential	Groundwater	GW-12607A-052318-JK-016	GW-12607A-102419-SK-010	GW-12607-102720-DR-028	GW-12607-011921-DA-014	GW-12607-011921-DA-018	GW-12607-080718-SK-005	GW-12607-102320-SK-018	GW-12607-020321-DA-010	GW-12607-102720-DR-026
Sample Date		Drinking Water	Drinking Water	Surface Water	05/23/2018	10/24/2019	10/27/2020	01/19/2021	01/19/2021	08/07/2018	10/23/2020	02/03/2021	10/27/2020
Sample Type				Interface (2)					Duplicate				
Sample Depth		a	b	c	-	-	-	-	-	-	-	-	-
Area					Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifier						Deep	Deep	Deep	Deep		Deep	Deep	Deep
Site					South	South	South	South	South	South	South	South	South
	Units												
Per/Polyfluoroalkyl Substances (PFAS)													
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L				--	1.9 U	1.8 U	1.9 U	1.9 U	--	1.7 U	1.9 U	1.8 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L				--	1.9 U	1.8 U	1.9 U	1.9 U	--	1.7 U	1.9 U	1.8 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L				--	1.9 U	1.8 U	1.9 U	1.9 U	--	1.7 U	1.9 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L				17 U	19 U	1.8 U	1.9 U	1.9 U	18 U	1.7 U	1.9 U	1.8 U
Fluorotelomer sulfonic acid (6:2)	ng/L				17 U	19 U	4.6 U	4.8 U	4.6 U	18 U	4.4 U	4.8 U	4.6 U
Fluorotelomer sulfonic acid (8:2)	ng/L				17 U	19 U	1.8 U	1.9 U	1.9 U	18 U	1.7 U	1.9 U	1.8 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	370	370		--	3.8 U	3.7 U	3.9 U	3.7 U	--	3.5 U	3.8 U	3.7 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L				17 U	19 U	4.6 U	4.8 U	4.6 U	18 U	4.4 U	4.8 U	4.6 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L				17 U	19 U	4.6 U	4.8 U	4.6 U	18 U	4.4 U	4.8 U	4.6 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	420	420		2.7	1.9 U	1.5 J	1.6 J	1.9	1.8 U	1.5 J	1.8 J+	0.85 J
Perfluorobutanoic acid (PFBA)	ng/L				8.5	6.5	7.1	9.2	8.2	6.7	5.3	6.4	3.8 J
Perfluorodecanesulfonic acid (PFDS)	ng/L				1.7 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L				1.7 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.7 UJ	1.9 U	1.8 U
Perfluorododecanoic acid (PFDoDA)	ng/L				1.7 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L				1.7 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	0.82 J	0.63 J	1.8 U
Perfluoroheptanoic acid (PFHpA)	ng/L				1.7 U	1.3 J	1.1 J	1.9 U	1.9 U	1.8 U	1.5 J	1.7 J	1.8 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	51	51		3.4	3.0 J	4.3 U	4.2 J	4.1 J	5.1	23 J	23 J	14 J
Perfluorohexanoic acid (PFHxA)	ng/L	400000	400000		1.7 U	1.7 J	1.3 J	2.1 U	2.5 U	1.8 U	1.7 U	1.9 U	1.8 U
Perfluorononane sulfonic acid (PFNS)	ng/L				1.7 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	6	6		1.7 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U
Perfluorooctane sulfonamide (FOSA)	ng/L				1.7 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	16	16	12	1.7 U	1.9 U	11 U	12 J	12 J	4.3	11 J	1.9 U	1.8 U
Perfluorooctanoic acid (PFOA)	ng/L	8	8	12000	3.8	5.9	5.8	6.2	6.2	3.5	**8.5**[ab]	7.2	1.8 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L				1.7 U	0.41 J	1.8 U	0.91 J	0.85 J	1.8 U	2.2 J	1.6 J	1.8 U
Perfluoropentanoic acid (PFPeA)	ng/L				2.2	1.9 U	1.5 J	2.4 U	2.5 U	2.1	1.7 U	2.1	0.72 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L				1.7 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L				1.7 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L				1.7 U	1.9 U	1.8 U	1.9 U	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U
Total PFOS and PFOA	ng/L				3.8	5.9	--	--	--	7.8	--	--	--
Field Parameters													
Conductivity, field	mS/cm				--	--	--	1.05	1.05	1.41	--	3.29	--
Conductivity, field	umhos/cm				--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm				--	1.06	0.93	--	--	--	3.37	--	3.82
Dissolved oxygen (DO), field	mg/L				--	0	0.06	0.06	0.06	0	0	0.56	0.08
Oxidation reduction potential (ORP), field	millivolts				--	-45.9	-34	64.9	64.9	-99.3	-97.4	-3.1	-48
pH, field	s.u.	6.5 - 8.5	6.5 - 8.5		--	7.18	7.03	6.94	6.94	6.96	7.03	7.14	**6.32**[ab]
Temperature, field	Deg C				--	--	--	--	--	16.86	--	--	--
Temperature, sample	Deg C				--	15.14	14.33	12	12	--	17.22	10.6	14.4
Turbidity, field	NTU				--	0.94	0.59	2.25	2.25	0.66	1.13	4.25	3.66

Notes:

U - Not detected at the associated reporting limit.
J - Estimated concentration.
UJ - Not detected; associated reporting limit is estimated.
J- - Estimated concentration, result may be biased low
J+ - Estimated concentration, result may be biased high.
CI - The peak identified by the data system exhibited chromatographic interference that could not be resolved. There is a reason to suspect there may be a high bias.
I - Value is EMPC (estimated maximum possible concentration)

(1) EGLE - Michigan Department of Environment, Great Lakes and Energy (EGLE) Generic cleanup criteria for residential and nonresidential category, administrative rule R 299.44 effective December 30, 2013, pursuant to Part 201 of 1994 PA 451 as amended

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		HA-MW-11	MW-001	MW-002	MW-003	MW-004	MW-27	MW-27	MW-27	MW-27	MW-27	MW-31D-12	MW-31D-12
Sample Identification		**GW-12607-102620-DR-022**	**WG-012607-101619-KT-001**	**WG-012607-101619-KT-002**	**WG-012607-101619-KT-003**	**GW-12607-052120-SK-004**	**GW-12607A-052318-JK-017**	**GW-12607-080718-SK-004**	**GW-12607-102320-SK-017**	**GW-12607-011921-DA-016**	**GW-12607-080918-SK-022**	**GW-12607-072219-DA-002**
Sample Date		**10/26/2020**	**10/16/2019**	**10/16/2019**	**10/16/2019**	**05/21/2020**	**05/23/2018**	**08/07/2018**	**10/23/2020**	**01/19/2021**	**08/09/2018**	**07/22/2019**
Sample Type												
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifier		**Shallow**				**Shallow**			**Deep**	**Deep**		**Deep**
Site		**South**	**South**	**South**	**North**	**North**	**South**	**South**	**South**	**South**	**South/North**	**South/North**
	Units											
Per/Polyfluoroalkyl Substances (PFAS)												
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.9 U	2.0 U	2.0 U	1.8 U	--	--	1.7 U	1.9 U	--	--
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.9 U	9.8 U	2.0 U	1.8 U	--	--	1.7 U	1.9 U	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.9 U	2.0 U	2.0 U	1.8 U	--	--	1.7 U	1.9 U	--	--
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	19 UJ	98 UJ	20 UJ	18 U	20 U	18 U	1.7 U	1.9 U	500 U	250 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.5 U	19 UJ	50 J+	20 UJ	18 U	20 U	18 U	4.3 U	4.8 U	500 U	250 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	19 U	98 UJ	20 U	18 U	20 U	18 U	1.7 U	1.9 U	500 U	250 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.6 U	3.9 U	3.9 U	3.9 U	3.6 U	--	--	3.5 U	3.8 U	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.5 U	19 U	19 J	20 U	18 U	20 U	18 U	4.3 U	4.8 U	500 U	250 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.5 U	19 U	3.1 J	20 U	18 U	20 U	18 U	4.3 U	4.8 U	500 U	250 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.1 J	1.7 J	7.6 J	0.84 J	0.63 J	2.2	1.8 U	1.6 J	2.1	50 U	2.9 J
Perfluorobutanoic acid (PFBA)	ng/L	8.1	19	240	1.2 J	3.1	3.3	4.6	4.4	5.6	59	25 U
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.9 U	9.8 U	2.0 U	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	25 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.9 U	7.2 J	0.39 J	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	25 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.9 U	2.0 U	2.0 U	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	25 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	0.89 J	9.0 J	2.0 U	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	5.8 J
Perfluoroheptanoic acid (PFHpA)	ng/L	1.7 J	2.0	7.5	0.74 J	0.26 J	2.0 U	1.8 U	0.44 J	1.9 U	50 U	25 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	1.9 U	5.1 J	20	2.0 U	1.8 U	2.5	2.4	1.7 J	2.1 J	50 U	28 J
Perfluorohexanoic acid (PFHxA)	ng/L	2.5	7.9	16 J	0.71 J	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	25 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.9 U	9.8 U	2.0 U	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	25 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	0.28 J	4.3	3.5	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	25 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	0.86 J	1.9 J	0.81 J	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	25 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	1.8 U	**86 J[abc]**	**700[abc]**	**17[abc]**	3.7	2.0 U	2.1	2.5 J	2.5 J	**740[abc]**	**370 J[abc]**
Perfluorooctanoic acid (PFOA)	ng/L	2.1	5.8	**41[ab]**	4.0	0.82 J	2.0 U	3.4	2.3	2.3	50 U	25 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	1.6 J	3.8	2.0 U	1.8 U	2.0 U	1.8 U	0.31 J	0.33 J	50 U	4.7 J
Perfluoropentanoic acid (PFPeA)	ng/L	1.9	9.1	93	2.0 U	1.1 J	2.0 U	1.8 U	0.51 J	1.9 U	50 U	25 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.9 U	2.0 U	2.0 U	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	25 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.9 U	9.8 U	2.0 U	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	25 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.9 U	9.8 U	2.0 U	1.8 U	2.0 U	1.8 U	1.7 U	1.9 U	50 U	25 U
Total PFOS and PFOA	ng/L	--	91.8 J	741	21	--	0	5.5	--	--	740	370 J
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	1.31	--	0.91	10.97	12
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	1.54	564	1.118	371	0.89	--	--	0.93	--	--	--
Dissolved oxygen (DO), field	mg/L	0.03	3.1	0.3	0.62	2.68	--	0	0	0.81	0	24.46
Oxidation reduction potential (ORP), field	millivolts	-41	-115.4	-152.3	-13.2	73.7	--	4.5	-56.8	101.1	-549.9	-485
pH, field	s.u.	7.01	7.05	7.66	7.19	7.29	--	7.21	7.07	7.02	**10.07[ab]**	**10.22[ab]**
Temperature, field	Deg C	--	--	--	--	--	--	15.96	--	--	18.26	--
Temperature, sample	Deg C	15.84	18.4	16.8	15.3	15.84	--	--	16.52	12.35	--	19.11
Turbidity, field	NTU	1.9	26.35	27.44	4.17	211	--	1.30	0.94	2.76	1000 >	13.49

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		MW-31D-12	MW-32D-12	MW-32D-12	MW-32D-12	MW-34D-12	MW-35D-13	MW-35D-13	MW-39D-13	MW-40D-13	MW-40D-13	MW-41D-13
Sample Identification		GW-12607-072219-DA-003	GW-12607A-052318-JK-018	GW-12607-080918-SK-020	GW-12607-080918-SK-021	GW-12607-080918-SK-018	GW-12607-080918-SK-016	GW-12607-121319-SK-005	GW-12607-121319-SK-006	GW-12607-080918-SK-017	GW-12607-121319-SK-007	GW-12607-080918-SK-015
Sample Date		07/22/2019	05/23/2018	08/09/2018	08/09/2018	08/09/2018	08/09/2018	12/13/2019	12/13/2019	08/09/2018	12/13/2019	08/09/2018
Sample Type		Duplicate										
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifier		Deep								Deep	Deep	Deep
Site		South/North	South/North	South/North	South/North	South/North	North	North	North	North	North	North
	Units											
Per/Polyfluoroalkyl Substances (PFAS)												
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	--	--	--	--	--	--	1.9 U	1.8 U	--	2.0 U	--
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	--	--	--	--	--	--	1.9 U	1.8 U	--	2.0 U	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	--	--	--	--	--	--	1.9 U	1.8 U	--	2.0 U	--
Fluorotelomer sulfonic acid (4:2)	ng/L	250 U	20 U	17 U	17 U	17 U	17 U	19 UJ	18 UJ	18 U	20 UJ	17 U
Fluorotelomer sulfonic acid (6:2)	ng/L	250 U	20 UJ	17 U	17 U	17 U	17 U	19 UJ	18 UJ	18 U	20 UJ	17 U
Fluorotelomer sulfonic acid (8:2)	ng/L	250 U	200 UJ	17 U	17 U	17 U	17 U	19 UJ	18 UJ	18 U	20 UJ	17 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	--	--	3.8 U	3.6 U	--	3.9 U	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	250 U	20 UJ	17 U	17 U	17 U	17 U	19 U	18 U	18 U	20 U	17 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	250 U	20 UJ	17 U	17 U	17 U	17 U	19 U	18 U	18 U	20 U	17 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	25 U	56 J	4.2	4.5	1.7 U	1.7 U	1.9 J	0.86 J	1.8	2.0 U	3.6 I
Perfluorobutanoic acid (PFBA)	ng/L	25 U	170 J	64	28	15	7.7	7.6	7.4	13	6.7	45
Perfluorodecanesulfonic acid (PFDS)	ng/L	25 U	2.0 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.8 U	1.8 U	2.0 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	25 U	2.0 UJ	1.7 U	1.7 U	1.7 U	1.7 UI	1.9 U	1.8 U	1.8 U	2.0 U	1.7 U
Perfluorododecanoic acid (PFDoDA)	ng/L	25 U	2.0 UJ	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.8 U	1.8 U	2.0 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	6.6 J	6.2	3.7	3.9	1.7 U	1.7 U	1.9 U	1.8 U	1.8 U	2.0 U	1.7 U
Perfluoroheptanoic acid (PFHpA)	ng/L	3.2 J	2.0 U	1.8	1.7 U	1.7 U	1.7 U	1.1 J	0.89 J	1.8 U	1.2 J	1.7 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	25 J	**69**[ab]	47	45	3.0	1.7 U	1.9 U	1.8 U	1.8 U	2.0 U	1.7 U
Perfluorohexanoic acid (PFHxA)	ng/L	25 U	2.0 U	1.7 U	1.7 U	1.7 U	3.3	2.6	2.1	1.8 U	1.3 J	1.9 I
Perfluorononane sulfonic acid (PFNS)	ng/L	25 U	2.0 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.8 U	1.8 U	2.0 U	1.7 U
Perfluorononanoic acid (PFNA)	ng/L	25 U	2.0 U	1.7 U	1.7 U	1.7 U	1.7 U	0.53 J	1.8 U	1.8 U	2.0 U	1.7 U
Perfluorooctane sulfonamide (FOSA)	ng/L	25 U	2.0 UJ	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	0.36 J	1.8 U	2.0 U	1.7 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	**390 J**[abc]	**190 J**[abc]	**92**[abc]	**93**[abc]	4.9	5.5	6.7	1.9	5.5	4.5	5.7
Perfluorooctanoic acid (PFOA)	ng/L	25 U	3.6	2.9	3.8	5.1	3.4	3.8	2.5	3.0	3.1	2.5
Perfluoropentane sulfonic acid (PFPeS)	ng/L	4.9 J	14	11	10	1.7 U	1.7 U	1.9 U	1.8 U	1.8 U	2.0 U	1.7 U
Perfluoropentanoic acid (PFPeA)	ng/L	25 U	2.0 U	1.7 U	1.7 U	1.7 U	3.1	3.0	3.5	1.8 U	2.0	1.7 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	25 U	2.0 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.8 U	1.8 U	2.0 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	25 U	2.0 U	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.8 U	1.8 U	2.0 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	25 U	2.0 UJ	1.7 U	1.7 U	1.7 U	1.7 U	1.9 U	1.8 U	1.8 U	2.0 U	1.7 U
Total PFOS and PFOA	ng/L	390 J	193.6 J	94.9	96.8	10	8.9	10.5	4.4	8.5	7.6	8.2
Field Parameters												
Conductivity, field	mS/cm	12	--	6.59	6.59	3.62	0.60	--	--	0.65	--	0.83
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	0.83	0.51	--	0.58	--
Dissolved oxygen (DO), field	mg/L	24.46	--	0	0	0	0	0	0	0	0.43	0
Oxidation reduction potential (ORP), field	millivolts	-485	--	-549.1	-549.1	-478	-336.4	-99.5	-53.2	-74.7	15.1	-188.4
pH, field	s.u.	**10.22**[ab]	--	**10.38**[ab]	**10.38**[ab]	**8.78**[ab]	7.54	7.57	7.56	7.35	7.43	7.18
Temperature, field	Deg C	--	--	18.19	18.19	20.14	18.91	--	--	19.14	--	18.62
Temperature, sample	Deg C	19.11	--	--	--	--	--	12.21	12.23	--	11.55	--
Turbidity, field	NTU	13.49	--	5.21	5.21	39.6	8.54	1.53	3.81	2.46	1.31	5.69

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		MW-41D-13	MW-66D-16	MW-67D-16	MW-67D-16	MW-67D-16	MW-67D-16	MW-67S-19	MW-67S-19	MW-68D-16	MW-68D-16	MW-68D-16
Sample Identification		GW-12607-121319-SK-004	GW-12607-080818-SK-013	GW-12607-080818-SK-012	GW-12607-072319-DA-011	GW-12607-102720-DR-030	GW-12607-102720-DR-031	GW-12607-072319-DA-010	GW-12607-102720-DR-032	GW-12607-080618-SK-002	GW-12607A-102419-SK-007	GW-12607-102320-SK-014
Sample Date		12/13/2019	08/08/2018	08/08/2018	07/23/2019	10/27/2020	10/27/2020	07/23/2019	10/27/2020	08/06/2018	10/24/2019	10/23/2020
Sample Type							Duplicate					
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifier		Deep	Deep	Deep	Deep	Deep	Deep	Shallow	Shallow	Deep	Deep	Deep
Site		North	South	South	South	South	South	South	South	South	South	South
	Units											
Per/Polyfluoroalkyl Substances (PFAS)												
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.9 U	--	--	--	1.8 U	1.8 U	--	1.9 U	--	1.8 U	1.7 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.9 U	--	--	--	1.8 U	1.8 U	--	1.9 U	--	1.8 U	1.7 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.9 U	--	--	--	1.8 U	1.8 U	--	1.9 U	--	1.8 U	1.7 U
Fluorotelomer sulfonic acid (4:2)	ng/L	19 UJ	18 U	17 U	19 U	1.8 U	1.8 U	19 U	1.9 U	17 U	18 U	1.7 U
Fluorotelomer sulfonic acid (6:2)	ng/L	19 UJ	18 U	17 U	19 U	4.5 U	4.5 U	2.7 J	4.7 U	17 U	18 UJ	4.3 U
Fluorotelomer sulfonic acid (8:2)	ng/L	19 UJ	18 U	17 U	19 UJ	1.8 U	1.8 U	19 U	1.9 U	17 U	18 UJ	1.7 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.7 U	--	--	--	3.6 U	3.6 U	--	3.8 U	--	3.7 U	3.5 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	19 U	18 U	17 U	19 U	4.5 U	4.5 U	19 U	4.7 U	17 U	18 U	4.3 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	19 U	18 U	17 U	19 U	4.5 U	4.5 U	19 U	4.7 U	17 U	18 U	4.3 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.9 U	1.8 U	1.7 U	1.1 J	1.6 J	2.2	1.4 J	2.0	1.7 U	1.8 U	1.7
Perfluorobutanoic acid (PFBA)	ng/L	1.9 U	1.8 UCl	8.7 Cl	17	7.8	7.6	4.8	9.2	14	16	8.1
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.7 U	1.8 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.7 U	1.8 U	1.7 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.7 U	1.8 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.9 U	1.8	6.9	5.0 J	4.1 U	4.7 U	0.24 J	1.9 U	1.7 U	3.5 J	3.4 J
Perfluoroheptanoic acid (PFHpA)	ng/L	1.8 J	1.8 U	1.7	1.3 J	1.0 J	1.0 J	2.1	4.4	2.2	3.5	1.7
Perfluorohexane sulfonic acid (PFHxS)	ng/L	1.9 U	7.5	19	20 J	24 U	24 U	2.3	4.0	7.2	15 J	16 J
Perfluorohexanoic acid (PFHxA)	ng/L	3.1	9.3	1.7 U	1.9 U	1.8 U	1.8 U	4.4	5.7	5.2	4.5	2.4 J
Perfluorononane sulfonic acid (PFNS)	ng/L	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.7 U	1.8 U	1.7 U
Perfluorononanoic acid (PFNA)	ng/L	0.59 J	1.8 U	1.7 U	0.45 J	1.8 U	0.32 J	1.9 U	1.9 U	1.7 U	1.5 J	0.96 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.7 U	1.8 U	1.7 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	**19**[abc]	**98**[abc]	**230**[abc]	**170 J**[abc]	140 U	150 U	**14**[c]	20 U	**20**[abc]	**91 J**[abc]	**120 J**[abc]
Perfluorooctanoic acid (PFOA)	ng/L	3.5	2.6	6.8	6.5	5.4	5.5	5.1	**14**[ab]	**8.9**[ab]	**14**[ab]	**11**[ab]
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.9 U	1.8 U	3.1	3.5 J	5.1 J	8.2 J	0.29 J	0.41 J	1.8	2.2 J	2.4 J
Perfluoropentanoic acid (PFPeA)	ng/L	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U	1.8 U	2.5	2.8	4.0	1.8 U	0.92 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.7 U	1.8 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.7 U	1.8 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	1.8 U	1.7 U	1.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.7 U	1.8 U	1.7 U
Total PFOS and PFOA	ng/L	22.5	100.6	236.8	176.5 J	--	--	19.1	--	28.9	105 J	--
Field Parameters												
Conductivity, field	mS/cm	--	5.71	3.85	3.61	--	--	0.775	--	2.34	--	--
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	0.65	--	--	--	6.83	6.83	--	1.4	--	3.45	3.59
Dissolved oxygen (DO), field	mg/L	0	0	0	0.61	0	0	4.72	0.73	0	0	0
Oxidation reduction potential (ORP), field	millivolts	16.4	-354.6	-318.4	-41	-282	-282	164	-157	-32.3	2.1	-109
pH, field	s.u.	7.11	7.53	7.72	6.76	7.73	7.73	6.56	7.34	7.09	7.23	7.27
Temperature, field	Deg C	--	17.88	16.65	--	--	--	--	--	19.90	--	--
Temperature, sample	Deg C	11.7	--	--	17.67	12.89	12.89	18.26	13.9	--	14.94	16.82
Turbidity, field	NTU	4.48	4.22	6.19	24.8	2.71	2.71	16.2	0.61	16.6	4.04	10.9

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		MW-68D-16	MW-69D-16	MW-69D-16	MW-69D-16	MW-69D-16	MW-69D-16	MW-69S-19	MW-69S-19	MW-69S-19	MW-70D-16	MW-70D-16
Sample Identification		GW-12607-011921-DA-013	GW-12607-042817-SK-026	GW-12607-080818-SK-011	GW-12607-072319-DA-009	GW-12607A-102319-SK-005	GW-12607-102620-DR-024	GW-12607-072319-DA-008	GW-12607A-102319-SK-004	GW-12607-102620-DR-025	GW-12607-042817-SK-024	GW-12607-042817-SK-025
Sample Date		01/19/2021	04/28/2017	08/08/2018	07/23/2019	10/23/2019	10/26/2020	07/23/2019	10/23/2019	10/26/2020	04/28/2017	04/28/2017
Sample Type												Duplicate
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01	Area 01
Aquifier		Deep	Deep	Deep	Deep	Deep	Deep	Shallow	Shallow	Shallow	Deep	Deep
Site		South	South	South	South	South	South	South	South	South	South	South
	Units											
Per/Polyfluoroalkyl Substances (PFAS)												
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	--	--	--	1.8 U	1.8 U	--	1.9 U	1.9 U	--	--
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	--	--	--	1.8 U	1.8 U	--	1.9 U	1.9 U	--	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	--	--	--	1.8 U	1.8 U	--	1.9 U	1.9 U	--	--
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	--	17 U	180 U	180 U	36 U	19 U	19 U	1.9 U	--	--
Fluorotelomer sulfonic acid (6:2)	ng/L	4.5 U	18 U	17 U	89 U	18 U	4.5 U	19 U	19 UJ	4.7 U	19 U	19 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	--	17 U	89 U	18 U	1.8 U	19 U	19 U	1.9 U	--	--
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.6 U	--	--	--	3.6 U	3.6 U	--	3.8 U	3.7 U	--	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.5 U	--	17 U	89 U	18 U	4.5 U	19 U	19 U	4.7 U	--	--
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.5 U	--	17 U	89 U	18 U	4.5 U	19 U	19 U	4.7 U	--	--
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.8 U	1.8 U	2.0	3.0 J	1.8 U	4.7	1.3 J	1.9 U	1.3 J	2.4	2.5
Perfluorobutanoic acid (PFBA)	ng/L	13	140 J	1.7 U	5.3 J	1.8 U	21 J-	7.5	8.1	24	14 J	13 J
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.7 U	8.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.7 U	8.9 U	1.8 U	1.8 U	0.83 J	1.2 J	1.9 U	1.9 U	1.9 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.8 U	1.7 U	8.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 UJ	1.9 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	2.9 J	1.8 U	1.7 U	8.9 U	1.8 J	1.2 J	1.6 J	1.7 J	1.9 U	1.9 U	1.9 U
Perfluoroheptanoic acid (PFHpA)	ng/L	2.4	1.8 U	1.7 U	1.5 J	2.0	1.5 J	5.4	4.1	6.4	1.9 U	1.9 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	15 J	11	12	49	**100**[ab]	15 J	4.7	2.8	3.6	11	9.6
Perfluorohexanoic acid (PFHxA)	ng/L	2.0 U	36 UJ	1.7 U	8.9 UJ	18 U	36 U	5.4	5.6	9.0	1.9 UJ	1.9 UJ
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	--	1.7 U	8.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	--	--
Perfluorononanoic acid (PFNA)	ng/L	0.73 J	1.8 U	1.7 U	8.9 U	1.8 U	1.8 U	**7.2**[ab]	**6.5**[ab]	4.0	1.9 U	1.9 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.8 UJ	1.7 U	8.9 U	1.8 U	1.8 U	1.9 U	0.43 J	1.9 U	1.9 UJ	1.9 UJ
Perfluorooctane sulfonic acid (PFOS)	ng/L	**120 J**[abc]	5.6	**13**[c]	**22**[abc]	**21 J**[abc]	**14 J**[c]	**780**[abc]	**500 J**[abc]	**260**[abc]	**27**[abc]	**24**[abc]
Perfluorooctanoic acid (PFOA)	ng/L	**10**[ab]	3.4	4.6	4.7 J	6.0	4.9	**27**[ab]	**18**[ab]	**14**[ab]	4.2	4.0
Perfluoropentane sulfonic acid (PFPeS)	ng/L	2.3 J	--	2.1	8.9 U	2.0 J	3.9 J	0.66 J	1.9 U	1.9 U	--	--
Perfluoropentanoic acid (PFPeA)	ng/L	2.8 U	580 J	1.7 U	8.9 U	1.8 U	1.8 U	3.8	1.9 U	8.2	120 J	120 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.7 U	8.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.8 U	1.7 U	8.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.7 U	8.9 U	1.8 U	1.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Total PFOS and PFOA	ng/L	--	9	17.6	26.7 J	27 J	--	807	518 J	--	31.2	28
Field Parameters												
Conductivity, field	mS/cm	3.84	17.11	10.9	12.01	--	--	0.53	--	--	3.57	3.57
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	--	--	--	--	14.58	17.91	--	0.74	0.75	--	--
Dissolved oxygen (DO), field	mg/L	0.05	-0.01	0	0.01	0	0.01	0.1	0.02	0.17	0	0
Oxidation reduction potential (ORP), field	millivolts	156.2	62.2	224.9	1	35.1	67	39.4	37.7	-22	103.3	103.3
pH, field	s.u.	7.74	**6.03**[ab]	**6.31**[ab]	6.5	6.54	**6.35**[ab]	7.33	7.54	7.26	**6.4**[ab]	**6.4**[ab]
Temperature, field	Deg C	--	13.69	18.43	--	--	--	--	--	--	14.8	14.8
Temperature, sample	Deg C	11.52	--	--	17.26	14.53	13.65	19.76	16.23	15	--	--
Turbidity, field	NTU	2.96	17.7	3.59	3.19	1.54	0.79	13.91	6.58	5.95	10.4	10.4

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		MW-70D-16	MW-70D-16	MW-70D-16	MW-72D-16	MW-72D-16	MW-74D-16	MW-74S-19	MW-74S-19	MW-76D-16	MW-77D-16	MW-80D-16
Sample Identification		**GW-12607-080718-SK-009**	**GW-12607-080718-SK-010**	**GW-12607-102720-DR-029**	**GW-12607-011917-SK-025**	**GW-12607-011917-SK-026**	**GW-12607-072319-DA-012**	**GW-12607-072319-DA-013**	**GW-12607-072319-DA-014**	**GW-12607-080718-SK-008**	**GW-12607-020321-DA-007**	**GW-12607-080818-SK-014**
Sample Date		**08/07/2018**	**08/07/2018**	**10/27/2020**	**01/19/2017**	**01/19/2017**	**07/23/2019**	**07/23/2019**	**07/23/2019**	**08/07/2018**	**02/03/2021**	**08/08/2018**
Sample Type			**Duplicate**			**Duplicate**			**Duplicate**			
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifier		**Deep**	**Deep**	**Deep**	**Deep**	**Deep**	**Deep**	**Shallow**	**Shallow**	**Deep**	**Deep**	**Deep**
Site		**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**
	Units											
Per/Polyfluoroalkyl Substances (PFAS)												
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	--	--	19 U	--	--	--	--	--	--	1.9 U	--
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	--	--	19 U	--	--	--	--	--	--	1.9 U	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	--	--	19 U	--	--	--	--	--	--	1.9 U	--
Fluorotelomer sulfonic acid (4:2)	ng/L	43 U	35 U	19 U	--	--	19 U	18 U	19 U	17 U	1.9 U	18 U
Fluorotelomer sulfonic acid (6:2)	ng/L	43 U	35 U	49 U	20 U	20 U	19 U	4.8 J	4.4 J	17 U	4.7 U	18 U
Fluorotelomer sulfonic acid (8:2)	ng/L	43 U	35 U	19 U	--	--	19 U	18 U	19 U	17 U	1.9 U	18 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	39 U	--	--	--	--	--	--	3.7 U	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	43 U	35 U	49 U	--	--	19 U	18 U	19 U	17 U	4.7 U	18 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	43 U	35 U	49 U	--	--	19 U	18 U	19 U	17 U	4.7 U	18 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	4.3 U	3.5 U	19 U	3.0	3.2	0.94 J	1.5 J	1.8 J	1.7 U	1.1 J	1.8 U
Perfluorobutanoic acid (PFBA)	ng/L	24	22	49 U	2.0 UJ	2.0 UJ	4.6	3.5	3.6	8.2	4.0 J	42
Perfluorodecanesulfonic acid (PFDS)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 U	1.9 U	1.8 U	1.9 U	1.7 U	1.9 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 U	1.9 U	1.8 U	0.37 J	1.7 U	1.9 U	1.8 U
Perfluorododecanoic acid (PFDoDA)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 U	1.9 U	1.8 U	1.9 U	1.7 U	1.9 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 U	0.34 J	0.27 J	1.9 U	1.7 U	1.9 U	5.7
Perfluoroheptanoic acid (PFHpA)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 U	0.71 J	0.38 J	0.41 J	1.7 U	0.53 J	1.8 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	31	29	22 U	17	18	3.5	1.8 U	1.9 U	3.3	3.8 J	12
Perfluorohexanoic acid (PFHxA)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 UJ	1.9 U	1.8 U	0.60 J	1.7 U	1.9 U	4.3
Perfluorononane sulfonic acid (PFNS)	ng/L	4.3 U	3.5 U	19 U	--	--	1.9 U	1.8 U	1.9 U	1.7 U	1.9 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 U	1.9 U	0.76 J	0.72 J	1.7 U	1.9 U	1.8 U
Perfluorooctane sulfonamide (FOSA)	ng/L	4.3 U	3.5 U	19 U	2.0 UJ	2.0 UJ	1.9 U	1.8 U	1.9 U	1.7 U	1.9 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	**60[abc]**	**55[abc]**	40 U	**15[c]**	**15[c]**	8.1	**20[abc]**	**22[abc]**	4.7	1.9 U	**360[abc]**
Perfluorooctanoic acid (PFOA)	ng/L	**9.8[ab]**	**8.7[ab]**	19 U	7.1 J	8.0 J	3.2	2.1	2.3	4.5	3.5	**13[ab]**
Perfluoropentane sulfonic acid (PFPeS)	ng/L	5.8	5.4	6.3 J	--	--	0.52 J	1.8 U	0.39 J	1.7 U	0.67 J	2.4
Perfluoropentanoic acid (PFPeA)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 U	1.3 J	0.56 J	0.65 J	1.7 U	0.59 J	1.8 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 U	1.9 U	1.8 U	1.9 U	1.7 U	1.9 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 U	1.9 U	1.8 U	1.9 U	1.7 U	1.9 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	4.3 U	3.5 U	19 U	2.0 U	2.0 U	1.9 U	1.8 U	1.9 U	1.7 U	1.9 U	1.8 U
Total PFOS and PFOA	ng/L	69.8	63.7	--	22.1 J	23 J	11.3	22.1	24.3	9.2	--	373
Field Parameters												
Conductivity, field	mS/cm	20.68	20.68	--	4.51	4.51	0.664	0.48	0.48	1.63	0.64	1.76
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	--	--	3.37	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0	0	0	0.98	0.98	0	0	0	0	0	0
Oxidation reduction potential (ORP), field	millivolts	-569	-569	-326	-205	-205	-103	-23	-23	-96.9	211.2	-228.4
pH, field	s.u.	**11.70[ab]**	**11.70[ab]**	8.03	6.9	6.9	7.34	7.41	7.41	6.86	7.11	7.35
Temperature, field	Deg C	17.50	17.50	--	11.07	11.07	--	--	--	18.25	--	17.81
Temperature, sample	Deg C	--	--	14.3	--	--	19.07	20.49	20.49	--	7.35	--
Turbidity, field	NTU	18.3	18.3	0.94	18.3	18.3	9.8	9.16	9.16	5.46	4.12	5.00

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		MW-82D-18	MW-82D-18	MW-82S-19	MW-83D-18	MW-84D-18	MW-84S-17	MW-101	MW-108	MW-108	MW-109	MW-31S-19
Sample Identification		**GW-12607A-052418-SK-023**	**GW-12607-072319-DA-016**	**GW-12607-072319-DA-015**	**GW-12607A-052418-SK-022**	**GW-12607A-052318-JK-019**	**GW-12607A-052318-JK-020**	**GW-1260 7-052120-SK-005**	**GW-12607-052120-SK-002**	**GW-12607-052120-SK-003**	**GW-12607-052120-SK-001**	**GW-12607-072219-DA-001**
Sample Date		**05/24/2018**	**07/23/2019**	**07/23/2019**	**05/24/2018**	**05/23/2018**	**05/23/2018**	**05/21/2020**	**05/21/2020**	**05/21/2020**	**05/21/2020**	**07/22/2019**
Sample Type										**Duplicate**		
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifier		**Deep**	**Deep**	**Shallow**	**Deep**	**Deep**	**Shallow**	**Shallow**				**Deep**
Site		**South**	**South**	**South**	**South**	**South**	**South**	**North**	**North**	**North**	**North**	**South/North**
	Units											
Per/Polyfluoroalkyl Substances (PFAS)												
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	--	--	--	--	--	--	1.7 U	1.8 U	1.8 U	1.8 U	--
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	--	--	--	--	--	--	1.7 U	1.8 U	1.8 U	1.8 U	--
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	--	--	--	--	--	--	1.7 U	1.8 U	1.8 U	1.8 U	--
Fluorotelomer sulfonic acid (4:2)	ng/L	18 U	19 U	19 U	18 U	18 U	17 U	17 UJ	18 UJ	18 UJ	18 U	20 U
Fluorotelomer sulfonic acid (6:2)	ng/L	18 U	19 U	4.8 J	18 U	18 UJ	17 UJ	17 U	18 U	18 U	18 U	20 U
Fluorotelomer sulfonic acid (8:2)	ng/L	18 U	19 U	19 U	18 U	18 UJ	17 UJ	17 U	18 U	18 U	18 U	20 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	--	--	--	--	3.5 U	3.5 U	3.6 U	3.7 U	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	18 U	19 U	19 U	18 U	18 U	17 U	17 U	18 U	18 U	18 U	20 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	18 U	19 U	19 U	18 U	18 U	17 U	17 U	18 U	18 U	18 U	20 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.8 U	0.49 J	1.9	1.8 U	3.1	3.3	1.3 J	1.0 J	1.0 J	0.76 J	1.3 J
Perfluorobutanoic acid (PFBA)	ng/L	8.0	5.7	4.4	9.0 J	5.3	9.4	11	6.8	6.9	4.8	5.7
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	1.8 U	2.0 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	1.8 U	2.0 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	1.8 U	2.0 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	2.9 J	0.87 J
Perfluoroheptanoic acid (PFHpA)	ng/L	1.8 U	1.2 J	1.4 J	1.8 U	1.8 U	2.1	0.53 J	0.89 J	0.98 J	1.7 J	1.0 J
Perfluorohexane sulfonic acid (PFHxS)	ng/L	1.8 U	1.9 U	3.2	1.8 U	1.8 U	1.8	1.7 U	1.8 U	1.8 U	4.6 J	3.4 J
Perfluorohexanoic acid (PFHxA)	ng/L	1.8 U	2.2	1.9	1.8 U	1.8 U	4.7	1.7 U	2.2	2.1	3.9	2.2
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	0.19 J	2.0 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.7 U	1.7 U	0.30 J	0.31 J	0.47 J	0.29 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	1.8 U	2.0 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	2.3	2.9	4.7	2.2	2.8	7.5	0.86 J	6.8 J	6.9 J	**290[abc]**	**72 J[abc]**
Perfluorooctanoic acid (PFOA)	ng/L	2.8	2.1	4.2	1.9	1.8	3.2	1.4 J	2.2	2.0	6.3	3.5
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	1.9 U	0.39 J	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	0.59 J	0.83 J
Perfluoropentanoic acid (PFPeA)	ng/L	2.1	1.4 J	1.4 J	1.8 U	1.8 U	2.9	1.1 J	1.2 J	1.3 J	1.5 J	1.3 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	1.8 U	2.0 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	1.8 U	2.0 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.9 U	1.9 U	1.8 U	1.8 U	1.7 U	1.7 U	1.8 U	1.8 U	1.8 U	2.0 U
Total PFOS and PFOA	ng/L	5.1	5	8.9	4.1	4.6	10.7	--	--	--	--	75.5 J
Field Parameters												
Conductivity, field	mS/cm	1.024	0.249	0.566	0.769	--	--	--	--	--	--	0.858
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	--	--	--	--	--	--	0.55	1.83	1.83	0.35	--
Dissolved oxygen (DO), field	mg/L	0.2	0.41	1.64	0.19	--	--	0.7	6.86	6.86	6.05	0.56
Oxidation reduction potential (ORP), field	millivolts	-107	38	116	76	--	--	-6.7	67.6	67.6	58.1	207
pH, field	s.u.	7.6	7.15	6.68	7.14	--	--	7.24	7.17	7.17	7.86	7.29
Temperature, field	Deg C	13.56	--	--	14.38	--	--	--	--	--	--	--
Temperature, sample	Deg C	--	16.59	20.3	--	--	--	15.7	14.4	14.4	14.78	19.94
Turbidity, field	NTU	10.8	12.5	14.9	7.41	--	--	6.14	1.75	1.75	383	8.19

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		MW-A1-12S	MW-A1-14S	MW-OS-4D	MW-OS-4S	MW-S-8D	MW-S-8D	MW-S-8S	MW-S-8S	OW-24	OW-24	OW-24
Sample Identification		**GW-12607-072219-DA-006**	**GW-12607A-102319-SK-001**	**GW-12607-102620-DR-020**	**GW-12607-102620-DR-021**	**GW-12607-080718-SK-007**	**GW-12607-020321-DA-009**	**GW-12607-080718-SK-006**	**GW-12607-020321-DA-008**	**GW-12607-011917-SK-022**	**GW-12607-042817-SK-027**	**GW-12607-102620-DR-023**
Sample Date		**07/22/2019**	**10/23/2019**	**10/26/2020**	**10/26/2020**	**08/07/2018**	**02/03/2021**	**08/07/2018**	**02/03/2021**	**01/19/2017**	**04/28/2017**	**10/26/2020**
Sample Type												
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifier		**Shallow**	**Shallow**	**Deep**	**Shallow**	**Deep**	**Deep**		**Shallow**	**Deep**	**Deep**	**Deep**
Site		**South/North**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**
	Units											
Per/Polyfluoroalkyl Substances (PFAS)												
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	--	1.8 U	1.8 U	1.8 U	--	1.8 U	--	1.9 U	--	--	1.9 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	--	1.8 U	1.8 U	1.8 U	--	1.8 U	--	1.9 U	--	--	1.9 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	--	0.25 J	1.8 U	1.8 U	--	1.8 U	--	1.9 U	--	--	1.9 U
Fluorotelomer sulfonic acid (4:2)	ng/L	19 U	18 UJ	1.8 U	1.8 U	16 U	1.8 U	17 U	1.9 U	--	--	1.9 U
Fluorotelomer sulfonic acid (6:2)	ng/L	2.3 J	18 UJ	4.5 U	4.5 U	16 U	4.6 U	17 U	4.6 U	20 U	19 U	4.7 U
Fluorotelomer sulfonic acid (8:2)	ng/L	19 U	18 UJ	1.8 U	1.8 U	16 U	1.8 U	17 U	1.9 U	--	--	1.9 UJ
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	3.6 U	3.6 U	3.6 U	--	3.7 U	--	3.7 U	--	--	3.8 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	19 U	18 U	4.5 U	4.5 U	16 U	4.6 U	17 U	4.6 U	--	--	4.7 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	19 U	18 U	4.5 U	4.5 U	16 U	4.6 U	17 U	4.6 U	--	--	4.7 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.1 J	1.8 U	1.1 J	3.3	1.6 U	1.6 J	2.2	3.1	2.0 U	6.8	4.6 J
Perfluorobutanoic acid (PFBA)	ng/L	2.8	1.8 U	5.5	13	4.9	7.6	1.7	12	2.0 U	1.9 UJ	12
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	1.8 U	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	2.0 U	1.9 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	1.0 J	1.8 U	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	2.0 U	1.9 U	1.9 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	1.8 U	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	2.0 U	1.9 U	1.9 UJ
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.9 U	1.7 J	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	2.0 U	2.7	3.2 J
Perfluoroheptanoic acid (PFHpA)	ng/L	0.76 J	1.0 J	0.31 J	0.40 J	1.6 U	0.76 J	1.7 U	1.9 U	2.0 U	2.0	1.2 J
Perfluorohexane sulfonic acid (PFHxS)	ng/L	1.9 U	5.5	1.8 U	1.8 U	3.0	2.7 J	2.7	2.0	11	17	26 J
Perfluorohexanoic acid (PFHxA)	ng/L	1.9	3.8	1.8 U	1.5 J	1.6 U	1.1 J	1.7 U	1.9 U	2.0 U	1.9 UJ	1.9 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.9 U	1.8 U	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	--	--	1.9 U
Perfluorononanoic acid (PFNA)	ng/L	0.41 J	0.79 J	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	2.0 U	1.9 U	0.28 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 U	1.8 U	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	2.0 UJ	1.9 UJ	1.9 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	1.9	**150**[abc]	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	0.55 J	**17**[abc]	**46**[abc]	**130 J**[abc]
Perfluorooctanoic acid (PFOA)	ng/L	1.9 U	7.0	1.8 U	1.0 J	2.9	2.9	1.7 U	1.1 J	2.3 J	4.7	4.3
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.9 U	0.91 J	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	--	--	4.7 J
Perfluoropentanoic acid (PFPeA)	ng/L	1.3 J	4.6	1.3 J	2.6	1.6 U	1.3 J	1.7 U	0.75 J	2.0 U	370 J	1.9 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	1.8 U	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	2.0 U	1.9 U	1.9 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	1.8 U	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	2.0 U	1.9 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	1.8 U	1.8 U	1.8 U	1.6 U	1.8 U	1.7 U	1.9 U	2.0 U	1.9 U	1.9 U
Total PFOS and PFOA	ng/L	1.9	157	--	--	2.9	--	0	--	19.3 J	50.7	--
Field Parameters												
Conductivity, field	mS/cm	0.371	--	--	--	0.89	0.68	0.76	0.57	9.03	12.79	--
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	--	1.25	2.99	2.61	--	--	--	--	--	--	5.03
Dissolved oxygen (DO), field	mg/L	2.67	0	0.09	0.05	0.31	0	1.77	3.5	0.75	-0.01	0.08
Oxidation reduction potential (ORP), field	millivolts	272	-168.9	-75	-7	120.4	37.6	214	199.5	-11	42.8	57
pH, field	s.u.	**6.43**[ab]	7.25	6.74	6.89	7.19	7.15	7.24	7.13	6.68	6.96	7.38
Temperature, field	Deg C	--	--	--	--	19.25	--	19.32	--	12.13	13.94	--
Temperature, sample	Deg C	19.73	18.31	17.8	18.72	--	9.48	--	9	--	--	15.75
Turbidity, field	NTU	15.6	21.2	1.28	2.11	3.61	4.02	1.60	3.76	20.2	4.75	1.19

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		PZ-SW-5	PZ-SW-6	PZ-SW-9	PZ-SW-9	PZ-SW-10	PZ-SW-10	PZ-SW-10	PZ-SW-10	PZ-SW-10	PZ-SW-18	TW68S-20
Sample Identification		**GW-12607A-052418-SK-021**	**GW-12607A-052418-SK-024**	**GW-12607-121319-SK-001**	**GW-12607-102320-SK-019**	**GW-12607-080618-SK-001**	**GW-12607A-102419-SK-006**	**GW-12607-121319-SK-002**	**GW-12607-102320-SK-015**	**GW-12607-011921-DA-012**	**GW-12607-102720-DR-027**	**GW-12607-102020-SK-001**
Sample Date		**05/24/2018**	**05/24/2018**	**12/13/2019**	**10/23/2020**	**08/06/2018**	**10/24/2019**	**12/13/2019**	**10/23/2020**	**01/19/2021**	**10/27/2020**	**10/20/2020**
Sample Type												
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifier			**Shallow**	**Shallow**	**Shallow**	**Shallow**	**Shallow**	**Shallow**	**Shallow**	**Shallow**	**Shallow**	**Shallow**
Site		**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**
	Units											
Per/Polyfluoroalkyl Substances (PFAS)												
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	--	--	1.9 U	1.7 U	--	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	--	--	1.9 U	1.7 U	--	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	--	--	1.9 U	1.7 U	--	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	18 U	20 U	19 UJ	1.7 U	25 U	18 U	19 UJ	1.8 U	1.8 UJ	1.9 U	1.8 UJ
Fluorotelomer sulfonic acid (6:2)	ng/L	18 U	20 U	19 UJ	4.3 U	25 U	18 U	19 UJ	4.4 U	4.4 UJ	4.7 U	4.5 UJ
Fluorotelomer sulfonic acid (8:2)	ng/L	18 U	20 UJ	19 U	1.7 U	25 U	18 U	19 UJ	1.8 U	1.8 U	1.9 U	1.8 UJ
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	--	--	3.9 U	3.5 U	--	3.6 U	3.7 U	3.5 U	3.6 U	3.7 U	3.6 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	18 U	20 U	19 U	4.3 U	25 U	18 U	19 U	4.4 U	4.4 U	4.7 U	4.5 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	18 U	20 U	19 U	4.3 U	25 U	18 U	19 U	4.4 U	4.4 U	4.7 U	4.5 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	4.3	12	1.1 J	1.1 J	2.5 U	1.8 U	1.1 J	1.2 J	2.2	1.9	2.3
Perfluorobutanoic acid (PFBA)	ng/L	18	110 J	4.4	7.9	7.0	9.6	8.1	8.5	8.3	8.1	19
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	2.0 U	1.9 U	1.7 U	2.5 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	2.0 U	1.9 U	1.7 U	2.5 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	2.0 U	1.9 U	1.7 U	2.5 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	2.0 U	0.88 J	0.79 J	2.5 U	2.5	1.6 J	1.9 J	2.2 J	1.9 U	1.9
Perfluoroheptanoic acid (PFHpA)	ng/L	1.8 U	2.0 U	0.79 J	1.8	2.5 U	1.8	1.7 J	0.97 J	1.8 U	0.85 J	6.4
Perfluorohexane sulfonic acid (PFHxS)	ng/L	1.8 U	2.0 U	3.4 J	2.9 J	3.9	7.9 J	7.8 I	5.6 J	5.9 J	2.0 J	9.5
Perfluorohexanoic acid (PFHxA)	ng/L	1.8 U	2.0 U	0.75 J	2.8	2.6	1.8	2.3	1.5 J	2.2 U	1.1 J	11
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	2.0 U	1.9 U	1.7 U	2.5 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	2.0 U	1.9 U	1.7 U	2.5 U	0.49 J	1.9 U	0.31 J	0.26 J	1.9 U	0.97 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	2.0 U	1.9 U	1.7 U	2.5 U	0.50 J	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	4.4	3.0	**23 I[abc]**	**14 J[c]**	12	**39 J[abc]**	**43 I[abc]**	**56 J[abc]**	**56 J[abc]**	**13 J[c]**	**110[abc]**
Perfluorooctanoic acid (PFOA)	ng/L	2.8	2.0	4.7	6.1	5.3	**8.8[ab]**	6.8	5.4	5.4	3.8	**27[ab]**
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	2.0 U	0.56 J	1.7 U	2.5 U	1.2 J	1.2 J	1.0 J	1.1 J	0.34 J	0.92 J
Perfluoropentanoic acid (PFPeA)	ng/L	1.8 U	2.0 U	0.85 J	1.9	4.5	1.8 U	1.8 J	1.8 U	1.8 U	2.5	4.9
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	2.0 U	1.9 U	1.7 U	2.5 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	2.0 U	1.9 U	1.7 U	2.5 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	2.0 U	1.9 U	1.7 U	2.5 U	1.8 U	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Total PFOS and PFOA	ng/L	7.2	5	27.7	--	17.3	47.8 J	49.8	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	1.022	0.851	--	--	1.55	--	--	--	1.86	--	--
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	--	--	1.12	1.87	--	2.62	2.3	1.68	--	0.51	0.98
Dissolved oxygen (DO), field	mg/L	1.58	0.21	0.01	0	0.07	0	0	0	0.07	0.2	0
Oxidation reduction potential (ORP), field	millivolts	0	-81	47.7	11.6	333.3	54	47.8	1	168.3	45	-148.2
pH, field	s.u.	7.16	7.06	7.4	7.2	7.35	7.41	7.4	7.27	7.1	7.03	7.38
Temperature, field	Deg C	13.66	14.62	--	--	19.82	--	--	--	--	--	--
Temperature, sample	Deg C	--	--	9.84	18.4	--	14.67	10.54	16.46	9.9	15.83	15.97
Turbidity, field	NTU	1.94	22.3	1.21	2.44	6.28	1.42	1.17	1.37	2.96	4.76	23.7

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		TW83D-20	TW83S-20	TW83S-20	TW84D-20	TW84S-20	TW85D-20	TW85S-20	TW86D-20	TW86S-20	TW87D-20	TW87S-20
Sample Identification		**GW-12607-102220-SK-011**	**GW-12607-102220-SK-009**	**GW-12607-102220-SK-010**	**GW-12607-102220-SK-013**	**GW-12607-102220-SK-012**	**GW-12607-102120-SK-006**	**GW-12607-102120-SK-005**	**GW-12607-102120-SK-008**	**GW-12607-102120-SK-007**	**GW-12607-102020-SK-004**	**GW-12607-102020-SK-003**
Sample Date		**10/22/2020**	**10/22/2020**	**10/22/2020**	**10/22/2020**	**10/22/2020**	**10/21/2020**	**10/21/2020**	**10/21/2020**	**10/21/2020**	**10/20/2020**	**10/20/2020**
Sample Type				**Duplicate**								
Sample Depth		-	-	-	-	-	-	-	-	-	-	-
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifier		**Deep**	**Shallow**	**Shallow**	**Deep**	**Shallow**	**Deep**	**Shallow**	**Deep**	**Shallow**	**Deep**	**Shallow**
Site		**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**North**	**South**	**South**
	Units											
Per/Polyfluoroalkyl Substances (PFAS)												
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 UJ	1.8 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.2 U	4.4 U	4.5 U	3.7 J	4.4 U	4.4 UJ	4.4 U	110 J+	4.6 U	4.6 UJ	4.4 UJ
Fluorotelomer sulfonic acid (8:2)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 UJ	1.8 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.4 U	3.5 U	3.6 U	3.5 U	3.5 U	3.5 U	3.5 U	3.7 U	3.7 U	3.6 U	3.5 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.2 U	4.4 U	4.5 U	4.4 U	4.4 U	4.4 U	4.4 U	4.6 U	4.6 U	4.6 U	4.4 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.2 U	4.4 U	4.5 U	4.4 U	4.4 U	4.4 U	4.4 U	4.6 U	4.6 U	4.6 U	4.4 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.7 U	1.1 J	1.2 J	1.8 U	1.2 J	3.2 J	1.9	18 U	1.2 J	1.6 J	2.3
Perfluorobutanoic acid (PFBA)	ng/L	4.2 U	5.2	5.3	4.0 J	14	44 U	20	46 U	11	12	15
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	5.4	0.42 J	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	0.35 J	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	3.8	18 U	3.2	18 U	1.9	0.64 J	3.3
Perfluorohexane sulfonic acid (PFHxS)	ng/L	1.5 J	1.1 J	1.1 J	1.3 J	1.6 J	1.0 J	1.6 J	18 U	1.6 J	4.0	5.2
Perfluorohexanoic acid (PFHxA)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	6.4	18 U	5.9	18 U	2.7	2.9	8.2
Perfluorononane sulfonic acid (PFNS)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	0.42 J	1.8 U	1.8 U	0.25 J	2.9	0.69 J	1.0 J	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.0 J	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	1.8	1.8 U	1.8 U	3.4	**87[abc]**	**15[c]**	**19 J[abc]**	2.2 J	12 J	**16 J[c]**	1.8 U
Perfluorooctanoic acid (PFOA)	ng/L	3.9	2.2	2.4	3.2	**8.6[ab]**	18 U	4.2	18 U	4.0	4.9	6.7
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.7 U	0.70 J	0.53 J	1.8 U	1.8 U	18 U	0.52 J	18 U	0.53 J	1.8 U	0.61 J
Perfluoropentanoic acid (PFPeA)	ng/L	1.7 U	1.8 U	1.8 U	3.7	7.0	18 U	5.8	18 U	2.0	1.2 J	4.4
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.7 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Total PFOS and PFOA	ng/L	--	--	--	--	--	--	--	--	--	--	--
Field Parameters												
Conductivity, field	mS/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	0.95	0.83	0.83	0.71	0.43	0.44	0.79	0.8	0.61	0.96	1.21
Dissolved oxygen (DO), field	mg/L	0	0.02	0.02	0	0	0	0	0	0.1	0.02	1.26
Oxidation reduction potential (ORP), field	millivolts	-210.4	-53.8	-53.8	-204.7	-143.7	-200.3	-54.8	-197.9	5.2	-187.4	-104.2
pH, field	s.u.	7.36	6.83	6.83	7.37	7.51	7.41	6.9	7.35	7.01	7.29	7.05
Temperature, field	Deg C	--	--	--	--	--	--	--	--	--	--	--
Temperature, sample	Deg C	16.69	15.97	15.97	16.21	16.54	17.29	15.64	17.66	18.92	14.71	15.47
Turbidity, field	NTU	1000	9.21	9.21	1000	9.32	30.8	5.74	1000	8.4	79.5	3.53

Table B.2

Analytical Results of Groundwater Samples
Area 1 PFAS
Eckles Road Site
Livonia, MIchigan

Sample Location		TW88S-20	TW-OS-11D	TW-OS-11S	TW-OS-12D	TW-OS-12S	TW-OS-13D	TW-OS-13D	TW-OS-13S	TW-OS-14D	TW-OS-14S
Sample Identification		**GW-12607-102020-SK-002**	**GW-12607-011321-DA-004**	**GW-12607-011321-DA-001**	**GW-12607-011421-DA-006**	**GW-12607-011321-DA-005**	**GW-12607-011421-DA-008**	**GW-12607-011421-DA-009**	**GW-12607-011421-DA-007**	**GW-12607-011821-DA-011**	**GW-12607-011821-DA-010**
Sample Date		**10/20/2020**	**01/13/2021**	**01/13/2021**	**01/14/2021**	**01/13/2021**	**01/14/2021**	**01/14/2021**	**01/14/2021**	**01/18/2021**	**01/18/2021**
Sample Type								**Duplicate**			
Sample Depth		**-**	**(21-21) ft BGS**	**(11-11) ft BGS**	**(21-21) ft BGS**	**(12-12) ft BGS**	**(19-19) ft BGS**	**(19-19) ft BGS**	**(11-11) ft BGS**	**(21-21) ft BGS**	**(14-14) ft BGS**
Area		**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**	**Area 01**
Aquifier		**Shallow**	**Deep**	**Shallow**	**Deep**	**Shallow**	**Deep**	**Deep**	**Shallow**	**Deep**	**Shallow**
Site		**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**	**South**
	Units										
Per/Polyfluoroalkyl Substances (PFAS)											
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.6 U	4.6 U	4.7 UJ	4.5 U	4.8 U	4.5 UJ	4.7 UJ	4.6 U	4.7 U	4.7 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 UJ	1.9 UJ	1.8 U	1.9 U	1.9 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.7 U	3.7 U	3.8 U	3.6 U	3.8 U	3.6 U	3.7 U	3.6 U	3.8 U	3.8 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.6 U	4.6 U	4.7 U	4.5 U	4.8 U	4.5 U	4.7 U	4.6 U	4.7 U	4.7 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.6 U	4.6 U	4.7 U	4.5 U	4.8 U	4.5 U	4.7 U	4.6 U	4.7 U	4.7 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	2.6	1.8 U	1.6 J	0.47 J	2.0	1.4 J	1.5 J	2.0	2.6	3.4
Perfluorobutanoic acid (PFBA)	ng/L	7.0	7.8	8.6	3.8 J	8.9	8.4	8.0	7.6	8.8	13
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.5 J	1.5 J	0.89 J	1.3 J	1.9 U
Perfluoroheptanoic acid (PFHpA)	ng/L	0.42 J	0.24 J	2.0	1.8 U	1.5 J	2.2	2.3	2.8	3.1	2.3
Perfluorohexane sulfonic acid (PFHxS)	ng/L	2.7 J	1.8 U	1.8 J	1.8 U	2.8 J	9.3 J	9.3 J	6.2 J	11 J	3.8 J
Perfluorohexanoic acid (PFHxA)	ng/L	1.3 J	0.76 J	4.3	1.0 J	2.1	2.2	2.2	2.7	3.5 U	3.8 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	0.52 J	0.50 J	0.50 J	0.40 J	1.9 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	1.8 U	1.8 U	0.92 J	1.8 U	1.2 J	**34 J[abc]**	**37 J[abc]**	**21 J[abc]**	**32 J[abc]**	1.4 J
Perfluorooctanoic acid (PFOA)	ng/L	2.8	1.8 U	2.9	1.8 U	4.4	**11[ab]**	**11[ab]**	**11[ab]**	**18[ab]**	4.3
Perfluoropentane sulfonic acid (PFPeS)	ng/L	0.51 J	0.36 J	0.74 J	0.29 J	0.73 J	1.8 J	1.8 J	0.95 J	1.6 J	0.86 J+
Perfluoropentanoic acid (PFPeA)	ng/L	1.1 J	3.1	4.5	1.0 J	2.2	1.8 U	1.9 U	1.7 J	2.6 U	3.7 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.8 U	1.9 U	1.9 U
Total PFOS and PFOA	ng/L	--	--	--	--	--	--	--	--	--	--
Field Parameters											
Conductivity, field	mS/cm	--	1.42	1	1.82	1.29	2.64	2.64	1.22	1.81	1.38
Conductivity, field	umhos/cm	--	--	--	--	--	--	--	--	--	--
Conductivity, field	uS/cm	0.68	--	--	--	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	0.04	0.06	0.12	0.02	0.01	0	0	0.04	0	0.32
Oxidation reduction potential (ORP), field	millivolts	-121.2	-68.7	99.9	81.9	0.8	21	21	-15.9	57.1	62.3
pH, field	s.u.	7.28	7.42	7.71	7.42	7.49	7.51	7.51	7.52	7.4	7.11
Temperature, field	Deg C	--	--	--	--	--	--	--	--	--	--
Temperature, sample	Deg C	15.74	10.72	--	11.66	11.18	12.41	12.41	12.07	10.61	11.7
Turbidity, field	NTU	24.8	796	8.56	12.15	42.5	4.9	4.9	16.56	94.67	8.54

Attachment C

Laboratory Analytical Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-138666-1
Client Project/Site: 12607-T06, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
10/29/2020 3:22:19 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

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www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Job ID: 240-138666-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-138666-1

Comments
No additional comments.

Receipt
The samples were received on 10/21/2020 10:10 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.2º C.

Metals
Method 6010B: The reporting limit (RL) provided falls below the laboratory's verified standard quantitation limit. Results reported below the verified standard quantitation limit have less certainty (i.e., are estimated) and must be used at the client's discretion. The continuing calibration blanks and method blanks may not support the lower RL.

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

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Qualifiers

Metals

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

General Chemistry

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

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-138666-1	GW-12607-102020-SK-001	Water	10/20/20 10:50	10/21/20 10:10	
240-138666-2	GW-12607-102020-SK-002	Water	10/20/20 13:20	10/21/20 10:10	
240-138666-3	GW-12607-102020-SK-003	Water	10/20/20 15:30	10/21/20 10:10	
240-138666-4	GW-12607-102020-SK-004	Water	10/20/20 16:50	10/21/20 10:10	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Client Sample ID: GW-12607-102020-SK-001 — Lab Sample ID: 240-138666-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	6.8	B	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	30		20	2.2	ug/L	1		6010B	Total Recoverable
Chromium	2.1	J B	5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	29	J	40	2.2	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12607-102020-SK-002 — Lab Sample ID: 240-138666-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	7.5	B	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	13	J	20	2.2	ug/L	1		6010B	Total Recoverable
Chromium	1.6	J B	5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	14	J	40	2.2	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12607-102020-SK-003 — Lab Sample ID: 240-138666-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	9.7	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102020-SK-004 — Lab Sample ID: 240-138666-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	7.2	B	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	13	J	20	2.2	ug/L	1		6010B	Total Recoverable
Chromium	4.0	J B	5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	12	J	40	2.2	ug/L	1		6010B	Dissolved
Cr (III)	0.0072	J	0.010	0.0020	mg/L	1		7196A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN
7196A	Chromium, Hexavalent	SW846	TAL CAN
7196A	Chromium, Trivalent (Colorimetric)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102020-SK-001
Date Collected: 10/20/20 10:50
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	6.8	B	5.0	0.63	ug/L		10/22/20 14:00	10/23/20 21:29	1
Nickel	30		20	2.2	ug/L		10/22/20 14:00	10/23/20 21:29	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102020-SK-002
Date Collected: 10/20/20 13:20
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	7.5	B	5.0	0.63	ug/L		10/22/20 14:00	10/23/20 21:37	1
Nickel	13	J	20	2.2	ug/L		10/22/20 14:00	10/23/20 21:37	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102020-SK-003
Date Collected: 10/20/20 15:30
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/22/20 14:00	10/23/20 21:46	1
Nickel	**9.7**	**J**	20	2.2	ug/L		10/22/20 14:00	10/23/20 21:46	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102020-SK-004
Date Collected: 10/20/20 16:50
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	7.2	B	5.0	0.63	ug/L		10/22/20 14:00	10/23/20 21:50	1
Nickel	13	J	20	2.2	ug/L		10/22/20 14:00	10/23/20 21:50	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-102020-SK-001
Date Collected: 10/20/20 10:50
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	2.1	J B	5.0	0.63	ug/L		10/22/20 14:00	10/23/20 21:33	1
Nickel	29	J	40	2.2	ug/L		10/22/20 14:00	10/23/20 21:33	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-102020-SK-002
Date Collected: 10/20/20 13:20
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	1.6	J B	5.0	0.63	ug/L		10/22/20 14:00	10/23/20 21:42	1
Nickel	14	J	40	2.2	ug/L		10/22/20 14:00	10/23/20 21:42	1

Client: GHD Services Inc.
Job ID: 240-138666-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-102020-SK-004
Lab Sample ID: 240-138666-4
Date Collected: 10/20/20 16:50
Matrix: Water
Date Received: 10/21/20 10:10

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	4.0	J B	5.0	0.63	ug/L		10/22/20 14:00	10/23/20 21:55	1
Nickel	12	J	40	2.2	ug/L		10/22/20 14:00	10/23/20 21:55	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

General Chemistry

Client Sample ID: GW-12607-102020-SK-003
Date Collected: 10/20/20 15:30
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			10/21/20 11:19	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			10/26/20 08:34	1

Client: GHD Services Inc.
Job ID: 240-138666-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102020-SK-004
Lab Sample ID: 240-138666-4
Date Collected: 10/20/20 16:50
Matrix: Water
Date Received: 10/21/20 10:10

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			10/21/20 11:25	1
Cr (III)	**0.0072**	**J**	0.010	0.0020	mg/L			10/26/20 08:34	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138666-1

Metals

Prep Batch: 457266

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138666-1	GW-12607-102020-SK-001	Dissolved	Water	3005A	
240-138666-1	GW-12607-102020-SK-001	Total Recoverable	Water	3005A	
240-138666-2	GW-12607-102020-SK-002	Dissolved	Water	3005A	
240-138666-2	GW-12607-102020-SK-002	Total Recoverable	Water	3005A	
240-138666-3	GW-12607-102020-SK-003	Total Recoverable	Water	3005A	
240-138666-4	GW-12607-102020-SK-004	Dissolved	Water	3005A	
240-138666-4	GW-12607-102020-SK-004	Total Recoverable	Water	3005A	
MB 240-457266/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-457266/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 457571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138666-1	GW-12607-102020-SK-001	Dissolved	Water	6010B	457266
240-138666-1	GW-12607-102020-SK-001	Total Recoverable	Water	6010B	457266
240-138666-2	GW-12607-102020-SK-002	Dissolved	Water	6010B	457266
240-138666-2	GW-12607-102020-SK-002	Total Recoverable	Water	6010B	457266
240-138666-3	GW-12607-102020-SK-003	Total Recoverable	Water	6010B	457266
240-138666-4	GW-12607-102020-SK-004	Dissolved	Water	6010B	457266
240-138666-4	GW-12607-102020-SK-004	Total Recoverable	Water	6010B	457266
MB 240-457266/1-A	Method Blank	Total Recoverable	Water	6010B	457266
LCS 240-457266/2-A	Lab Control Sample	Total Recoverable	Water	6010B	457266

General Chemistry

Analysis Batch: 457089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138666-3	GW-12607-102020-SK-003	Total/NA	Water	7196A	
240-138666-4	GW-12607-102020-SK-004	Total/NA	Water	7196A	
MB 240-457089/3	Method Blank	Total/NA	Water	7196A	
LCS 240-457089/4	Lab Control Sample	Total/NA	Water	7196A	
240-138666-3 MS	GW-12607-102020-SK-003	Total/NA	Water	7196A	
240-138666-3 MSD	GW-12607-102020-SK-003	Total/NA	Water	7196A	

Analysis Batch: 457662

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138666-3	GW-12607-102020-SK-003	Total/NA	Water	7196A	
240-138666-4	GW-12607-102020-SK-004	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-457266/1-A
Matrix: Water
Analysis Batch: 457571

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 457266

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.793	J	5.0	0.63	ug/L		10/22/20 14:00	10/23/20 20:34	1
Nickel	20	U	20	2.2	ug/L		10/22/20 14:00	10/23/20 20:34	1

Lab Sample ID: LCS 240-457266/2-A
Matrix: Water
Analysis Batch: 457571

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 457266

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1000	982		ug/L		98	80 - 120
Nickel	1000	992		ug/L		99	80 - 120

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-457089/3
Matrix: Water
Analysis Batch: 457089

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			10/21/20 11:14	1

Lab Sample ID: LCS 240-457089/4
Matrix: Water
Analysis Batch: 457089

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.263		mg/L		105	80 - 123

Lab Sample ID: 240-138666-3 MS
Matrix: Water
Analysis Batch: 457089

Client Sample ID: GW-12607-102020-SK-003
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.010	U	0.250	0.244		mg/L		98	31 - 151

Lab Sample ID: 240-138666-3 MSD
Matrix: Water
Analysis Batch: 457089

Client Sample ID: GW-12607-102020-SK-003
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	0.010	U	0.250	0.237		mg/L		95	31 - 151	3	20

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-138666-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-102020-SK-001
Lab Sample ID: 240-138666-1
Date Collected: 10/20/20 10:50
Matrix: Water
Date Received: 10/21/20 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			457266	10/22/20 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	457571	10/23/20 21:33	WKD	TAL CAN
Total Recoverable	Prep	3005A			457266	10/22/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	457571	10/23/20 21:29	WKD	TAL CAN

Client Sample ID: GW-12607-102020-SK-002
Lab Sample ID: 240-138666-2
Date Collected: 10/20/20 13:20
Matrix: Water
Date Received: 10/21/20 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			457266	10/22/20 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	457571	10/23/20 21:42	WKD	TAL CAN
Total Recoverable	Prep	3005A			457266	10/22/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	457571	10/23/20 21:37	WKD	TAL CAN

Client Sample ID: GW-12607-102020-SK-003
Lab Sample ID: 240-138666-3
Date Collected: 10/20/20 15:30
Matrix: Water
Date Received: 10/21/20 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			457266	10/22/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	457571	10/23/20 21:46	WKD	TAL CAN
Total/NA	Analysis	7196A		1	457662	10/26/20 08:34	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457089	10/21/20 11:19	AGC	TAL CAN

Client Sample ID: GW-12607-102020-SK-004
Lab Sample ID: 240-138666-4
Date Collected: 10/20/20 16:50
Matrix: Water
Date Received: 10/21/20 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			457266	10/22/20 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	457571	10/23/20 21:55	WKD	TAL CAN
Total Recoverable	Prep	3005A			457266	10/22/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	457571	10/23/20 21:50	WKD	TAL CAN
Total/NA	Analysis	7196A		1	457662	10/26/20 08:34	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457089	10/21/20 11:25	AGC	TAL CAN

Laboratory References:
TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-138666-1
Project/Site: 12607-T06, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

2.3132

Chain of Custody Record

460202

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MICHIGAN 190

Address:

T.A. # 24005880

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: Chris Meincke	Site Contact: S. Kippen	Date: 10-20-20	COC No:
Company Name: GHD	Tel/Email: (248)935-7346	Lab Contact: —	Carrier: FedEx	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: S. Kippen
City/State/Zip: Farmington Hills, M.I. 48331	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: (248) 893-3400	TAT if different from Below			Walk-in Client:
Fax: Chem.det@ghd.com.	☒ 2 weeks (circled)			Lab Sampling:
Project Name: Eckles Rd / Racer	☐ 1 week			Job / SDG No.:
Site: Livonia, M.I.	☐ 2 days			
PO # 5504):	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Chromium	Nickel	PFA's	Hex-Chromium dissolved Metals	Sample Specific Notes:
GW-12607-102020-SK-001	10-20-20	10:50 ~~15:30~~	G	GW	3			X	X	X	X	
-002		13:20			3			X	X	X	X	
-003		15:30			3			X	X	X	X	
-004		16:50			4			X	X	X	X	

SK

240-138666 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
R. Scott K	GHD 10/20/20	18:25		ETA	10-21-20 1010
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 138666**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: Matt Snyder

Cooler Received on 10-21-20 Opened on 10-21-20

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 2.3 °C Corrected Cooler Temp. 3.2 °C
   IR GUN #IR-12 (CF +0.5°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? (Yes) No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC? Yes (No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes (No)
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

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

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

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
GW-12607-102020-SK-001	240-138666-B-1	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102020-SK-001	240-138666-C-1	Plastic 250ml - w/nitric - dis	<2			
GW-12607-102020-SK-002	240-138666-B-2	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102020-SK-002	240-138666-C-2	Plastic 250ml - w/nitric - dis	<2			
GW-12607-102020-SK-003	240-138666-C-3	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102020-SK-004	240-138666-C-4	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102020-SK-004	240-138666-D-4	Plastic 250ml - w/nitric - dis	<2			

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-138666-2
Client Project/Site: 12607-T31, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
10/29/2020 4:22:07 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138666-2

Job ID: 240-138666-2

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-138666-2

Comments
No additional comments.

Receipt
The samples were received on 10/21/2020 10:10 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.2º C.

LCMS
Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-6:2 FTS for the following samples: GW-12607-102020-SK-003 (240-138666-3). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for several analytes in the following samples: GW-12607-102020-SK-001 (240-138666-1) and GW-12607-102020-SK-004 (240-138666-4). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analytes was outside of the established ratio limits. The qualitative identification of the analytes has some degree of uncertainty. However, analyst judgment was used to positively identify the analytes. GW-12607-102020-SK-002 (240-138666-2)

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-424558.

Method 3535: The following sample was light brown prior to extraction: GW-12607-102020-SK-004 (240-138666-4)

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

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 240-138666-2
Project/Site: 12607-T31, RACER Eckles Rd

Qualifiers

LCMS

Qualifier	Qualifier Description
*5	Isotope dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138666-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-138666-1	GW-12607-102020-SK-001	Water	10/20/20 10:50	10/21/20 10:10	
240-138666-2	GW-12607-102020-SK-002	Water	10/20/20 13:20	10/21/20 10:10	
240-138666-3	GW-12607-102020-SK-003	Water	10/20/20 15:30	10/21/20 10:10	
240-138666-4	GW-12607-102020-SK-004	Water	10/20/20 16:50	10/21/20 10:10	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138666-2

Client Sample ID: GW-12607-102020-SK-001 — Lab Sample ID: 240-138666-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	19		4.5	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	4.9		1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	11		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.4		1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	27		1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.97	J	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.3		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.92	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.5		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.9		1.8	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	110	B	1.8	0.48	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102020-SK-002 — Lab Sample ID: 240-138666-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.0		4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.1	J	1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.3	J	1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.42	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.8		1.8	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.6		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.51	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.7	I	1.8	0.52	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102020-SK-003 — Lab Sample ID: 240-138666-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	15		4.4	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	4.4		1.8	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	8.2		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.3		1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	6.7		1.8	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.3		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.61	J	1.8	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.2		1.8	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102020-SK-004 — Lab Sample ID: 240-138666-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	12		4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.2	J	1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.9		1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.64	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.9		1.8	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.0		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	16	I B	1.8	0.49	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	1.0	J	1.8	0.89	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138666-2

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102020-SK-001
Date Collected: 10/20/20 10:50
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**19**		4.5	2.1	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluoropentanoic acid (PFPeA)	**4.9**		1.8	0.44	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorohexanoic acid (PFHxA)	**11**		1.8	0.52	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluoroheptanoic acid (PFHpA)	**6.4**		1.8	0.22	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorooctanoic acid (PFOA)	**27**		1.8	0.76	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorononanoic acid (PFNA)	**0.97**	**J**	1.8	0.24	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.98	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.65	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorobutanesulfonic acid (PFBS)	**2.3**		1.8	0.18	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluoropentanesulfonic acid (PFPeS)	**0.92**	**J**	1.8	0.27	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorohexanesulfonic acid (PFHxS)	**9.5**		1.8	0.51	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.9**		1.8	0.17	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorooctanesulfonic acid (PFOS)	**110**	**B**	1.8	0.48	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/22/20 19:16	10/26/20 14:57	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.88	ng/L		10/22/20 19:16	10/26/20 14:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		10/22/20 19:16	10/26/20 14:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		10/22/20 19:16	10/26/20 14:57	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/22/20 19:16	10/26/20 14:57	1
6:2 FTS	4.5	U	4.5	2.2	ng/L		10/22/20 19:16	10/26/20 14:57	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/22/20 19:16	10/26/20 14:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		10/22/20 19:16	10/26/20 14:57	1
HFPO-DA (GenX)	3.6	U	3.6	1.3	ng/L		10/22/20 19:16	10/26/20 14:57	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/22/20 19:16	10/26/20 14:57	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/22/20 19:16	10/26/20 14:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*47*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C5 PFPeA	*53*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C2 PFHxA	*93*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C4 PFHpA	*99*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C4 PFOA	*98*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C5 PFNA	*104*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C2 PFDA	*98*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C2 PFUnA	*101*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C2 PFDoA	*87*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C2 PFTeDA	*96*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C3 PFBS	*93*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
18O2 PFHxS	*108*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C4 PFOS	*110*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*
13C8 FOSA	*105*		*25 - 150*	*10/22/20 19:16*	*10/26/20 14:57*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102020-SK-001
Date Collected: 10/20/20 10:50
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-1
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	91		25 - 150	10/22/20 19:16	10/26/20 14:57	1
d5-NEtFOSAA	91		25 - 150	10/22/20 19:16	10/26/20 14:57	1
M2-6:2 FTS	181	*5	25 - 150	10/22/20 19:16	10/26/20 14:57	1
M2-8:2 FTS	195	*5	25 - 150	10/22/20 19:16	10/26/20 14:57	1
M2-4:2 FTS	163	*5	25 - 150	10/22/20 19:16	10/26/20 14:57	1
13C3 HFPO-DA	83		25 - 150	10/22/20 19:16	10/26/20 14:57	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102020-SK-002
Date Collected: 10/20/20 13:20
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.0**		4.6	2.2	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluoropentanoic acid (PFPeA)	**1.1**	**J**	1.8	0.45	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorohexanoic acid (PFHxA)	**1.3**	**J**	1.8	0.53	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluoroheptanoic acid (PFHpA)	**0.42**	**J**	1.8	0.23	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorooctanoic acid (PFOA)	**2.8**		1.8	0.78	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.67	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorobutanesulfonic acid (PFBS)	**2.6**		1.8	0.18	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluoropentanesulfonic acid (PFPeS)	**0.51**	**J**	1.8	0.27	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorohexanesulfonic acid (PFHxS)	**2.7**	**I**	1.8	0.52	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.49	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/22/20 19:16	10/26/20 15:06	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.90	ng/L		10/22/20 19:16	10/26/20 15:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		10/22/20 19:16	10/26/20 15:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		10/22/20 19:16	10/26/20 15:06	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		10/22/20 19:16	10/26/20 15:06	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		10/22/20 19:16	10/26/20 15:06	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		10/22/20 19:16	10/26/20 15:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.37	ng/L		10/22/20 19:16	10/26/20 15:06	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		10/22/20 19:16	10/26/20 15:06	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/22/20 19:16	10/26/20 15:06	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/22/20 19:16	10/26/20 15:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*56*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C5 PFPeA	*68*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C2 PFHxA	*93*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C4 PFHpA	*96*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C4 PFOA	*94*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C5 PFNA	*97*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C2 PFDA	*93*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C2 PFUnA	*80*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C2 PFDoA	*81*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C2 PFTeDA	*83*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C3 PFBS	*87*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
18O2 PFHxS	*98*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C4 PFOS	*100*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
13C8 FOSA	*93*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*
d3-NMeFOSAA	*79*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:06*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102020-SK-002
Date Collected: 10/20/20 13:20
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-2
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	87		25 - 150	10/22/20 19:16	10/26/20 15:06	1
M2-6:2 FTS	134		25 - 150	10/22/20 19:16	10/26/20 15:06	1
M2-8:2 FTS	141		25 - 150	10/22/20 19:16	10/26/20 15:06	1
M2-4:2 FTS	132		25 - 150	10/22/20 19:16	10/26/20 15:06	1
13C3 HFPO-DA	76		25 - 150	10/22/20 19:16	10/26/20 15:06	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102020-SK-003
Date Collected: 10/20/20 15:30
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**15**		4.4	2.1	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluoropentanoic acid (PFPeA)	**4.4**		1.8	0.43	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorohexanoic acid (PFHxA)	**8.2**		1.8	0.51	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluoroheptanoic acid (PFHpA)	**3.3**		1.8	0.22	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorooctanoic acid (PFOA)	**6.7**		1.8	0.75	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.27	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.97	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.1	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.64	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorobutanesulfonic acid (PFBS)	**2.3**		1.8	0.18	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluoropentanesulfonic acid (PFPeS)	**0.61**	**J**	1.8	0.26	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorohexanesulfonic acid (PFHxS)	**5.2**		1.8	0.50	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.48	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		10/22/20 19:16	10/23/20 22:59	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.87	ng/L		10/22/20 19:16	10/23/20 22:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		10/22/20 19:16	10/23/20 22:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.1	ng/L		10/22/20 19:16	10/23/20 22:59	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/22/20 19:16	10/23/20 22:59	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		10/22/20 19:16	10/23/20 22:59	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/22/20 19:16	10/23/20 22:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.35	ng/L		10/22/20 19:16	10/23/20 22:59	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/22/20 19:16	10/23/20 22:59	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/22/20 19:16	10/23/20 22:59	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		10/22/20 19:16	10/23/20 22:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*73*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C5 PFPeA	*70*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C2 PFHxA	*110*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C4 PFHpA	*125*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C4 PFOA	*128*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C5 PFNA	*124*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C2 PFDA	*109*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C2 PFUnA	*115*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C2 PFDoA	*109*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C2 PFTeDA	*108*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C3 PFBS	*98*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
18O2 PFHxS	*124*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C4 PFOS	*128*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
13C8 FOSA	*120*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*
d3-NMeFOSAA	*100*		*25 - 150*	*10/22/20 19:16*	*10/23/20 22:59*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102020-SK-003
Date Collected: 10/20/20 15:30
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-3
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	112		25 - 150	10/22/20 19:16	10/23/20 22:59	1
M2-6:2 FTS	156	*5	25 - 150	10/22/20 19:16	10/23/20 22:59	1
M2-8:2 FTS	150		25 - 150	10/22/20 19:16	10/23/20 22:59	1
M2-4:2 FTS	140		25 - 150	10/22/20 19:16	10/23/20 22:59	1
13C3 HFPO-DA	106		25 - 150	10/22/20 19:16	10/23/20 22:59	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102020-SK-004
Date Collected: 10/20/20 16:50
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**12**		4.6	2.2	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluoropentanoic acid (PFPeA)	**1.2**	**J**	1.8	0.45	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorohexanoic acid (PFHxA)	**2.9**		1.8	0.53	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluoroheptanoic acid (PFHpA)	**0.64**	**J**	1.8	0.23	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorooctanoic acid (PFOA)	**4.9**		1.8	0.77	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.66	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.8	0.18	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.27	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorohexanesulfonic acid (PFHxS)	**4.0**		1.8	0.52	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorooctanesulfonic acid (PFOS)	**16**	**I B**	1.8	0.49	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/22/20 19:16	10/26/20 15:16	1
Perfluorooctanesulfonamide (FOSA)	**1.0**	**J**	1.8	0.89	ng/L		10/22/20 19:16	10/26/20 15:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		10/22/20 19:16	10/26/20 15:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		10/22/20 19:16	10/26/20 15:16	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		10/22/20 19:16	10/26/20 15:16	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		10/22/20 19:16	10/26/20 15:16	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		10/22/20 19:16	10/26/20 15:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		10/22/20 19:16	10/26/20 15:16	1
HFPO-DA (GenX)	3.6	U	3.6	1.4	ng/L		10/22/20 19:16	10/26/20 15:16	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/22/20 19:16	10/26/20 15:16	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/22/20 19:16	10/26/20 15:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*47*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C5 PFPeA	*51*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C2 PFHxA	*78*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C4 PFHpA	*88*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C4 PFOA	*89*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C5 PFNA	*92*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C2 PFDA	*95*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C2 PFUnA	*87*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C2 PFDoA	*85*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C2 PFTeDA	*86*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C3 PFBS	*86*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
18O2 PFHxS	*102*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*
13C4 PFOS	*99*		*25 - 150*	*10/22/20 19:16*	*10/26/20 15:16*	*1*

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138666-2

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102020-SK-004
Date Collected: 10/20/20 16:50
Date Received: 10/21/20 10:10

Lab Sample ID: 240-138666-4
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	95		25 - 150	10/22/20 19:16	10/26/20 15:16	1
d3-NMeFOSAA	77		25 - 150	10/22/20 19:16	10/26/20 15:16	1
d5-NEtFOSAA	86		25 - 150	10/22/20 19:16	10/26/20 15:16	1
M2-6:2 FTS	214	*5	25 - 150	10/22/20 19:16	10/26/20 15:16	1
M2-8:2 FTS	190	*5	25 - 150	10/22/20 19:16	10/26/20 15:16	1
M2-4:2 FTS	177	*5	25 - 150	10/22/20 19:16	10/26/20 15:16	1
13C3 HFPO-DA	73		25 - 150	10/22/20 19:16	10/26/20 15:16	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138666-2

LCMS

Prep Batch: 424558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138666-1	GW-12607-102020-SK-001	Total/NA	Water	3535	
240-138666-2	GW-12607-102020-SK-002	Total/NA	Water	3535	
240-138666-3	GW-12607-102020-SK-003	Total/NA	Water	3535	
240-138666-4	GW-12607-102020-SK-004	Total/NA	Water	3535	
MB 320-424558/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-424558/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-424558/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 424868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138666-3	GW-12607-102020-SK-003	Total/NA	Water	537 (modified)	424558
MB 320-424558/1-A	Method Blank	Total/NA	Water	537 (modified)	424558
LCS 320-424558/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	424558
LCSD 320-424558/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	424558

Analysis Batch: 425397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138666-1	GW-12607-102020-SK-001	Total/NA	Water	537 (modified)	424558
240-138666-2	GW-12607-102020-SK-002	Total/NA	Water	537 (modified)	424558
240-138666-4	GW-12607-102020-SK-004	Total/NA	Water	537 (modified)	424558

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-424558/1-A
Matrix: Water
Analysis Batch: 424868

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424558

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.0	U	5.0	2.4	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.73	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.0	0.57	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorooctanesulfonic acid (PFOS)	0.762	J	2.0	0.54	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.37	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		10/22/20 19:16	10/23/20 19:11	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.98	ng/L		10/22/20 19:16	10/23/20 19:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.0	U	5.0	1.2	ng/L		10/22/20 19:16	10/23/20 19:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.0	U	5.0	1.3	ng/L		10/22/20 19:16	10/23/20 19:11	1
4:2 FTS	2.0	U	2.0	0.24	ng/L		10/22/20 19:16	10/23/20 19:11	1
6:2 FTS	5.0	U	5.0	2.5	ng/L		10/22/20 19:16	10/23/20 19:11	1
8:2 FTS	2.0	U	2.0	0.46	ng/L		10/22/20 19:16	10/23/20 19:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.0	U	2.0	0.40	ng/L		10/22/20 19:16	10/23/20 19:11	1
HFPO-DA (GenX)	4.0	U	4.0	1.5	ng/L		10/22/20 19:16	10/23/20 19:11	1
F-53B Major	2.0	U	2.0	0.24	ng/L		10/22/20 19:16	10/23/20 19:11	1
F-53B Minor	2.0	U	2.0	0.32	ng/L		10/22/20 19:16	10/23/20 19:11	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*90*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C5 PFPeA	*92*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C2 PFHxA	*96*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C4 PFHpA	*98*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C4 PFOA	*104*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C5 PFNA	*102*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C2 PFDA	*85*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C2 PFUnA	*101*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C2 PFDoA	*97*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C3 PFBS	*92*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
18O2 PFHxS	*97*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C4 PFOS	*99*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
13C8 FOSA	*85*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*10/22/20 19:16*	*10/23/20 19:11*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-424558/1-A
Matrix: Water
Analysis Batch: 424868

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 424558

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	94		25 - 150	10/22/20 19:16	10/23/20 19:11	1
M2-6:2 FTS	101		25 - 150	10/22/20 19:16	10/23/20 19:11	1
M2-8:2 FTS	106		25 - 150	10/22/20 19:16	10/23/20 19:11	1
M2-4:2 FTS	99		25 - 150	10/22/20 19:16	10/23/20 19:11	1
13C3 HFPO-DA	88		25 - 150	10/22/20 19:16	10/23/20 19:11	1

Lab Sample ID: LCS 320-424558/2-A
Matrix: Water
Analysis Batch: 424868

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424558

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.3		ng/L		103	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	39.2		ng/L		98	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	43.1		ng/L		108	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	41.3		ng/L		103	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	42.7		ng/L		107	70 - 130
Perfluorononanoic acid (PFNA)	40.0	43.6		ng/L		109	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	39.0		ng/L		97	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	42.9		ng/L		107	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	35.5		ng/L		89	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	32.0		ng/L		80	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	43.8		ng/L		109	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	35.8		ng/L		101	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.5		ng/L		105	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.5		ng/L		95	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.7		ng/L		104	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	36.6		ng/L		99	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	39.4		ng/L		103	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.6		ng/L		98	71 - 131
Perfluorooctanesulfonamide (FOSA)	40.0	45.6		ng/L		114	73 - 133
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.8		ng/L		110	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.3		ng/L		106	76 - 136
4:2 FTS	37.4	41.1		ng/L		110	79 - 139
6:2 FTS	37.9	35.4		ng/L		93	59 - 175
8:2 FTS	38.3	42.6		ng/L		111	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	40.0		ng/L		106	79 - 139
HFPO-DA (GenX)	40.0	43.3		ng/L		108	51 - 173
F-53B Major	37.3	38.7		ng/L		104	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-424558/2-A
Matrix: Water
Analysis Batch: 424868

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 424558

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			37.7	35.5		ng/L		94	54 - 114		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*94*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*97*		*25 - 150*
13C4 PFHpA	*100*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*96*		*25 - 150*
13C2 PFDA	*99*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*114*		*25 - 150*
13C2 PFTeDA	*92*		*25 - 150*
13C3 PFBS	*97*		*25 - 150*
18O2 PFHxS	*102*		*25 - 150*
13C4 PFOS	*102*		*25 - 150*
13C8 FOSA	*88*		*25 - 150*
d3-NMeFOSAA	*92*		*25 - 150*
d5-NEtFOSAA	*97*		*25 - 150*
M2-6:2 FTS	*101*		*25 - 150*
M2-8:2 FTS	*107*		*25 - 150*
M2-4:2 FTS	*100*		*25 - 150*
13C3 HFPO-DA	*92*		*25 - 150*

Lab Sample ID: LCSD 320-424558/3-A
Matrix: Water
Analysis Batch: 424868

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 424558

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	41.9		ng/L		105	76 - 136	1	30
Perfluoropentanoic acid (PFPeA)			40.0	39.3		ng/L		98	71 - 131	0	30
Perfluorohexanoic acid (PFHxA)			40.0	39.9		ng/L		100	73 - 133	8	30
Perfluoroheptanoic acid (PFHpA)			40.0	39.1		ng/L		98	72 - 132	5	30
Perfluorooctanoic acid (PFOA)			40.0	44.2		ng/L		111	70 - 130	3	30
Perfluorononanoic acid (PFNA)			40.0	39.1		ng/L		98	75 - 135	11	30
Perfluorodecanoic acid (PFDA)			40.0	38.5		ng/L		96	76 - 136	1	30
Perfluoroundecanoic acid (PFUnA)			40.0	38.5		ng/L		96	68 - 128	11	30
Perfluorododecanoic acid (PFDoA)			40.0	43.1		ng/L		108	71 - 131	19	30
Perfluorotridecanoic acid (PFTriA)			40.0	41.8		ng/L		105	71 - 131	27	30
Perfluorotetradecanoic acid (PFTeA)			40.0	45.5		ng/L		114	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)			35.4	36.3		ng/L		103	67 - 127	1	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	40.2		ng/L		107	66 - 126	2	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	35.4		ng/L		97	59 - 119	3	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-424558/3-A
Matrix: Water
Analysis Batch: 424868

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 424558

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	41.4		ng/L		109	76 - 136	4	30
Perfluorooctanesulfonic acid (PFOS)			37.1	37.5		ng/L		101	70 - 130	2	30
Perfluorononanesulfonic acid (PFNS)			38.4	40.8		ng/L		106	75 - 135	4	30
Perfluorodecanesulfonic acid (PFDS)			38.6	39.1		ng/L		101	71 - 131	4	30
Perfluorooctanesulfonamide (FOSA)			40.0	44.8		ng/L		112	73 - 133	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	42.8		ng/L		107	76 - 136	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	42.1		ng/L		105	76 - 136	1	30
4:2 FTS			37.4	39.1		ng/L		105	79 - 139	5	30
6:2 FTS			37.9	37.0		ng/L		98	59 - 175	4	30
8:2 FTS			38.3	41.2		ng/L		108	75 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	39.7		ng/L		105	79 - 139	1	30
HFPO-DA (GenX)			40.0	40.9		ng/L		102	51 - 173	6	30
F-53B Major			37.3	39.4		ng/L		106	75 - 135	2	30
F-53B Minor			37.7	36.0		ng/L		95	54 - 114	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*97*		*25 - 150*
13C5 PFPeA	*97*		*25 - 150*
13C2 PFHxA	*105*		*25 - 150*
13C4 PFHpA	*107*		*25 - 150*
13C4 PFOA	*101*		*25 - 150*
13C5 PFNA	*108*		*25 - 150*
13C2 PFDA	*101*		*25 - 150*
13C2 PFUnA	*105*		*25 - 150*
13C2 PFDoA	*95*		*25 - 150*
13C2 PFTeDA	*86*		*25 - 150*
13C3 PFBS	*98*		*25 - 150*
18O2 PFHxS	*99*		*25 - 150*
13C4 PFOS	*99*		*25 - 150*
13C8 FOSA	*90*		*25 - 150*
d3-NMeFOSAA	*93*		*25 - 150*
d5-NEtFOSAA	*98*		*25 - 150*
M2-6:2 FTS	*101*		*25 - 150*
M2-8:2 FTS	*106*		*25 - 150*
M2-4:2 FTS	*103*		*25 - 150*
13C3 HFPO-DA	*92*		*25 - 150*

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-138666-2
Project/Site: 12607-T31, RACER Eckles Rd

Client Sample ID: GW-12607-102020-SK-001
Lab Sample ID: 240-138666-1
Date Collected: 10/20/20 10:50
Matrix: Water
Date Received: 10/21/20 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			424558	10/22/20 19:16	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	425397	10/26/20 14:57	IK	TAL SAC

Client Sample ID: GW-12607-102020-SK-002
Lab Sample ID: 240-138666-2
Date Collected: 10/20/20 13:20
Matrix: Water
Date Received: 10/21/20 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			424558	10/22/20 19:16	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	425397	10/26/20 15:06	IK	TAL SAC

Client Sample ID: GW-12607-102020-SK-003
Lab Sample ID: 240-138666-3
Date Collected: 10/20/20 15:30
Matrix: Water
Date Received: 10/21/20 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			424558	10/22/20 19:16	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	424868	10/23/20 22:59	RS1	TAL SAC

Client Sample ID: GW-12607-102020-SK-004
Lab Sample ID: 240-138666-4
Date Collected: 10/20/20 16:50
Matrix: Water
Date Received: 10/21/20 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			424558	10/22/20 19:16	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	425397	10/26/20 15:16	IK	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-138666-2
Project/Site: 12607-T31, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	10-31-20
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
Nevada	State	CA000442021-1	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-20
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

2.3132

MICHIGAN 190

Chain of Custody Record 460202

eurofins | Environment Testing TestAmerica

Address: _____ T.A. # 24005880

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other: TAL-8210

Client Contact	Project Manager: Chris Meincke	Site Contact: S. Kippen	Date: 10-20-20	COC No:
Company Name: GHD	Tel/Email: (248)935-7346	Lab Contact: —	Carrier: FedEx	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: S. Kippen
City/State/Zip: Farmington Hills, M.I. 48331	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: (248) 893-3400	TAT if different from Below			Walk-in Client:
Fax: Chem.det@ghd.com.	☒ 2 weeks (circled)			Lab Sampling:
Project Name: Eckles Rd / Racer	☐ 1 week			Job / SDG No.:
Site: Livonia, M.I.	☐ 2 days			
PO # 5504):	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Chromium	Nickel	PFA's	Hex-Chromium dissolved Metals	Sample Specific Notes:
GW-12607-102020-SK-001	10-20-20	10:50 ~~15:30~~	G	GW	3			X	X	X	X	
-002		13:20			3			X	X	X	X	
-003		15:30			3			X	X	X		
-004		16:50			4			X	X	X	X	

SK

240-138666 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
R. Scott K	GHD 10/20/20	18:25		ETA	10-21-20 1010
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 138666**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: MattSnyder

Cooler Received on 10-21-20 Opened on 10-21-20

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 2.3 °C Corrected Cooler Temp. 3.2 °C
   IR GUN #IR-12 (CF +0.5°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? (Yes) No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC? Yes (No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes (No)
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

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

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

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
GW-12607-102020-SK-001	240-138666-B-1	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102020-SK-001	240-138666-C-1	Plastic 250ml - w/nitric - dis	<2			
GW-12607-102020-SK-002	240-138666-B-2	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102020-SK-002	240-138666-C-2	Plastic 250ml - w/nitric - dis	<2			
GW-12607-102020-SK-003	240-138666-C-3	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102020-SK-004	240-138666-C-4	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102020-SK-004	240-138666-D-4	Plastic 250ml - w/nitric - dis	<2			

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-138666-2

Login Number: 138666
List Number: 2
Creator: Saephan, Kae C

List Source: Eurofins TestAmerica, Sacramento
List Creation: 10/22/20 11:52 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	ob: 0.8c corr: 0.3c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138666-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-138666-1	GW-12607-102020-SK-001	47	53	93	99	98	104	98	101
240-138666-2	GW-12607-102020-SK-002	56	68	93	96	94	97	93	80
240-138666-3	GW-12607-102020-SK-003	73	70	110	125	128	124	109	115
240-138666-4	GW-12607-102020-SK-004	47	51	78	88	89	92	95	87
LCS 320-424558/2-A	Lab Control Sample	94	95	97	100	100	96	99	94
LCSD 320-424558/3-A	Lab Control Sample Dup	97	97	105	107	101	108	101	105
MB 320-424558/1-A	Method Blank	90	92	96	98	104	102	85	101

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
240-138666-1	GW-12607-102020-SK-001	87	96	93	108	110	105	91	91
240-138666-2	GW-12607-102020-SK-002	81	83	87	98	100	93	79	87
240-138666-3	GW-12607-102020-SK-003	109	108	98	124	128	120	100	112
240-138666-4	GW-12607-102020-SK-004	85	86	86	102	99	95	77	86
LCS 320-424558/2-A	Lab Control Sample	114	92	97	102	102	88	92	97
LCSD 320-424558/3-A	Lab Control Sample Dup	95	86	98	99	99	90	93	98
MB 320-424558/1-A	Method Blank	97	88	92	97	99	85	90	94

		Percent Isotope Dilution Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
240-138666-1	GW-12607-102020-SK-001	181 *5	195 *5	163 *5	83
240-138666-2	GW-12607-102020-SK-002	134	141	132	76
240-138666-3	GW-12607-102020-SK-003	156 *5	150	140	106
240-138666-4	GW-12607-102020-SK-004	214 *5	190 *5	177 *5	73
LCS 320-424558/2-A	Lab Control Sample	101	107	100	92
LCSD 320-424558/3-A	Lab Control Sample Dup	101	106	103	92
MB 320-424558/1-A	Method Blank	101	106	99	88

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-138755-1
Client Project/Site: 12607-T06, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
10/29/2020 3:28:18 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

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www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138755-1

Job ID: 240-138755-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-138755-1

Comments
No additional comments.

Receipt
The samples were received on 10/22/2020 10:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.9º C.

Metals
Method 6010B: Some requested practical quantitation limits (PQLs) fall below the laboratory's verified standard quantitation limit. The continuing calibration blanks and method blanks may not support the lower PQL.

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

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

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 240-138755-1
Project/Site: 12607-T06, RACER Eckles Rd

Qualifiers

Metals

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

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138755-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-138755-1	GW-12607-102120-SK-005	Water	10/21/20 12:10	10/22/20 10:00	
240-138755-2	GW-12607-102120-SK-006	Water	10/21/20 13:40	10/22/20 10:00	
240-138755-3	GW-12607-102120-SK-007	Water	10/21/20 15:00	10/22/20 10:00	
240-138755-4	GW-12607-102120-SK-008	Water	10/21/20 16:25	10/22/20 10:00	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138755-1

Client Sample ID: GW-12607-102120-SK-005 — Lab Sample ID: 240-138755-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.86	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	3.3	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102120-SK-006 — Lab Sample ID: 240-138755-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	11		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	5.7	J	20	2.2	ug/L	1		6010B	Total Recoverable
Chromium	1.4	J	5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	3.4	J	40	2.2	ug/L	1		6010B	Dissolved
Cr (III)	0.011		0.010	0.0020	mg/L	1		7196A	Total/NA

Client Sample ID: GW-12607-102120-SK-007 — Lab Sample ID: 240-138755-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	220		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	17	J	20	2.2	ug/L	1		6010B	Total Recoverable
Cr (VI)	0.20		0.010		mg/L	1		7196A	Total/NA
Cr (III)	0.017		0.010	0.0020	mg/L	1		7196A	Total/NA

Client Sample ID: GW-12607-102120-SK-008 — Lab Sample ID: 240-138755-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	220		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	80		20	2.2	ug/L	1		6010B	Total Recoverable
Chromium	32		5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	17	J	40	2.2	ug/L	1		6010B	Dissolved
Cr (III)	0.22		0.010	0.0020	mg/L	1		7196A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138755-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN
7196A	Chromium, Hexavalent	SW846	TAL CAN
7196A	Chromium, Trivalent (Colorimetric)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138755-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102120-SK-005
Date Collected: 10/21/20 12:10
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.86	J	5.0	0.63	ug/L		10/23/20 14:00	10/26/20 15:22	1
Nickel	3.3	J	20	2.2	ug/L		10/23/20 14:00	10/26/20 15:22	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138755-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102120-SK-006
Date Collected: 10/21/20 13:40
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	11		5.0	0.63	ug/L		10/23/20 14:00	10/26/20 15:26	1
Nickel	5.7	J	20	2.2	ug/L		10/23/20 14:00	10/26/20 15:26	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138755-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102120-SK-007
Date Collected: 10/21/20 15:00
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	220		5.0	0.63	ug/L		10/23/20 14:00	10/26/20 15:34	1
Nickel	17	J	20	2.2	ug/L		10/23/20 14:00	10/26/20 15:34	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138755-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102120-SK-008
Date Collected: 10/21/20 16:25
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	220		5.0	0.63	ug/L		10/23/20 14:00	10/26/20 15:39	1
Nickel	80		20	2.2	ug/L		10/23/20 14:00	10/26/20 15:39	1

Client: GHD Services Inc.
Job ID: 240-138755-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-102120-SK-006
Lab Sample ID: 240-138755-2
Date Collected: 10/21/20 13:40
Matrix: Water
Date Received: 10/22/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	1.4	J	5.0	0.63	ug/L		10/23/20 14:00	10/26/20 15:30	1
Nickel	3.4	J	40	2.2	ug/L		10/23/20 14:00	10/26/20 15:30	1

Client: GHD Services Inc.
Job ID: 240-138755-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-102120-SK-008
Lab Sample ID: 240-138755-4
Date Collected: 10/21/20 16:25
Matrix: Water
Date Received: 10/22/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	32		5.0	0.63	ug/L		10/23/20 14:00	10/26/20 15:43	1
Nickel	17	J	40	2.2	ug/L		10/23/20 14:00	10/26/20 15:43	1

Client: GHD Services Inc.
Job ID: 240-138755-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102120-SK-005
Lab Sample ID: 240-138755-1
Date Collected: 10/21/20 12:10
Matrix: Water
Date Received: 10/22/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			10/22/20 11:01	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			10/29/20 08:20	1

Client: GHD Services Inc.
Job ID: 240-138755-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102120-SK-006
Lab Sample ID: 240-138755-2
Date Collected: 10/21/20 13:40
Matrix: Water
Date Received: 10/22/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			10/22/20 11:01	1
Cr (III)	**0.011**		0.010	0.0020	mg/L			10/29/20 08:20	1

Client: GHD Services Inc.
Job ID: 240-138755-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102120-SK-007
Lab Sample ID: 240-138755-3
Date Collected: 10/21/20 15:00
Matrix: Water
Date Received: 10/22/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.20		0.010		mg/L			10/22/20 11:01	1
Cr (III)	0.017		0.010	0.0020	mg/L			10/29/20 08:20	1

Client: GHD Services Inc.
Job ID: 240-138755-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102120-SK-008
Lab Sample ID: 240-138755-4
Date Collected: 10/21/20 16:25
Matrix: Water
Date Received: 10/22/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			10/22/20 09:49	1
Cr (III)	**0.22**		0.010	0.0020	mg/L			10/29/20 08:20	1

QC Association Summary

Client: GHD Services Inc.
Job ID: 240-138755-1
Project/Site: 12607-T06, RACER Eckles Rd

Metals

Prep Batch: 457487

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138755-1	GW-12607-102120-SK-005	Total Recoverable	Water	3005A	
240-138755-2	GW-12607-102120-SK-006	Dissolved	Water	3005A	
240-138755-2	GW-12607-102120-SK-006	Total Recoverable	Water	3005A	
240-138755-3	GW-12607-102120-SK-007	Total Recoverable	Water	3005A	
240-138755-4	GW-12607-102120-SK-008	Dissolved	Water	3005A	
240-138755-4	GW-12607-102120-SK-008	Total Recoverable	Water	3005A	
MB 240-457487/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-457487/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 457731

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138755-1	GW-12607-102120-SK-005	Total Recoverable	Water	6010B	457487
240-138755-2	GW-12607-102120-SK-006	Dissolved	Water	6010B	457487
240-138755-2	GW-12607-102120-SK-006	Total Recoverable	Water	6010B	457487
240-138755-3	GW-12607-102120-SK-007	Total Recoverable	Water	6010B	457487
240-138755-4	GW-12607-102120-SK-008	Dissolved	Water	6010B	457487
240-138755-4	GW-12607-102120-SK-008	Total Recoverable	Water	6010B	457487
MB 240-457487/1-A	Method Blank	Total Recoverable	Water	6010B	457487
LCS 240-457487/2-A	Lab Control Sample	Total Recoverable	Water	6010B	457487

General Chemistry

Analysis Batch: 457260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138755-1	GW-12607-102120-SK-005	Total/NA	Water	7196A	
240-138755-2	GW-12607-102120-SK-006	Total/NA	Water	7196A	
240-138755-3	GW-12607-102120-SK-007	Total/NA	Water	7196A	
240-138755-4	GW-12607-102120-SK-008	Total/NA	Water	7196A	
MB 240-457260/3	Method Blank	Total/NA	Water	7196A	
LCS 240-457260/4	Lab Control Sample	Total/NA	Water	7196A	

Analysis Batch: 458299

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138755-1	GW-12607-102120-SK-005	Total/NA	Water	7196A	
240-138755-2	GW-12607-102120-SK-006	Total/NA	Water	7196A	
240-138755-3	GW-12607-102120-SK-007	Total/NA	Water	7196A	
240-138755-4	GW-12607-102120-SK-008	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-457487/1-A
Matrix: Water
Analysis Batch: 457731

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 457487

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/23/20 14:00	10/26/20 13:44	1
Nickel	20	U	20	2.2	ug/L		10/23/20 14:00	10/26/20 13:44	1

Lab Sample ID: LCS 240-457487/2-A
Matrix: Water
Analysis Batch: 457731

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 457487

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1000	958		ug/L		96	80 - 120
Nickel	1000	973		ug/L		97	80 - 120

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-457260/3
Matrix: Water
Analysis Batch: 457260

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			10/22/20 09:49	1

Lab Sample ID: LCS 240-457260/4
Matrix: Water
Analysis Batch: 457260

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.270		mg/L		108	80 - 123

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-138755-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-102120-SK-005
Lab Sample ID: 240-138755-1
Date Collected: 10/21/20 12:10
Matrix: Water
Date Received: 10/22/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			457487	10/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	457731	10/26/20 15:22	WKD	TAL CAN
Total/NA	Analysis	7196A		1	458299	10/29/20 08:20	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457260	10/22/20 11:01	KLR	TAL CAN

Client Sample ID: GW-12607-102120-SK-006
Lab Sample ID: 240-138755-2
Date Collected: 10/21/20 13:40
Matrix: Water
Date Received: 10/22/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			457487	10/23/20 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	457731	10/26/20 15:30	WKD	TAL CAN
Total Recoverable	Prep	3005A			457487	10/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	457731	10/26/20 15:26	WKD	TAL CAN
Total/NA	Analysis	7196A		1	458299	10/29/20 08:20	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457260	10/22/20 11:01	KLR	TAL CAN

Client Sample ID: GW-12607-102120-SK-007
Lab Sample ID: 240-138755-3
Date Collected: 10/21/20 15:00
Matrix: Water
Date Received: 10/22/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			457487	10/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	457731	10/26/20 15:34	WKD	TAL CAN
Total/NA	Analysis	7196A		1	458299	10/29/20 08:20	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457260	10/22/20 11:01	KLR	TAL CAN

Client Sample ID: GW-12607-102120-SK-008
Lab Sample ID: 240-138755-4
Date Collected: 10/21/20 16:25
Matrix: Water
Date Received: 10/22/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			457487	10/23/20 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	457731	10/26/20 15:43	WKD	TAL CAN
Total Recoverable	Prep	3005A			457487	10/23/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	457731	10/26/20 15:39	WKD	TAL CAN
Total/NA	Analysis	7196A		1	458299	10/29/20 08:20	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457260	10/22/20 09:49	KLR	TAL CAN

Laboratory References:
TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-138755-1
Project/Site: 12607-T06, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

Chain of Custody Record

460203

3.0/3.9

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MICHIGAN 190

T.A.# 24005880

Address:

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: Chris Meincke	Site Contact: S. Kippen	Date: 10-21-2020	COC No:
Company Name: GHD	Tel/Email: (248) 935-7346	Lab Contact: —	Carrier: FedEx	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: S. Kippen
City/State/Zip: Farmington Hills, M.I 48331	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: (248) 893-3460	TAT if different from Below			Walk-in Client:
Fax: chem.det@ghd.com	☒ 2 weeks (circled) ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: Eckles Rd - Racer				Job / SDG No.:
Site: Livonia, M.I.				
PO# 550W: T06T20 and T31T20				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Chromium	Nickel	Hex Chromium	dissolved Metals	PFAs	Sample Specific Notes:
GW-12607-102120-SK-005	10.21.20	12:10	G	GW	3			X	X	X		X	
-006		13:40			4			X	X	X	X	X	
-007		15:00			3			X	X	X		X	
-008		16:25			4			X	X	X	X	X	

SK

240-138755 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
K. Lott K	GHD	10/21/20 18:00		ETA	10-22-20 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 138755
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: Jenny Rose

Cooler Received on 10-22-20 Opened on 10-22-20

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 3.6 °C Corrected Cooler Temp. 3.9 °C

IR GUN #IR-12 (CF +0.5°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes) No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes) No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes (No)
-Were tamper/custody seals intact and uncompromised?	(Yes) No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes) No
4. Did custody papers accompany the sample(s)?	(Yes) No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes) No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes) No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes) No
11. Sufficient quantity received to perform indicated analyses?	(Yes) No
12. Are these work share samples and all listed on the COC?	Yes (No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	(Yes) No NA pH Strip Lot# HC907861
14. Were VOAs on the COC?	Yes (No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes (No)
17. Was a LL Hg or Me Hg trip blank present? _____	Yes (No)

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

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

Concerning _____

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

Samples processed by:

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Preservative Lot #
GW-12607-102120-SK-005	240-138755-C-1	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102120-SK-006	240-138755-C-2	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102120-SK-006	240-138755-D-2	Plastic 250ml - w/nitric - dis	<2			
GW-12607-102120-SK-007	240-138755-C-3	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102120-SK-008	240-138755-C-4	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102120-SK-008	240-138755-D-4	Plastic 250ml - w/nitric - dis	<2			

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-138755-2
Client Project/Site: 12607-T31, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
10/31/2020 1:17:23 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 240-138755-2

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-138755-2

Comments
No additional comments.

Receipt
The samples were received on 10/22/2020 10:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.9º C.

LCMS
Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-6:2 FTS of the following samples: GW-12607-102120-SK-006 (240-138755-2) and GW-12607-102120-SK-008 (240-138755-4). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgment was used to positively identify the analyte.

Method 537 (modified): Results for samples GW-12607-102120-SK-006 (240-138755-2) and GW-12607-102120-SK-008 (240-138755-4) were reported from the analysis of a diluted extract due to matrix interference of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-425432.

Method 3535: The following samples contain a thin layer of sediments at the bottom of the bottles prior to extraction: GW-12607-102120-SK-005 (240-138755-1), GW-12607-102120-SK-006 (240-138755-2), GW-12607-102120-SK-007 (240-138755-3) and GW-12607-102120-SK-008 (240-138755-4).

Method 3535: During the solid phase extraction process,The following samples contain non-settable particulates which clogged the solid phase extraction column:GW-12607-102120-SK-005 (240-138755-1), GW-12607-102120-SK-006 (240-138755-2), GW-12607-102120-SK-007 (240-138755-3) and GW-12607-102120-SK-008 (240-138755-4).

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138755-2

Qualifiers

LCMS

Qualifier	Qualifier Description
*5	Isotope dilution analyte is outside acceptance limits.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138755-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-138755-1	GW-12607-102120-SK-005	Water	10/21/20 12:10	10/22/20 10:00	
240-138755-2	GW-12607-102120-SK-006	Water	10/21/20 13:40	10/22/20 10:00	
240-138755-3	GW-12607-102120-SK-007	Water	10/21/20 15:00	10/22/20 10:00	
240-138755-4	GW-12607-102120-SK-008	Water	10/21/20 16:25	10/22/20 10:00	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138755-2

Client Sample ID: GW-12607-102120-SK-005 — Lab Sample ID: 240-138755-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	20		4.4	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	5.8		1.8	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.9		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.2		1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.2		1.8	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.0	J	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.9		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.52	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6	J I	1.8	0.50	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.35	J I	1.8	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	19	I	1.8	0.48	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102120-SK-006 — Lab Sample ID: 240-138755-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid (PFNA)	0.69	J	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.42	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.8	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	15		1.8	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	3.2	J I	18	1.8	ng/L	10		537 (modified)	Total/NA

Client Sample ID: GW-12607-102120-SK-007 — Lab Sample ID: 240-138755-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	11		4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.0		1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.7		1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.9		1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.0		1.8	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.53	J	1.8	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6	J I	1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12	I	1.8	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102120-SK-008 — Lab Sample ID: 240-138755-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	2.2	I	1.8	0.50	ng/L	1		537 (modified)	Total/NA
6:2 FTS	110		4.6	2.3	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138755-2

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102120-SK-005
Date Collected: 10/21/20 12:10
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**20**		4.4	2.1	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluoropentanoic acid (PFPeA)	**5.8**		1.8	0.43	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorohexanoic acid (PFHxA)	**5.9**		1.8	0.51	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluoroheptanoic acid (PFHpA)	**3.2**		1.8	0.22	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorooctanoic acid (PFOA)	**4.2**		1.8	0.75	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorononanoic acid (PFNA)	**1.0**	**J**	1.8	0.24	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.27	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.97	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.1	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.65	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorobutanesulfonic acid (PFBS)	**1.9**		1.8	0.18	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluoropentanesulfonic acid (PFPeS)	**0.52**	**J**	1.8	0.27	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorohexanesulfonic acid (PFHxS)	**1.6**	**J I**	1.8	0.50	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.35**	**J I**	1.8	0.17	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorooctanesulfonic acid (PFOS)	**19**	**I**	1.8	0.48	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		10/26/20 13:09	10/27/20 16:56	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.87	ng/L		10/26/20 13:09	10/27/20 16:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 13:09	10/27/20 16:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 13:09	10/27/20 16:56	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/26/20 13:09	10/27/20 16:56	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		10/26/20 13:09	10/27/20 16:56	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/26/20 13:09	10/27/20 16:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.35	ng/L		10/26/20 13:09	10/27/20 16:56	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/26/20 13:09	10/27/20 16:56	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/26/20 13:09	10/27/20 16:56	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		10/26/20 13:09	10/27/20 16:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*46*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C5 PFPeA	*52*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C2 PFHxA	*62*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C4 PFHpA	*71*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C4 PFOA	*69*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C5 PFNA	*72*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C2 PFDA	*69*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C2 PFUnA	*67*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C2 PFDoA	*65*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C2 PFTeDA	*62*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C3 PFBS	*61*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
18O2 PFHxS	*65*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C4 PFOS	*60*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*
13C8 FOSA	*63*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:56*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102120-SK-005
Date Collected: 10/21/20 12:10
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-1
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	57		25 - 150	10/26/20 13:09	10/27/20 16:56	1
d5-NEtFOSAA	66		25 - 150	10/26/20 13:09	10/27/20 16:56	1
M2-6:2 FTS	73		25 - 150	10/26/20 13:09	10/27/20 16:56	1
M2-8:2 FTS	64		25 - 150	10/26/20 13:09	10/27/20 16:56	1
M2-4:2 FTS	74		25 - 150	10/26/20 13:09	10/27/20 16:56	1
13C3 HFPO-DA	60		25 - 150	10/26/20 13:09	10/27/20 16:56	1

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138755-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102120-SK-006
Date Collected: 10/21/20 13:40
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	**0.69**	**J**	1.8	0.24	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluorodecanoic acid (PFDA)	**0.42**	**J**	1.8	0.27	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.96	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.48	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.1	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.64	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluorohexanesulfonic acid (PFHxS)	**1.0**	**J**	1.8	0.50	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluorooctanesulfonic acid (PFOS)	**15**		1.8	0.47	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.32	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		10/26/20 13:09	10/27/20 17:05	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.86	ng/L		10/26/20 13:09	10/27/20 17:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 13:09	10/27/20 17:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 13:09	10/27/20 17:05	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/26/20 13:09	10/27/20 17:05	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		10/26/20 13:09	10/27/20 17:05	1
8:2 FTS	1.8	U	1.8	0.40	ng/L		10/26/20 13:09	10/27/20 17:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.35	ng/L		10/26/20 13:09	10/27/20 17:05	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/26/20 13:09	10/27/20 17:05	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/26/20 13:09	10/27/20 17:05	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		10/26/20 13:09	10/27/20 17:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFNA	*81*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
13C2 PFDA	*82*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
13C2 PFUnA	*88*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
13C2 PFDoA	*94*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
13C2 PFTeDA	*79*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
18O2 PFHxS	*92*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
13C4 PFOS	*84*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
13C8 FOSA	*74*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
d3-NMeFOSAA	*57*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
d5-NEtFOSAA	*73*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
M2-6:2 FTS	*165*	**5*	*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
M2-8:2 FTS	*125*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
M2-4:2 FTS	*137*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*
13C3 HFPO-DA	*80*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:05*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102120-SK-007
Date Collected: 10/21/20 15:00
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**11**		4.6	2.2	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluoropentanoic acid (PFPeA)	**2.0**		1.8	0.45	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorohexanoic acid (PFHxA)	**2.7**		1.8	0.53	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluoroheptanoic acid (PFHpA)	**1.9**		1.8	0.23	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorooctanoic acid (PFOA)	**4.0**		1.8	0.78	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.29	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.51	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.67	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.18	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluoropentanesulfonic acid (PFPeS)	**0.53**	**J**	1.8	0.28	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorohexanesulfonic acid (PFHxS)	**1.6**	**J I**	1.8	0.52	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorooctanesulfonic acid (PFOS)	**12**	**I**	1.8	0.50	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/26/20 13:09	10/27/20 17:14	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.90	ng/L		10/26/20 13:09	10/27/20 17:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		10/26/20 13:09	10/27/20 17:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		10/26/20 13:09	10/27/20 17:14	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		10/26/20 13:09	10/27/20 17:14	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		10/26/20 13:09	10/27/20 17:14	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		10/26/20 13:09	10/27/20 17:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.37	ng/L		10/26/20 13:09	10/27/20 17:14	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		10/26/20 13:09	10/27/20 17:14	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/26/20 13:09	10/27/20 17:14	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/26/20 13:09	10/27/20 17:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*58*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C5 PFPeA	*44*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C2 PFHxA	*72*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C4 PFHpA	*78*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C4 PFOA	*79*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C5 PFNA	*77*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C2 PFDA	*71*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C2 PFUnA	*74*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C2 PFDoA	*67*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C2 PFTeDA	*72*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C3 PFBS	*59*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
18O2 PFHxS	*75*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C4 PFOS	*71*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*
13C8 FOSA	*69*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:14*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102120-SK-007
Date Collected: 10/21/20 15:00
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-3
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	54		25 - 150	10/26/20 13:09	10/27/20 17:14	1
d5-NEtFOSAA	67		25 - 150	10/26/20 13:09	10/27/20 17:14	1
M2-6:2 FTS	72		25 - 150	10/26/20 13:09	10/27/20 17:14	1
M2-8:2 FTS	63		25 - 150	10/26/20 13:09	10/27/20 17:14	1
M2-4:2 FTS	67		25 - 150	10/26/20 13:09	10/27/20 17:14	1
13C3 HFPO-DA	69		25 - 150	10/26/20 13:09	10/27/20 17:14	1

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138755-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102120-SK-008
Date Collected: 10/21/20 16:25
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		10/26/20 13:09	10/27/20 17:23	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.29	ng/L		10/26/20 13:09	10/27/20 17:23	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		10/26/20 13:09	10/27/20 17:23	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.51	ng/L		10/26/20 13:09	10/27/20 17:23	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/26/20 13:09	10/27/20 17:23	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.67	ng/L		10/26/20 13:09	10/27/20 17:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.18	ng/L		10/26/20 13:09	10/27/20 17:23	1
Perfluorooctanesulfonic acid (PFOS)	**2.2**	**I**	1.8	0.50	ng/L		10/26/20 13:09	10/27/20 17:23	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		10/26/20 13:09	10/27/20 17:23	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.30	ng/L		10/26/20 13:09	10/27/20 17:23	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.90	ng/L		10/26/20 13:09	10/27/20 17:23	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		10/26/20 13:09	10/27/20 17:23	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		10/26/20 13:09	10/27/20 17:23	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		10/26/20 13:09	10/27/20 17:23	1
6:2 FTS	**110**		4.6	2.3	ng/L		10/26/20 13:09	10/27/20 17:23	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		10/26/20 13:09	10/27/20 17:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.37	ng/L		10/26/20 13:09	10/27/20 17:23	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		10/26/20 13:09	10/27/20 17:23	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/26/20 13:09	10/27/20 17:23	1
F-53B Minor	1.8	U	1.8	0.30	ng/L		10/26/20 13:09	10/27/20 17:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFNA	*88*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
13C2 PFDA	*82*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
13C2 PFUnA	*89*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
13C2 PFDoA	*71*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
13C2 PFTeDA	*85*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
18O2 PFHxS	*105*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
13C4 PFOS	*91*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
13C8 FOSA	*77*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
d3-NMeFOSAA	*57*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
d5-NEtFOSAA	*74*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
M2-6:2 FTS	*170*	**5*	*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
M2-8:2 FTS	*128*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
M2-4:2 FTS	*150*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*
13C3 HFPO-DA	*83*		*25 - 150*	*10/26/20 13:09*	*10/27/20 17:23*	*1*

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138755-2

Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Client Sample ID: GW-12607-102120-SK-006
Date Collected: 10/21/20 13:40
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	44	U	44	21	ng/L		10/26/20 13:09	10/29/20 05:02	10
Perfluoropentanoic acid (PFPeA)	18	U	18	4.3	ng/L		10/26/20 13:09	10/29/20 05:02	10
Perfluorohexanoic acid (PFHxA)	18	U	18	5.1	ng/L		10/26/20 13:09	10/29/20 05:02	10
Perfluoroheptanoic acid (PFHpA)	18	U	18	2.2	ng/L		10/26/20 13:09	10/29/20 05:02	10
Perfluorooctanoic acid (PFOA)	18	U	18	7.4	ng/L		10/26/20 13:09	10/29/20 05:02	10
Perfluorobutanesulfonic acid (PFBS)	**3.2**	**J I**	18	1.8	ng/L		10/26/20 13:09	10/29/20 05:02	10
Perfluoropentanesulfonic acid (PFPeS)	18	U	18	2.6	ng/L		10/26/20 13:09	10/29/20 05:02	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*60*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:02*	*10*
13C5 PFPeA	*65*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:02*	*10*
13C2 PFHxA	*72*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:02*	*10*
13C4 PFHpA	*75*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:02*	*10*
13C4 PFOA	*82*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:02*	*10*
13C3 PFBS	*70*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:02*	*10*
18O2 PFHxS	*72*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:02*	*10*

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138755-2

Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Client Sample ID: GW-12607-102120-SK-008
Date Collected: 10/21/20 16:25
Date Received: 10/22/20 10:00

Lab Sample ID: 240-138755-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	46	U	46	22	ng/L		10/26/20 13:09	10/29/20 05:11	10
Perfluoropentanoic acid (PFPeA)	18	U	18	4.5	ng/L		10/26/20 13:09	10/29/20 05:11	10
Perfluorohexanoic acid (PFHxA)	18	U	18	5.4	ng/L		10/26/20 13:09	10/29/20 05:11	10
Perfluoroheptanoic acid (PFHpA)	18	U	18	2.3	ng/L		10/26/20 13:09	10/29/20 05:11	10
Perfluorooctanoic acid (PFOA)	18	U	18	7.8	ng/L		10/26/20 13:09	10/29/20 05:11	10
Perfluorobutanesulfonic acid (PFBS)	18	U	18	1.8	ng/L		10/26/20 13:09	10/29/20 05:11	10
Perfluoropentanesulfonic acid (PFPeS)	18	U	18	2.8	ng/L		10/26/20 13:09	10/29/20 05:11	10
Perfluorohexanesulfonic acid (PFHxS)	18	U	18	5.3	ng/L		10/26/20 13:09	10/29/20 05:11	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*57*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:11*	*10*
13C5 PFPeA	*63*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:11*	*10*
13C2 PFHxA	*71*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:11*	*10*
13C4 PFHpA	*72*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:11*	*10*
13C4 PFOA	*81*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:11*	*10*
13C3 PFBS	*70*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:11*	*10*
18O2 PFHxS	*72*		*25 - 150*	*10/26/20 13:09*	*10/29/20 05:11*	*10*

QC Association Summary

Client: GHD Services Inc.
Job ID: 240-138755-2
Project/Site: 12607-T31, RACER Eckles Rd

LCMS

Prep Batch: 425432

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138755-1	GW-12607-102120-SK-005	Total/NA	Water	3535	
240-138755-2	GW-12607-102120-SK-006	Total/NA	Water	3535	
240-138755-2 - DL	GW-12607-102120-SK-006	Total/NA	Water	3535	
240-138755-3	GW-12607-102120-SK-007	Total/NA	Water	3535	
240-138755-4	GW-12607-102120-SK-008	Total/NA	Water	3535	
240-138755-4 - DL	GW-12607-102120-SK-008	Total/NA	Water	3535	
MB 320-425432/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-425432/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-425432/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 425793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138755-1	GW-12607-102120-SK-005	Total/NA	Water	537 (modified)	425432
240-138755-2	GW-12607-102120-SK-006	Total/NA	Water	537 (modified)	425432
240-138755-3	GW-12607-102120-SK-007	Total/NA	Water	537 (modified)	425432
240-138755-4	GW-12607-102120-SK-008	Total/NA	Water	537 (modified)	425432
MB 320-425432/1-A	Method Blank	Total/NA	Water	537 (modified)	425432
LCS 320-425432/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	425432
LCSD 320-425432/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	425432

Analysis Batch: 426504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138755-2 - DL	GW-12607-102120-SK-006	Total/NA	Water	537 (modified)	425432
240-138755-4 - DL	GW-12607-102120-SK-008	Total/NA	Water	537 (modified)	425432

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-425432/1-A
Matrix: Water
Analysis Batch: 425793

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 425432

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.0	U	5.0	2.4	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.73	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.0	0.57	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.37	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		10/26/20 13:09	10/27/20 16:29	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.98	ng/L		10/26/20 13:09	10/27/20 16:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.0	U	5.0	1.2	ng/L		10/26/20 13:09	10/27/20 16:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.0	U	5.0	1.3	ng/L		10/26/20 13:09	10/27/20 16:29	1
4:2 FTS	2.0	U	2.0	0.24	ng/L		10/26/20 13:09	10/27/20 16:29	1
6:2 FTS	5.0	U	5.0	2.5	ng/L		10/26/20 13:09	10/27/20 16:29	1
8:2 FTS	2.0	U	2.0	0.46	ng/L		10/26/20 13:09	10/27/20 16:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.0	U	2.0	0.40	ng/L		10/26/20 13:09	10/27/20 16:29	1
HFPO-DA (GenX)	4.0	U	4.0	1.5	ng/L		10/26/20 13:09	10/27/20 16:29	1
F-53B Major	2.0	U	2.0	0.24	ng/L		10/26/20 13:09	10/27/20 16:29	1
F-53B Minor	2.0	U	2.0	0.32	ng/L		10/26/20 13:09	10/27/20 16:29	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C5 PFPeA	*91*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C2 PFHxA	*95*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C4 PFHpA	*96*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C4 PFOA	*102*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C5 PFNA	*108*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C2 PFDA	*107*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C2 PFUnA	*98*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C2 PFDoA	*92*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C3 PFBS	*91*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
18O2 PFHxS	*92*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C4 PFOS	*89*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
13C8 FOSA	*92*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*10/26/20 13:09*	*10/27/20 16:29*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-425432/1-A
Matrix: Water
Analysis Batch: 425793

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 425432

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	105		25 - 150	10/26/20 13:09	10/27/20 16:29	1
M2-6:2 FTS	89		25 - 150	10/26/20 13:09	10/27/20 16:29	1
M2-8:2 FTS	99		25 - 150	10/26/20 13:09	10/27/20 16:29	1
M2-4:2 FTS	83		25 - 150	10/26/20 13:09	10/27/20 16:29	1
13C3 HFPO-DA	88		25 - 150	10/26/20 13:09	10/27/20 16:29	1

Lab Sample ID: LCS 320-425432/2-A
Matrix: Water
Analysis Batch: 425793

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 425432

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.8		ng/L		107	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	39.8		ng/L		99	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	42.6		ng/L		107	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	41.2		ng/L		103	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	40.4		ng/L		101	70 - 130
Perfluorononanoic acid (PFNA)	40.0	42.4		ng/L		106	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	39.6		ng/L		99	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	43.7		ng/L		109	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	36.4		ng/L		91	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	46.4		ng/L		116	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	39.4		ng/L		99	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	35.9		ng/L		101	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.4		ng/L		105	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.1		ng/L		99	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.8		ng/L		107	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	37.8		ng/L		102	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	39.0		ng/L		102	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.2		ng/L		102	71 - 131
Perfluorooctanesulfonamide (FOSA)	40.0	42.3		ng/L		106	73 - 133
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.4		ng/L		103	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.7		ng/L		104	76 - 136
4:2 FTS	37.4	39.5		ng/L		106	79 - 139
6:2 FTS	37.9	37.8		ng/L		100	59 - 175
8:2 FTS	38.3	41.9		ng/L		109	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	40.6		ng/L		108	79 - 139
HFPO-DA (GenX)	40.0	40.8		ng/L		102	51 - 173
F-53B Major	37.3	38.6		ng/L		104	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-425432/2-A
Matrix: Water
Analysis Batch: 425793

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 425432

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			37.7	35.9		ng/L		95	54 - 114		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*74*		*25 - 150*
13C5 PFPeA	*77*		*25 - 150*
13C2 PFHxA	*77*		*25 - 150*
13C4 PFHpA	*81*		*25 - 150*
13C4 PFOA	*89*		*25 - 150*
13C5 PFNA	*88*		*25 - 150*
13C2 PFDA	*84*		*25 - 150*
13C2 PFUnA	*86*		*25 - 150*
13C2 PFDoA	*61*		*25 - 150*
13C2 PFTeDA	*94*		*25 - 150*
13C3 PFBS	*77*		*25 - 150*
18O2 PFHxS	*78*		*25 - 150*
13C4 PFOS	*79*		*25 - 150*
13C8 FOSA	*80*		*25 - 150*
d3-NMeFOSAA	*74*		*25 - 150*
d5-NEtFOSAA	*66*		*25 - 150*
M2-6:2 FTS	*73*		*25 - 150*
M2-8:2 FTS	*100*		*25 - 150*
M2-4:2 FTS	*68*		*25 - 150*
13C3 HFPO-DA	*78*		*25 - 150*

Lab Sample ID: LCSD 320-425432/3-A
Matrix: Water
Analysis Batch: 425793

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 425432

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	43.9		ng/L		110	76 - 136	3	30
Perfluoropentanoic acid (PFPeA)			40.0	38.3		ng/L		96	71 - 131	4	30
Perfluorohexanoic acid (PFHxA)			40.0	40.7		ng/L		102	73 - 133	5	30
Perfluoroheptanoic acid (PFHpA)			40.0	42.3		ng/L		106	72 - 132	3	30
Perfluorooctanoic acid (PFOA)			40.0	40.2		ng/L		100	70 - 130	0	30
Perfluorononanoic acid (PFNA)			40.0	41.0		ng/L		102	75 - 135	3	30
Perfluorodecanoic acid (PFDA)			40.0	40.7		ng/L		102	76 - 136	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	43.3		ng/L		108	68 - 128	1	30
Perfluorododecanoic acid (PFDoA)			40.0	40.7		ng/L		102	71 - 131	11	30
Perfluorotridecanoic acid (PFTriA)			40.0	39.8		ng/L		100	71 - 131	15	30
Perfluorotetradecanoic acid (PFTeA)			40.0	38.5		ng/L		96	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)			35.4	37.1		ng/L		105	67 - 127	3	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	41.0		ng/L		109	66 - 126	4	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	35.9		ng/L		99	59 - 119	1	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-425432/3-A
Matrix: Water
Analysis Batch: 425793

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 425432

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	40.9		ng/L		107	76 - 136	0	30
Perfluorooctanesulfonic acid (PFOS)			37.1	37.7		ng/L		102	70 - 130	0	30
Perfluorononanesulfonic acid (PFNS)			38.4	40.7		ng/L		106	75 - 135	4	30
Perfluorodecanesulfonic acid (PFDS)			38.6	40.8		ng/L		106	71 - 131	4	30
Perfluorooctanesulfonamide (FOSA)			40.0	43.5		ng/L		109	73 - 133	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	41.3		ng/L		103	76 - 136	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	42.9		ng/L		107	76 - 136	3	30
4:2 FTS			37.4	40.7		ng/L		109	79 - 139	3	30
6:2 FTS			37.9	36.6		ng/L		97	59 - 175	3	30
8:2 FTS			38.3	40.9		ng/L		107	75 - 135	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	40.3		ng/L		107	79 - 139	1	30
HFPO-DA (GenX)			40.0	43.4		ng/L		108	51 - 173	6	30
F-53B Major			37.3	39.0		ng/L		105	75 - 135	1	30
F-53B Minor			37.7	37.1		ng/L		99	54 - 114	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*74*		*25 - 150*
13C5 PFPeA	*80*		*25 - 150*
13C2 PFHxA	*83*		*25 - 150*
13C4 PFHpA	*81*		*25 - 150*
13C4 PFOA	*89*		*25 - 150*
13C5 PFNA	*91*		*25 - 150*
13C2 PFDA	*89*		*25 - 150*
13C2 PFUnA	*86*		*25 - 150*
13C2 PFDoA	*91*		*25 - 150*
13C2 PFTeDA	*88*		*25 - 150*
13C3 PFBS	*77*		*25 - 150*
18O2 PFHxS	*80*		*25 - 150*
13C4 PFOS	*80*		*25 - 150*
13C8 FOSA	*79*		*25 - 150*
d3-NMeFOSAA	*80*		*25 - 150*
d5-NEtFOSAA	*86*		*25 - 150*
M2-6:2 FTS	*71*		*25 - 150*
M2-8:2 FTS	*76*		*25 - 150*
M2-4:2 FTS	*70*		*25 - 150*
13C3 HFPO-DA	*75*		*25 - 150*

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138755-2

Client Sample ID: GW-12607-102120-SK-005
Lab Sample ID: 240-138755-1
Date Collected: 10/21/20 12:10
Matrix: Water
Date Received: 10/22/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425432	10/26/20 13:09	LA	TAL SAC
Total/NA	Analysis	537 (modified)		1	425793	10/27/20 16:56	K1S	TAL SAC

Client Sample ID: GW-12607-102120-SK-006
Lab Sample ID: 240-138755-2
Date Collected: 10/21/20 13:40
Matrix: Water
Date Received: 10/22/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425432	10/26/20 13:09	LA	TAL SAC
Total/NA	Analysis	537 (modified)		1	425793	10/27/20 17:05	K1S	TAL SAC
Total/NA	Prep	3535	DL		425432	10/26/20 13:09	LA	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10	426504	10/29/20 05:02	S1M	TAL SAC

Client Sample ID: GW-12607-102120-SK-007
Lab Sample ID: 240-138755-3
Date Collected: 10/21/20 15:00
Matrix: Water
Date Received: 10/22/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425432	10/26/20 13:09	LA	TAL SAC
Total/NA	Analysis	537 (modified)		1	425793	10/27/20 17:14	K1S	TAL SAC

Client Sample ID: GW-12607-102120-SK-008
Lab Sample ID: 240-138755-4
Date Collected: 10/21/20 16:25
Matrix: Water
Date Received: 10/22/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425432	10/26/20 13:09	LA	TAL SAC
Total/NA	Analysis	537 (modified)		1	425793	10/27/20 17:23	K1S	TAL SAC
Total/NA	Prep	3535	DL		425432	10/26/20 13:09	LA	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10	426504	10/29/20 05:11	S1M	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-138755-2
Project/Site: 12607-T31, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	10-31-20
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
Nevada	State	CA000442021-1	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-20
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

460203

3.0/3.9

eurofins | Environment Testing TestAmerica

MICHIGAN 190 T.A.# 24005880

Address:

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: Chris Meincke	Site Contact: S. Kippen	Date: 10-21-2020	COC No:
Company Name: GHD	Tel/Email: (248) 935-7346	Lab Contact: —	Carrier: FedEx	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: S. Kippen
City/State/Zip: Farmington Hills, M.I 48331	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: (248) 893-3460	TAT if different from Below			Walk-in Client:
Fax: chem.det@ghd.com	☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: Eckles Rd - Racer				Job / SDG No.:
Site: Livonia, M.I.				
PO# 550W: T06T20 and T31T20				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Chromium	Nickel	Hex Chromium	dissolved Metals	PFAs	Sample Specific Notes:
GW-12607-102120-SK-005	10.21.20	12:10	G	GW	3			X	X	X		X	
-006		13:40			4			X	X	X	X	X	
-007		15:00			3			X	X	X		X	
-008		16:25			4			X	X	X	X	X	

SK

240-138755 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: ____ Corr'd: ____ | Therm ID No.: ____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
K. Lott K	GHD	10/21/20 18:00		ETA	10-22-20 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 138755
Canton Facility

Client GHD Site Name

Cooler Received on 10-22-20 Opened on 10-22-20

Cooler unpacked by: Jenny Rose

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 3.6 °C Corrected Cooler Temp. 3.9 °C
   IR GUN #IR-12 (CF +0.5°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? (Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? (Yes) No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC? Yes (No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes (No)
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

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

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

Concerning _____

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
GW-12607-102120-SK-005	240-138755-C-1	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102120-SK-006	240-138755-C-2	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102120-SK-006	240-138755-D-2	Plastic 250ml - w/nitric - dis	<2			
GW-12607-102120-SK-007	240-138755-C-3	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102120-SK-008	240-138755-C-4	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102120-SK-008	240-138755-D-4	Plastic 250ml - w/nitric - dis	<2			

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-138755-2

Login Number: 138755
List Number: 2
Creator: Saephan, Kae C

List Source: Eurofins TestAmerica, Sacramento
List Creation: 10/23/20 01:22 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	ob: 1.8c corr: 2.3c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138755-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-138755-1	GW-12607-102120-SK-005	46	52	62	71	69	72	69	67
240-138755-2	GW-12607-102120-SK-006						81	82	88
240-138755-2 - DL	GW-12607-102120-SK-006	60	65	72	75	82			
240-138755-3	GW-12607-102120-SK-007	58	44	72	78	79	77	71	74
240-138755-4	GW-12607-102120-SK-008						88	82	89
240-138755-4 - DL	GW-12607-102120-SK-008	57	63	71	72	81			
LCS 320-425432/2-A	Lab Control Sample	74	77	77	81	89	88	84	86
LCSD 320-425432/3-A	Lab Control Sample Dup	74	80	83	81	89	91	89	86
MB 320-425432/1-A	Method Blank	85	91	95	96	102	108	107	98

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
240-138755-1	GW-12607-102120-SK-005	65	62	61	65	60	63	57	66
240-138755-2	GW-12607-102120-SK-006	94	79		92	84	74	57	73
240-138755-2 - DL	GW-12607-102120-SK-006			70	72				
240-138755-3	GW-12607-102120-SK-007	67	72	59	75	71	69	54	67
240-138755-4	GW-12607-102120-SK-008	71	85		105	91	77	57	74
240-138755-4 - DL	GW-12607-102120-SK-008			70	72				
LCS 320-425432/2-A	Lab Control Sample	61	94	77	78	79	80	74	66
LCSD 320-425432/3-A	Lab Control Sample Dup	91	88	77	80	80	79	80	86
MB 320-425432/1-A	Method Blank	92	90	91	92	89	92	91	105

		Percent Isotope Dilution Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
240-138755-1	GW-12607-102120-SK-005	73	64	74	60
240-138755-2	GW-12607-102120-SK-006	165 *5	125	137	80
240-138755-2 - DL	GW-12607-102120-SK-006				
240-138755-3	GW-12607-102120-SK-007	72	63	67	69
240-138755-4	GW-12607-102120-SK-008	170 *5	128	150	83
240-138755-4 - DL	GW-12607-102120-SK-008				
LCS 320-425432/2-A	Lab Control Sample	73	100	68	78
LCSD 320-425432/3-A	Lab Control Sample Dup	71	76	70	75
MB 320-425432/1-A	Method Blank	89	99	83	88

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 240-138755-2
Project/Site: 12607-T31, RACER Eckles Rd

d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-138829-1
Client Project/Site: 12607-T06, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
11/3/2020 2:31:10 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 240-138829-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-138829-1

Comments
No additional comments.

Receipt
The samples were received on 10/23/2020 10:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.1º C.

Metals
Method 6010B: Some requested practical quantitation limits (PQLs) fall below the laboratory's verified standard quantitation limit. The continuing calibration blanks and method blanks may not support the lower PQL.

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

General Chemistry
Method 7196A: The following sample(s) was received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: GW-12607-102220-SK-009 (240-138829-1) and GW-12607-102220-SK-010 (240-138829-2).

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

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 240-138829-1
Project/Site: 12607-T06, RACER Eckles Rd

Qualifiers

Metals

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

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-138829-1	GW-12607-102220-SK-009	Water	10/22/20 12:20	10/23/20 10:00	
240-138829-2	GW-12607-102220-SK-010	Water	10/22/20 12:25	10/23/20 10:00	
240-138829-3	GW-12607-102220-SK-011	Water	10/22/20 14:15	10/23/20 10:00	
240-138829-4	GW-12607-102220-SK-012	Water	10/22/20 15:35	10/23/20 10:00	
240-138829-5	GW-12607-102220-SK-013	Water	10/22/20 16:50	10/23/20 10:00	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

Client Sample ID: GW-12607-102220-SK-009 — Lab Sample ID: 240-138829-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	1.7	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	14	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102220-SK-010 — Lab Sample ID: 240-138829-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.85	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	14	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102220-SK-011 — Lab Sample ID: 240-138829-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	350		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	92		20	2.2	ug/L	1		6010B	Total Recoverable
Chromium	140		5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	40		40	2.2	ug/L	1		6010B	Dissolved
Cr (III)	0.35		0.010	0.0020	mg/L	1		7196A	Total/NA

Client Sample ID: GW-12607-102220-SK-012 — Lab Sample ID: 240-138829-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	1.1	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	3.1	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102220-SK-013 — Lab Sample ID: 240-138829-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	290		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	110		20	2.2	ug/L	1		6010B	Total Recoverable
Chromium	18		5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	12	J	40	2.2	ug/L	1		6010B	Dissolved
Cr (III)	0.29		0.010	0.0020	mg/L	1		7196A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN
7196A	Chromium, Hexavalent	SW846	TAL CAN
7196A	Chromium, Trivalent (Colorimetric)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102220-SK-009
Date Collected: 10/22/20 12:20
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	1.7	J	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 17:54	1
Nickel	14	J	20	2.2	ug/L		10/28/20 14:00	10/29/20 17:54	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102220-SK-010
Date Collected: 10/22/20 12:25
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.85	J	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 18:07	1
Nickel	14	J	20	2.2	ug/L		10/28/20 14:00	10/29/20 18:07	1

Client: GHD Services Inc.
Job ID: 240-138829-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102220-SK-011
Lab Sample ID: 240-138829-3
Date Collected: 10/22/20 14:15
Matrix: Water
Date Received: 10/23/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	350		5.0	0.63	ug/L		10/28/20 14:00	10/29/20 18:11	1
Nickel	92		20	2.2	ug/L		10/28/20 14:00	10/29/20 18:11	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102220-SK-012
Date Collected: 10/22/20 15:35
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	1.1	J	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 18:19	1
Nickel	3.1	J	20	2.2	ug/L		10/28/20 14:00	10/29/20 18:19	1

Client: GHD Services Inc.
Job ID: 240-138829-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102220-SK-013
Lab Sample ID: 240-138829-5
Date Collected: 10/22/20 16:50
Matrix: Water
Date Received: 10/23/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	290		5.0	0.63	ug/L		10/28/20 14:00	10/29/20 18:24	1
Nickel	110		20	2.2	ug/L		10/28/20 14:00	10/29/20 18:24	1

Client: GHD Services Inc.
Job ID: 240-138829-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-102220-SK-011
Lab Sample ID: 240-138829-3
Date Collected: 10/22/20 14:15
Matrix: Water
Date Received: 10/23/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	140		5.0	0.63	ug/L		10/28/20 14:00	10/29/20 18:15	1
Nickel	40		40	2.2	ug/L		10/28/20 14:00	10/29/20 18:15	1

Client: GHD Services Inc.
Job ID: 240-138829-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-102220-SK-013
Lab Sample ID: 240-138829-5
Date Collected: 10/22/20 16:50
Matrix: Water
Date Received: 10/23/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	18		5.0	0.63	ug/L		10/28/20 14:00	10/29/20 18:28	1
Nickel	12	J	40	2.2	ug/L		10/28/20 14:00	10/29/20 18:28	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

General Chemistry

Client Sample ID: GW-12607-102220-SK-009
Date Collected: 10/22/20 12:20
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U H	0.010	0.0070	mg/L			10/23/20 13:37	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			11/03/20 12:31	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

General Chemistry

Client Sample ID: GW-12607-102220-SK-010
Date Collected: 10/22/20 12:25
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U H	0.010	0.0070	mg/L			10/23/20 13:38	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			11/03/20 12:31	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

General Chemistry

Client Sample ID: GW-12607-102220-SK-011
Date Collected: 10/22/20 14:15
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			10/23/20 13:39	1
Cr (III)	**0.35**		0.010	0.0020	mg/L			11/03/20 12:31	1

Client: GHD Services Inc.
Job ID: 240-138829-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102220-SK-012
Lab Sample ID: 240-138829-4
Date Collected: 10/22/20 15:35
Matrix: Water
Date Received: 10/23/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			10/23/20 13:40	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			11/03/20 12:31	1

Client: GHD Services Inc.
Job ID: 240-138829-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102220-SK-013
Lab Sample ID: 240-138829-5
Date Collected: 10/22/20 16:50
Matrix: Water
Date Received: 10/23/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.050	U	0.050	0.035	mg/L			10/23/20 13:41	5
Cr (III)	**0.29**		0.010	0.0020	mg/L			11/03/20 12:31	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

Metals

Prep Batch: 458103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138829-1	GW-12607-102220-SK-009	Total Recoverable	Water	3005A	
240-138829-2	GW-12607-102220-SK-010	Total Recoverable	Water	3005A	
240-138829-3	GW-12607-102220-SK-011	Dissolved	Water	3005A	
240-138829-3	GW-12607-102220-SK-011	Total Recoverable	Water	3005A	
240-138829-4	GW-12607-102220-SK-012	Total Recoverable	Water	3005A	
240-138829-5	GW-12607-102220-SK-013	Dissolved	Water	3005A	
240-138829-5	GW-12607-102220-SK-013	Total Recoverable	Water	3005A	
MB 240-458103/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-458103/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 458486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138829-1	GW-12607-102220-SK-009	Total Recoverable	Water	6010B	458103
240-138829-2	GW-12607-102220-SK-010	Total Recoverable	Water	6010B	458103
240-138829-3	GW-12607-102220-SK-011	Dissolved	Water	6010B	458103
240-138829-3	GW-12607-102220-SK-011	Total Recoverable	Water	6010B	458103
240-138829-4	GW-12607-102220-SK-012	Total Recoverable	Water	6010B	458103
240-138829-5	GW-12607-102220-SK-013	Dissolved	Water	6010B	458103
240-138829-5	GW-12607-102220-SK-013	Total Recoverable	Water	6010B	458103
MB 240-458103/1-A	Method Blank	Total Recoverable	Water	6010B	458103
LCS 240-458103/2-A	Lab Control Sample	Total Recoverable	Water	6010B	458103

General Chemistry

Analysis Batch: 457500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138829-1	GW-12607-102220-SK-009	Total/NA	Water	7196A	
240-138829-2	GW-12607-102220-SK-010	Total/NA	Water	7196A	
240-138829-3	GW-12607-102220-SK-011	Total/NA	Water	7196A	
240-138829-4	GW-12607-102220-SK-012	Total/NA	Water	7196A	
240-138829-5	GW-12607-102220-SK-013	Total/NA	Water	7196A	
MB 240-457500/3	Method Blank	Total/NA	Water	7196A	
LCS 240-457500/4	Lab Control Sample	Total/NA	Water	7196A	

Analysis Batch: 459094

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138829-1	GW-12607-102220-SK-009	Total/NA	Water	7196A	
240-138829-2	GW-12607-102220-SK-010	Total/NA	Water	7196A	
240-138829-3	GW-12607-102220-SK-011	Total/NA	Water	7196A	
240-138829-4	GW-12607-102220-SK-012	Total/NA	Water	7196A	
240-138829-5	GW-12607-102220-SK-013	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-458103/1-A
Matrix: Water
Analysis Batch: 458486

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 458103

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 17:25	1
Nickel	20	U	20	2.2	ug/L		10/28/20 14:00	10/29/20 17:25	1

Lab Sample ID: LCS 240-458103/2-A
Matrix: Water
Analysis Batch: 458486

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 458103

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1000	931		ug/L		93	80 - 120
Nickel	1000	995		ug/L		100	80 - 120

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-457500/3
Matrix: Water
Analysis Batch: 457500

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			10/23/20 10:21	1

Lab Sample ID: LCS 240-457500/4
Matrix: Water
Analysis Batch: 457500

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.267		mg/L		107	80 - 123

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-138829-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-102220-SK-009
Lab Sample ID: 240-138829-1
Date Collected: 10/22/20 12:20
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458103	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 17:54	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:31	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457500	10/23/20 13:37	KLR	TAL CAN

Client Sample ID: GW-12607-102220-SK-010
Lab Sample ID: 240-138829-2
Date Collected: 10/22/20 12:25
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458103	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 18:07	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:31	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457500	10/23/20 13:38	KLR	TAL CAN

Client Sample ID: GW-12607-102220-SK-011
Lab Sample ID: 240-138829-3
Date Collected: 10/22/20 14:15
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			458103	10/28/20 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	458486	10/29/20 18:15	WKD	TAL CAN
Total Recoverable	Prep	3005A			458103	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 18:11	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:31	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457500	10/23/20 13:39	KLR	TAL CAN

Client Sample ID: GW-12607-102220-SK-012
Lab Sample ID: 240-138829-4
Date Collected: 10/22/20 15:35
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458103	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 18:19	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:31	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457500	10/23/20 13:40	KLR	TAL CAN

Client Sample ID: GW-12607-102220-SK-013
Lab Sample ID: 240-138829-5
Date Collected: 10/22/20 16:50
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			458103	10/28/20 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	458486	10/29/20 18:28	WKD	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138829-1

Client Sample ID: GW-12607-102220-SK-013

Lab Sample ID: 240-138829-5

Date Collected: 10/22/20 16:50

Matrix: Water

Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458103	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 18:24	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:31	KLC	TAL CAN
Total/NA	Analysis	7196A		5	457500	10/23/20 13:41	KLR	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-138829-1
Project/Site: 12607-T06, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

MICHIGAN 190

4.25 | **Chain of Custody Record** 460205

eurofins | Environment Testing TestAmerica

T.A.# 24005880

Address: _____

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: C. Meincke	Site Contact: S. Kippen	Date: 10-22-2020	COC No:
Company Name: GHD	Tel/Email: (248) 935-7346	Lab Contact: —	Carrier: FedEx	1 of 1 COCs
Address: 26850 Haggerty Rd	**Analysis Turnaround Time**			Sampler: Scott Kippen
City/State/Zip: Farmington Hills, M.I. 48331	☐ CALENDAR DAYS ☒ WORKING DAYS			**For Lab Use Only:**
Phone: (248) 893-3400	TAT if different from Below _____			Walk-in Client:
Fax: chem.det@ghd.com	☒ 2 weeks (circled) ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: Eckles Rd. – Racer				Job / SDG No.:
Site: Livonia, M.I.				
PO# SSOW: T06Y20 & T31Y20				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Chromium	Nickel	Hex-Chromium	Dissolved Metals	PFAs	Sample Specific Notes:
GW-12607-102220-SK-009	10-22-20	12:20	G	GW	3			X	X	X		X	
-010		12:25			3			X	X	X		X	
-011		14:15			4			X	X	X	X	X	
-012		15:35			3			X	X	X		X	
-013		16:50			4			X	X	X	X	X	
EB-12607-102220-SK-001		10:45		W	1							X	
-002		15:55			1							X	
FB-12607-102220-SK-003		16:00			1							X	
					SK								

240-138829 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H_2SO_4; 4=HNO_3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
K. Scott Kippen	GHD	10/22/2020 18:25	Tammy Boyer	ETA	10-23-20 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 138829
Canton Facility

Client GHD Site Name

Cooler Received on 10-23-20 Opened on 10-23-20

Cooler unpacked by: Danny Boyer

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF **+0.9** °C) Observed Cooler Temp. 4.2 °C Corrected Cooler Temp. 5.1 °C
   IR GUN #IR-12 (CF **+0.5**°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	(Yes)	No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC?	Yes	(No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

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

Contacted PM Date by via Verbal Voice Mail Other

Concerning

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen:

WI-NC-099

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
GW-12607-102220-SK-009	240-138829-C-1	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102220-SK-010	240-138829-C-2	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102220-SK-011	240-138829-C-3	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102220-SK-011	240-138829-D-3	Plastic 250ml - w/nitric - dis	<2			
GW-12607-102220-SK-012	240-138829-C-4	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102220-SK-013	240-138829-C-5	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102220-SK-013	240-138829-D-5	Plastic 250ml - w/nitric - dis	<2			

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-138829-2
Client Project/Site: 12607-T31, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
10/29/2020 4:27:45 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

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Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138829-2

Job ID: 240-138829-2

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-138829-2

Comments
No additional comments.

Receipt
The samples were received on 10/23/2020 10:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.1º C.

LCMS
Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-425563 and analytical batch 320-425905 recovered outside control limits for the following analytes: Perfluoroundecanoic acid (PFUnA). The analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s).

Method 537 (modified): The following blank samples have detection for Perfluorohexanoic acid (PFHxA) and Perfluoropentanoic acid (PFPeA) above the reporting limit (RL). The samples were re-analyzed with concurring results. Due to insufficient sample, the samples could not be re-extracted; therefore, data have been reported. EB-12607-102220-SK-001 (240-138829-6), EB-12607-102220-SK-002 (240-138829-7) and FB-12607-102220-SK-003 (240-138829-8)

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

Organic Prep
Method 3535: The following samples were brown and contained a thin layer of sediment at the bottom of the bottle prior to extraction: GW-12607-102220-SK-011 (240-138829-3) and GW-12607-102220-SK-013 (240-138829-5).

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138829-2

Qualifiers

LCMS

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138829-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-138829-1	GW-12607-102220-SK-009	Water	10/22/20 12:20	10/23/20 10:00	
240-138829-2	GW-12607-102220-SK-010	Water	10/22/20 12:25	10/23/20 10:00	
240-138829-3	GW-12607-102220-SK-011	Water	10/22/20 14:15	10/23/20 10:00	
240-138829-4	GW-12607-102220-SK-012	Water	10/22/20 15:35	10/23/20 10:00	
240-138829-5	GW-12607-102220-SK-013	Water	10/22/20 16:50	10/23/20 10:00	
240-138829-6	EB-12607-102220-SK-001	Water	10/22/20 10:45	10/23/20 10:00	
240-138829-7	EB-12607-102220-SK-002	Water	10/22/20 15:55	10/23/20 10:00	
240-138829-8	FB-12607-102220-SK-003	Water	10/22/20 16:00	10/23/20 10:00	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138829-2

Client Sample ID: GW-12607-102220-SK-009 — Lab Sample ID: 240-138829-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.2		4.4	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.83	J	1.8	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.8		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.71	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.2		1.8	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.70	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J I	1.8	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102220-SK-010 — Lab Sample ID: 240-138829-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.3		4.5	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.90	J	1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.8		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.66	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.4		1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.53	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J I	1.8	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102220-SK-011 — Lab Sample ID: 240-138829-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	1.4	J	1.7	0.21	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.9		1.7	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.42	J	1.7	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	1.7	0.48	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.8		1.7	0.46	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102220-SK-012 — Lab Sample ID: 240-138829-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	14		4.4	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	7.0		1.8	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	6.4		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.8		1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.6		1.8	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	2.9		1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	5.4		1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6	J	1.8	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	87		1.8	0.48	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102220-SK-013 — Lab Sample ID: 240-138829-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.0	J	4.4	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.7		1.8	0.43	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.2	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.2		1.8	0.74	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample ID: GW-12607-102220-SK-013 (Continued) — Lab Sample ID: 240-138829-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid (PFNA)	0.25	J	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.3	J	1.8	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.4		1.8	0.47	ng/L	1		537 (modified)	Total/NA
6:2 FTS	3.7	J	4.4	2.2	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-12607-102220-SK-001 — Lab Sample ID: 240-138829-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	2.7		1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.1		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.29	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-12607-102220-SK-002 — Lab Sample ID: 240-138829-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	2.6		1.8	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.6		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.27	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FB-12607-102220-SK-003 — Lab Sample ID: 240-138829-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	2.5		1.8	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.6		1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.32	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138829-2

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102220-SK-009
Date Collected: 10/22/20 12:20
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.2**		4.4	2.1	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluoropentanoic acid (PFPeA)	**0.83**	**J**	1.8	0.43	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorohexanoic acid (PFHxA)	**1.8**		1.8	0.51	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluoroheptanoic acid (PFHpA)	**0.71**	**J**	1.8	0.22	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorooctanoic acid (PFOA)	**2.2**		1.8	0.75	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.27	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluoroundecanoic acid (PFUnA)	1.8	U *	1.8	0.97	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.65	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.8	0.18	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluoropentanesulfonic acid (PFPeS)	**0.70**	**J**	1.8	0.27	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorohexanesulfonic acid (PFHxS)	**1.1**	**J I**	1.8	0.50	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.48	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 17:55	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.87	ng/L		10/26/20 18:38	10/28/20 17:55	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 18:38	10/28/20 17:55	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.2	ng/L		10/26/20 18:38	10/28/20 17:55	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 17:55	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		10/26/20 18:38	10/28/20 17:55	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/26/20 18:38	10/28/20 17:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.35	ng/L		10/26/20 18:38	10/28/20 17:55	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/26/20 18:38	10/28/20 17:55	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 17:55	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 17:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*51*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C5 PFPeA	*69*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C2 PFHxA	*83*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C4 PFHpA	*91*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C4 PFOA	*105*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C5 PFNA	*101*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C2 PFDA	*100*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C2 PFUnA	*107*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C2 PFDoA	*92*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C3 PFBS	*85*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
18O2 PFHxS	*93*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C4 PFOS	*92*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
13C8 FOSA	*95*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*
d3-NMeFOSAA	*86*		*25 - 150*	*10/26/20 18:38*	*10/28/20 17:55*	*1*

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138829-2

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102220-SK-009
Date Collected: 10/22/20 12:20
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-1
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	101		25 - 150	10/26/20 18:38	10/28/20 17:55	1
M2-6:2 FTS	110		25 - 150	10/26/20 18:38	10/28/20 17:55	1
M2-8:2 FTS	98		25 - 150	10/26/20 18:38	10/28/20 17:55	1
M2-4:2 FTS	113		25 - 150	10/26/20 18:38	10/28/20 17:55	1
13C3 HFPO-DA	85		25 - 150	10/26/20 18:38	10/28/20 17:55	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102220-SK-010
Date Collected: 10/22/20 12:25
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.3**		4.5	2.1	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluoropentanoic acid (PFPeA)	**0.90**	**J**	1.8	0.44	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorohexanoic acid (PFHxA)	**1.8**		1.8	0.52	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluoroheptanoic acid (PFHpA)	**0.66**	**J**	1.8	0.22	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorooctanoic acid (PFOA)	**2.4**		1.8	0.76	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluoroundecanoic acid (PFUnA)	1.8	U *	1.8	0.98	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.65	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.18	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluoropentanesulfonic acid (PFPeS)	**0.53**	**J**	1.8	0.27	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorohexanesulfonic acid (PFHxS)	**1.1**	**J I**	1.8	0.51	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.48	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/26/20 18:38	10/28/20 18:04	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.88	ng/L		10/26/20 18:38	10/28/20 18:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		10/26/20 18:38	10/28/20 18:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		10/26/20 18:38	10/28/20 18:04	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 18:04	1
6:2 FTS	4.5	U	4.5	2.2	ng/L		10/26/20 18:38	10/28/20 18:04	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/26/20 18:38	10/28/20 18:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		10/26/20 18:38	10/28/20 18:04	1
HFPO-DA (GenX)	3.6	U	3.6	1.3	ng/L		10/26/20 18:38	10/28/20 18:04	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 18:04	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/26/20 18:38	10/28/20 18:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*51*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C5 PFPeA	*69*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C2 PFHxA	*89*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C4 PFHpA	*98*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C4 PFOA	*101*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C5 PFNA	*109*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C2 PFDA	*99*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C2 PFUnA	*110*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C2 PFDoA	*94*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C2 PFTeDA	*92*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C3 PFBS	*86*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
18O2 PFHxS	*93*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C4 PFOS	*92*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
13C8 FOSA	*95*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*
d3-NMeFOSAA	*86*		*25 - 150*	*10/26/20 18:38*	*10/28/20 18:04*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102220-SK-010
Date Collected: 10/22/20 12:25
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-2
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	96		25 - 150	10/26/20 18:38	10/28/20 18:04	1
M2-6:2 FTS	113		25 - 150	10/26/20 18:38	10/28/20 18:04	1
M2-8:2 FTS	95		25 - 150	10/26/20 18:38	10/28/20 18:04	1
M2-4:2 FTS	112		25 - 150	10/26/20 18:38	10/28/20 18:04	1
13C3 HFPO-DA	87		25 - 150	10/26/20 18:38	10/28/20 18:04	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102220-SK-011
Date Collected: 10/22/20 14:15
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	4.2	U	4.2	2.0	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluoropentanoic acid (PFPeA)	1.7	U	1.7	0.42	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorohexanoic acid (PFHxA)	1.7	U	1.7	0.49	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluoroheptanoic acid (PFHpA)	**1.4**	**J**	1.7	0.21	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorooctanoic acid (PFOA)	**3.9**		1.7	0.72	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorononanoic acid (PFNA)	**0.42**	**J**	1.7	0.23	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorodecanoic acid (PFDA)	1.7	U	1.7	0.26	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluoroundecanoic acid (PFUnA)	1.7	U *	1.7	0.93	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorododecanoic acid (PFDoA)	1.7	U	1.7	0.47	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorotridecanoic acid (PFTriA)	1.7	U	1.7	1.1	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorotetradecanoic acid (PFTeA)	1.7	U	1.7	0.62	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorobutanesulfonic acid (PFBS)	1.7	U	1.7	0.17	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluoropentanesulfonic acid (PFPeS)	1.7	U	1.7	0.25	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorohexanesulfonic acid (PFHxS)	**1.5**	**J**	1.7	0.48	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.7	U	1.7	0.16	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorooctanesulfonic acid (PFOS)	**1.8**		1.7	0.46	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorononanesulfonic acid (PFNS)	1.7	U	1.7	0.31	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorodecanesulfonic acid (PFDS)	1.7	U	1.7	0.27	ng/L		10/26/20 18:38	10/28/20 01:48	1
Perfluorooctanesulfonamide (FOSA)	1.7	U	1.7	0.83	ng/L		10/26/20 18:38	10/28/20 01:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.2	U	4.2	1.0	ng/L		10/26/20 18:38	10/28/20 01:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.2	U	4.2	1.1	ng/L		10/26/20 18:38	10/28/20 01:48	1
4:2 FTS	1.7	U	1.7	0.20	ng/L		10/26/20 18:38	10/28/20 01:48	1
6:2 FTS	4.2	U	4.2	2.1	ng/L		10/26/20 18:38	10/28/20 01:48	1
8:2 FTS	1.7	U	1.7	0.39	ng/L		10/26/20 18:38	10/28/20 01:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.7	U	1.7	0.34	ng/L		10/26/20 18:38	10/28/20 01:48	1
HFPO-DA (GenX)	3.4	U	3.4	1.3	ng/L		10/26/20 18:38	10/28/20 01:48	1
F-53B Major	1.7	U	1.7	0.20	ng/L		10/26/20 18:38	10/28/20 01:48	1
F-53B Minor	1.7	U	1.7	0.27	ng/L		10/26/20 18:38	10/28/20 01:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*35*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C5 PFPeA	*47*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C2 PFHxA	*58*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C4 PFHpA	*70*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C4 PFOA	*75*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C5 PFNA	*80*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C2 PFDA	*79*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C2 PFUnA	*87*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C2 PFDoA	*81*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C2 PFTeDA	*71*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C3 PFBS	*72*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
18O2 PFHxS	*80*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C4 PFOS	*75*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
13C8 FOSA	*63*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*
d3-NMeFOSAA	*55*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:48*	*1*

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138829-2

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102220-SK-011
Date Collected: 10/22/20 14:15
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-3
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	64		25 - 150	10/26/20 18:38	10/28/20 01:48	1
M2-6:2 FTS	150		25 - 150	10/26/20 18:38	10/28/20 01:48	1
M2-8:2 FTS	108		25 - 150	10/26/20 18:38	10/28/20 01:48	1
M2-4:2 FTS	114		25 - 150	10/26/20 18:38	10/28/20 01:48	1
13C3 HFPO-DA	71		25 - 150	10/26/20 18:38	10/28/20 01:48	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102220-SK-012
Date Collected: 10/22/20 15:35
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**14**		4.4	2.1	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluoropentanoic acid (PFPeA)	**7.0**		1.8	0.43	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorohexanoic acid (PFHxA)	**6.4**		1.8	0.51	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluoroheptanoic acid (PFHpA)	**3.8**		1.8	0.22	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorooctanoic acid (PFOA)	**8.6**		1.8	0.75	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorononanoic acid (PFNA)	**2.9**		1.8	0.24	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorodecanoic acid (PFDA)	**5.4**		1.8	0.27	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluoroundecanoic acid (PFUnA)	1.8	U *	1.8	0.97	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.48	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.1	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.64	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.18	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.26	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorohexanesulfonic acid (PFHxS)	**1.6**	**J**	1.8	0.50	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorooctanesulfonic acid (PFOS)	**87**		1.8	0.48	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 01:57	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.86	ng/L		10/26/20 18:38	10/28/20 01:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 18:38	10/28/20 01:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 18:38	10/28/20 01:57	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 01:57	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		10/26/20 18:38	10/28/20 01:57	1
8:2 FTS	1.8	U	1.8	0.40	ng/L		10/26/20 18:38	10/28/20 01:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.35	ng/L		10/26/20 18:38	10/28/20 01:57	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/26/20 18:38	10/28/20 01:57	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 01:57	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 01:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*44*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C5 PFPeA	*56*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C2 PFHxA	*77*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C4 PFHpA	*85*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C4 PFOA	*92*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C5 PFNA	*98*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C2 PFDA	*97*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C2 PFUnA	*103*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C2 PFDoA	*100*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C3 PFBS	*79*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
18O2 PFHxS	*90*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C4 PFOS	*85*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*
13C8 FOSA	*82*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:57*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102220-SK-012
Date Collected: 10/22/20 15:35
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-4
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	72		25 - 150	10/26/20 18:38	10/28/20 01:57	1
d5-NEtFOSAA	86		25 - 150	10/26/20 18:38	10/28/20 01:57	1
M2-6:2 FTS	144		25 - 150	10/26/20 18:38	10/28/20 01:57	1
M2-8:2 FTS	127		25 - 150	10/26/20 18:38	10/28/20 01:57	1
M2-4:2 FTS	114		25 - 150	10/26/20 18:38	10/28/20 01:57	1
13C3 HFPO-DA	83		25 - 150	10/26/20 18:38	10/28/20 01:57	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102220-SK-013
Date Collected: 10/22/20 16:50
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.0**	**J**	4.4	2.1	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluoropentanoic acid (PFPeA)	**3.7**		1.8	0.43	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	0.51	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluoroheptanoic acid (PFHpA)	**1.2**	**J**	1.8	0.22	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorooctanoic acid (PFOA)	**3.2**		1.8	0.74	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorononanoic acid (PFNA)	**0.25**	**J**	1.8	0.24	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.27	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluoroundecanoic acid (PFUnA)	1.8	U *	1.8	0.96	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.48	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.1	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.64	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.26	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorohexanesulfonic acid (PFHxS)	**1.3**	**J**	1.8	0.50	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorooctanesulfonic acid (PFOS)	**3.4**		1.8	0.47	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.32	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 02:06	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.86	ng/L		10/26/20 18:38	10/28/20 02:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 18:38	10/28/20 02:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 18:38	10/28/20 02:06	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 02:06	1
6:2 FTS	**3.7**	**J**	4.4	2.2	ng/L		10/26/20 18:38	10/28/20 02:06	1
8:2 FTS	1.8	U	1.8	0.40	ng/L		10/26/20 18:38	10/28/20 02:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.35	ng/L		10/26/20 18:38	10/28/20 02:06	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/26/20 18:38	10/28/20 02:06	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 02:06	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 02:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*41*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C5 PFPeA	*48*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C2 PFHxA	*59*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C4 PFHpA	*66*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C4 PFOA	*67*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C5 PFNA	*77*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C2 PFDA	*73*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C2 PFUnA	*74*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C2 PFDoA	*76*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C2 PFTeDA	*76*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C3 PFBS	*66*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
18O2 PFHxS	*74*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C4 PFOS	*69*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
13C8 FOSA	*56*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*
d3-NMeFOSAA	*47*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:06*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102220-SK-013
Date Collected: 10/22/20 16:50
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-5
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	60		25 - 150	10/26/20 18:38	10/28/20 02:06	1
M2-6:2 FTS	128		25 - 150	10/26/20 18:38	10/28/20 02:06	1
M2-8:2 FTS	98		25 - 150	10/26/20 18:38	10/28/20 02:06	1
M2-4:2 FTS	105		25 - 150	10/26/20 18:38	10/28/20 02:06	1
13C3 HFPO-DA	65		25 - 150	10/26/20 18:38	10/28/20 02:06	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: EB-12607-102220-SK-001
Date Collected: 10/22/20 10:45
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	4.5	U	4.5	2.2	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluoropentanoic acid (PFPeA)	**2.7**		1.8	0.44	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorohexanoic acid (PFHxA)	**2.1**		1.8	0.52	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluoroheptanoic acid (PFHpA)	**0.29**	**J**	1.8	0.23	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.77	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluoroundecanoic acid (PFUnA)	1.8	U *	1.8	1.0	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.66	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.27	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	0.52	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.49	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/26/20 18:38	10/28/20 02:15	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.89	ng/L		10/26/20 18:38	10/28/20 02:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		10/26/20 18:38	10/28/20 02:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		10/26/20 18:38	10/28/20 02:15	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		10/26/20 18:38	10/28/20 02:15	1
6:2 FTS	4.5	U	4.5	2.3	ng/L		10/26/20 18:38	10/28/20 02:15	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		10/26/20 18:38	10/28/20 02:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		10/26/20 18:38	10/28/20 02:15	1
HFPO-DA (GenX)	3.6	U	3.6	1.4	ng/L		10/26/20 18:38	10/28/20 02:15	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/26/20 18:38	10/28/20 02:15	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/26/20 18:38	10/28/20 02:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*70*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C5 PFPeA	*77*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C2 PFHxA	*85*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C4 PFHpA	*86*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C4 PFOA	*99*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C5 PFNA	*93*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C2 PFDA	*94*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C2 PFUnA	*96*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C2 PFDoA	*67*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C2 PFTeDA	*78*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C3 PFBS	*79*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
18O2 PFHxS	*81*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C4 PFOS	*81*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
13C8 FOSA	*86*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
d3-NMeFOSAA	*65*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*
d5-NEtFOSAA	*72*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:15*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: EB-12607-102220-SK-001
Date Collected: 10/22/20 10:45
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-6
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	103		25 - 150	10/26/20 18:38	10/28/20 02:15	1
M2-8:2 FTS	105		25 - 150	10/26/20 18:38	10/28/20 02:15	1
M2-4:2 FTS	86		25 - 150	10/26/20 18:38	10/28/20 02:15	1
13C3 HFPO-DA	80		25 - 150	10/26/20 18:38	10/28/20 02:15	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: EB-12607-102220-SK-002
Date Collected: 10/22/20 15:55
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	4.4	U	4.4	2.1	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluoropentanoic acid (PFPeA)	**2.6**		1.8	0.43	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorohexanoic acid (PFHxA)	**2.6**		1.8	0.51	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluoroheptanoic acid (PFHpA)	**0.27**	**J**	1.8	0.22	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.75	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.27	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluoroundecanoic acid (PFUnA)	1.8	U *	1.8	0.96	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.48	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.1	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.64	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.26	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	0.50	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.47	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.32	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 02:24	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.86	ng/L		10/26/20 18:38	10/28/20 02:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 18:38	10/28/20 02:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 18:38	10/28/20 02:24	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 02:24	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		10/26/20 18:38	10/28/20 02:24	1
8:2 FTS	1.8	U	1.8	0.40	ng/L		10/26/20 18:38	10/28/20 02:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.35	ng/L		10/26/20 18:38	10/28/20 02:24	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/26/20 18:38	10/28/20 02:24	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 02:24	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 02:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*65*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C5 PFPeA	*72*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C2 PFHxA	*76*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C4 PFHpA	*80*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C4 PFOA	*80*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C5 PFNA	*88*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C2 PFDA	*87*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C2 PFUnA	*82*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C2 PFDoA	*82*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C2 PFTeDA	*74*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C3 PFBS	*72*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
18O2 PFHxS	*74*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C4 PFOS	*74*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
13C8 FOSA	*70*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
d3-NMeFOSAA	*69*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*
d5-NEtFOSAA	*80*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:24*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: EB-12607-102220-SK-002
Date Collected: 10/22/20 15:55
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-7
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	67		25 - 150	10/26/20 18:38	10/28/20 02:24	1
M2-8:2 FTS	75		25 - 150	10/26/20 18:38	10/28/20 02:24	1
M2-4:2 FTS	63		25 - 150	10/26/20 18:38	10/28/20 02:24	1
13C3 HFPO-DA	69		25 - 150	10/26/20 18:38	10/28/20 02:24	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: FB-12607-102220-SK-003
Date Collected: 10/22/20 16:00
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	4.4	U	4.4	2.1	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluoropentanoic acid (PFPeA)	**2.5**		1.8	0.43	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorohexanoic acid (PFHxA)	**2.6**		1.8	0.51	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluoroheptanoic acid (PFHpA)	**0.32**	**J**	1.8	0.22	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.75	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.27	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluoroundecanoic acid (PFUnA)	1.8	U *	1.8	0.97	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.48	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.1	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.64	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.26	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	0.50	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.48	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 02:33	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.86	ng/L		10/26/20 18:38	10/28/20 02:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 18:38	10/28/20 02:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.1	ng/L		10/26/20 18:38	10/28/20 02:33	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 02:33	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		10/26/20 18:38	10/28/20 02:33	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/26/20 18:38	10/28/20 02:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.35	ng/L		10/26/20 18:38	10/28/20 02:33	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/26/20 18:38	10/28/20 02:33	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/26/20 18:38	10/28/20 02:33	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		10/26/20 18:38	10/28/20 02:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*70*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C5 PFPeA	*76*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C2 PFHxA	*83*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C4 PFHpA	*86*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C4 PFOA	*90*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C5 PFNA	*91*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C2 PFDA	*89*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C2 PFUnA	*98*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C2 PFDoA	*101*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C2 PFTeDA	*87*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C3 PFBS	*79*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
18O2 PFHxS	*81*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C4 PFOS	*80*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
13C8 FOSA	*79*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
d3-NMeFOSAA	*76*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*
d5-NEtFOSAA	*88*		*25 - 150*	*10/26/20 18:38*	*10/28/20 02:33*	*1*

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138829-2

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: FB-12607-102220-SK-003
Date Collected: 10/22/20 16:00
Date Received: 10/23/20 10:00

Lab Sample ID: 240-138829-8
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	75		25 - 150	10/26/20 18:38	10/28/20 02:33	1
M2-8:2 FTS	84		25 - 150	10/26/20 18:38	10/28/20 02:33	1
M2-4:2 FTS	70		25 - 150	10/26/20 18:38	10/28/20 02:33	1
13C3 HFPO-DA	77		25 - 150	10/26/20 18:38	10/28/20 02:33	1

LCMS

Prep Batch: 425563

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138829-1	GW-12607-102220-SK-009	Total/NA	Water	3535	
240-138829-2	GW-12607-102220-SK-010	Total/NA	Water	3535	
240-138829-3	GW-12607-102220-SK-011	Total/NA	Water	3535	
240-138829-4	GW-12607-102220-SK-012	Total/NA	Water	3535	
240-138829-5	GW-12607-102220-SK-013	Total/NA	Water	3535	
240-138829-6	EB-12607-102220-SK-001	Total/NA	Water	3535	
240-138829-7	EB-12607-102220-SK-002	Total/NA	Water	3535	
240-138829-8	FB-12607-102220-SK-003	Total/NA	Water	3535	
MB 320-425563/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-425563/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 425905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138829-3	GW-12607-102220-SK-011	Total/NA	Water	537 (modified)	425563
240-138829-4	GW-12607-102220-SK-012	Total/NA	Water	537 (modified)	425563
240-138829-5	GW-12607-102220-SK-013	Total/NA	Water	537 (modified)	425563
240-138829-6	EB-12607-102220-SK-001	Total/NA	Water	537 (modified)	425563
240-138829-7	EB-12607-102220-SK-002	Total/NA	Water	537 (modified)	425563
240-138829-8	FB-12607-102220-SK-003	Total/NA	Water	537 (modified)	425563
MB 320-425563/1-A	Method Blank	Total/NA	Water	537 (modified)	425563
LCS 320-425563/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	425563

Analysis Batch: 426300

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138829-1	GW-12607-102220-SK-009	Total/NA	Water	537 (modified)	425563
240-138829-2	GW-12607-102220-SK-010	Total/NA	Water	537 (modified)	425563

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-425563/1-A
Matrix: Water
Analysis Batch: 425905

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 425563

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.0	U	5.0	2.4	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.73	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.0	0.57	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.37	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		10/26/20 18:38	10/28/20 01:11	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.98	ng/L		10/26/20 18:38	10/28/20 01:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.0	U	5.0	1.2	ng/L		10/26/20 18:38	10/28/20 01:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.0	U	5.0	1.3	ng/L		10/26/20 18:38	10/28/20 01:11	1
4:2 FTS	2.0	U	2.0	0.24	ng/L		10/26/20 18:38	10/28/20 01:11	1
6:2 FTS	5.0	U	5.0	2.5	ng/L		10/26/20 18:38	10/28/20 01:11	1
8:2 FTS	2.0	U	2.0	0.46	ng/L		10/26/20 18:38	10/28/20 01:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.0	U	2.0	0.40	ng/L		10/26/20 18:38	10/28/20 01:11	1
HFPO-DA (GenX)	4.0	U	4.0	1.5	ng/L		10/26/20 18:38	10/28/20 01:11	1
F-53B Major	2.0	U	2.0	0.24	ng/L		10/26/20 18:38	10/28/20 01:11	1
F-53B Minor	2.0	U	2.0	0.32	ng/L		10/26/20 18:38	10/28/20 01:11	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*76*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C5 PFPeA	*82*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C2 PFHxA	*90*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C4 PFHpA	*91*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C4 PFOA	*94*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C5 PFNA	*97*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C2 PFDA	*98*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C2 PFUnA	*96*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C2 PFDoA	*100*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C2 PFTeDA	*82*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C3 PFBS	*81*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
18O2 PFHxS	*84*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C4 PFOS	*83*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
13C8 FOSA	*79*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*
d3-NMeFOSAA	*75*		*25 - 150*	*10/26/20 18:38*	*10/28/20 01:11*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-425563/1-A
Matrix: Water
Analysis Batch: 425905

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 425563

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	88		25 - 150	10/26/20 18:38	10/28/20 01:11	1
M2-6:2 FTS	83		25 - 150	10/26/20 18:38	10/28/20 01:11	1
M2-8:2 FTS	81		25 - 150	10/26/20 18:38	10/28/20 01:11	1
M2-4:2 FTS	76		25 - 150	10/26/20 18:38	10/28/20 01:11	1
13C3 HFPO-DA	84		25 - 150	10/26/20 18:38	10/28/20 01:11	1

Lab Sample ID: LCS 320-425563/2-A
Matrix: Water
Analysis Batch: 425905

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 425563

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	44.9		ng/L		112	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	40.7		ng/L		102	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	43.3		ng/L		108	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	40.4		ng/L		101	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	40.2		ng/L		101	70 - 130
Perfluorononanoic acid (PFNA)	40.0	42.4		ng/L		106	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	41.1		ng/L		103	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	52.9	*	ng/L		132	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	38.9		ng/L		97	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	39.1		ng/L		98	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	45.6		ng/L		114	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	37.9		ng/L		107	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	40.9		ng/L		109	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.0		ng/L		99	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.6		ng/L		112	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	40.0		ng/L		108	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	42.7		ng/L		111	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.7		ng/L		103	71 - 131
Perfluorooctanesulfonamide (FOSA)	40.0	45.1		ng/L		113	73 - 133
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.3		ng/L		108	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.6		ng/L		107	76 - 136
4:2 FTS	37.4	41.0		ng/L		110	79 - 139
6:2 FTS	37.9	38.3		ng/L		101	59 - 175
8:2 FTS	38.3	42.2		ng/L		110	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	43.3		ng/L		115	79 - 139
HFPO-DA (GenX)	40.0	43.3		ng/L		108	51 - 173
F-53B Major	37.3	41.3		ng/L		111	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-425563/2-A
Matrix: Water
Analysis Batch: 425905

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 425563

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			37.7	39.1		ng/L		104	54 - 114		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*71*		*25 - 150*
13C5 PFPeA	*77*		*25 - 150*
13C2 PFHxA	*82*		*25 - 150*
13C4 PFHpA	*86*		*25 - 150*
13C4 PFOA	*92*		*25 - 150*
13C5 PFNA	*91*		*25 - 150*
13C2 PFDA	*93*		*25 - 150*
13C2 PFUnA	*86*		*25 - 150*
13C2 PFDoA	*100*		*25 - 150*
13C2 PFTeDA	*88*		*25 - 150*
13C3 PFBS	*76*		*25 - 150*
18O2 PFHxS	*77*		*25 - 150*
13C4 PFOS	*77*		*25 - 150*
13C8 FOSA	*76*		*25 - 150*
d3-NMeFOSAA	*74*		*25 - 150*
d5-NEtFOSAA	*86*		*25 - 150*
M2-6:2 FTS	*70*		*25 - 150*
M2-8:2 FTS	*72*		*25 - 150*
M2-4:2 FTS	*69*		*25 - 150*
13C3 HFPO-DA	*80*		*25 - 150*

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138829-2

Client Sample ID: GW-12607-102220-SK-009
Lab Sample ID: 240-138829-1
Date Collected: 10/22/20 12:20
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425563	10/26/20 18:38	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	426300	10/28/20 17:55	S1M	TAL SAC

Client Sample ID: GW-12607-102220-SK-010
Lab Sample ID: 240-138829-2
Date Collected: 10/22/20 12:25
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425563	10/26/20 18:38	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	426300	10/28/20 18:04	S1M	TAL SAC

Client Sample ID: GW-12607-102220-SK-011
Lab Sample ID: 240-138829-3
Date Collected: 10/22/20 14:15
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425563	10/26/20 18:38	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	425905	10/28/20 01:48	RS1	TAL SAC

Client Sample ID: GW-12607-102220-SK-012
Lab Sample ID: 240-138829-4
Date Collected: 10/22/20 15:35
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425563	10/26/20 18:38	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	425905	10/28/20 01:57	RS1	TAL SAC

Client Sample ID: GW-12607-102220-SK-013
Lab Sample ID: 240-138829-5
Date Collected: 10/22/20 16:50
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425563	10/26/20 18:38	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	425905	10/28/20 02:06	RS1	TAL SAC

Client Sample ID: EB-12607-102220-SK-001
Lab Sample ID: 240-138829-6
Date Collected: 10/22/20 10:45
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425563	10/26/20 18:38	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	425905	10/28/20 02:15	RS1	TAL SAC

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-138829-2
Project/Site: 12607-T31, RACER Eckles Rd

Client Sample ID: EB-12607-102220-SK-002
Lab Sample ID: 240-138829-7

Date Collected: 10/22/20 15:55
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425563	10/26/20 18:38	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	425905	10/28/20 02:24	RS1	TAL SAC

Client Sample ID: FB-12607-102220-SK-003
Lab Sample ID: 240-138829-8

Date Collected: 10/22/20 16:00
Matrix: Water
Date Received: 10/23/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			425563	10/26/20 18:38	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	425905	10/28/20 02:33	RS1	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-138829-2
Project/Site: 12607-T31, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	10-31-20
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
Nevada	State	CA000442021-1	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-20
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
190

4.25.1 **Chain of Custody Record** 460205 eurofins | Environment Testing TestAmerica

T.A.# 24005880

Address: _____

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: C. Meincke	Site Contact: S. Kippen	Date: 10-22-2020	COC No:
Company Name: GHD	Tel/Email: (248) 935-7346	Lab Contact: —	Carrier: FedEx	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: Scott Kippen
City/State/Zip: Farmington Hills, M.I. 48331	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: (248) 893-3400	TAT if different from Below _____			Walk-in Client:
Fax: chem.det@ghd.com	☒ 2 weeks (circled) ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: Eckles Rd. - Racer				Job / SDG No.:
Site: Livonia, M.I.				
PO# 5SOW: T06Y20 & T31Y20				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Chromium	Nickel	Hex-Chromium	Dissolved Metals	PFAs	Sample Specific Notes:
GW-12607-102220-SK-009	10-22-20	12:20	G	GW	3			X	X	X		X	
-010		12:25			3			X	X	X		X	
-011		14:15			4			X	X	X	X	X	
-012		15:35			3			X	X	X		X	
-013		16:50			4			X	X	X	X	X	
EB-12607-102220-SK-001		10:45		W	1							X	
-002		15:55			1							X	
FB-12607-102220-SK-003		16:00			1							X	
					SK								

240-138829 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
K. Scott Kippen	GHD	10/22/2020 18:25	Tammy Boyer	ETA	10-23-20 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 138829
Canton Facility

Client GHD Site Name

Cooler Received on 10-23-20 Opened on 10-23-20

Cooler unpacked by: Danny Boyer

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF **+0.9** °C) Observed Cooler Temp. 4.2 °C Corrected Cooler Temp. 5.1 °C
   IR GUN #IR-12 (CF **+0.5**°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	(Yes)	No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC?	Yes	(No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

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

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

Concerning ____

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
GW-12607-102220-SK-009	240-138829-C-1	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102220-SK-010	240-138829-C-2	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102220-SK-011	240-138829-C-3	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102220-SK-011	240-138829-D-3	Plastic 250ml - w/nitric - dis	<2			
GW-12607-102220-SK-012	240-138829-C-4	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102220-SK-013	240-138829-C-5	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102220-SK-013	240-138829-D-5	Plastic 250ml - w/nitric - dis	<2			

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-138829-2

Login Number: 138829
List Number: 2
Creator: Saephan, Kae C

List Source: Eurofins TestAmerica, Sacramento
List Creation: 10/24/20 12:02 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	ob: 0.5c corr: 0.0c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138829-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-138829-1	GW-12607-102220-SK-009	51	69	83	91	105	101	100	107
240-138829-2	GW-12607-102220-SK-010	51	69	89	98	101	109	99	110
240-138829-3	GW-12607-102220-SK-011	35	47	58	70	75	80	79	87
240-138829-4	GW-12607-102220-SK-012	44	56	77	85	92	98	97	103
240-138829-5	GW-12607-102220-SK-013	41	48	59	66	67	77	73	74
240-138829-6	EB-12607-102220-SK-001	70	77	85	86	99	93	94	96
240-138829-7	EB-12607-102220-SK-002	65	72	76	80	80	88	87	82
240-138829-8	FB-12607-102220-SK-003	70	76	83	86	90	91	89	98
LCS 320-425563/2-A	Lab Control Sample	71	77	82	86	92	91	93	86
MB 320-425563/1-A	Method Blank	76	82	90	91	94	97	98	96

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
240-138829-1	GW-12607-102220-SK-009	92	89	85	93	92	95	86	101
240-138829-2	GW-12607-102220-SK-010	94	92	86	93	92	95	86	96
240-138829-3	GW-12607-102220-SK-011	81	71	72	80	75	63	55	64
240-138829-4	GW-12607-102220-SK-012	100	98	79	90	85	82	72	86
240-138829-5	GW-12607-102220-SK-013	76	76	66	74	69	56	47	60
240-138829-6	EB-12607-102220-SK-001	67	78	79	81	81	86	65	72
240-138829-7	EB-12607-102220-SK-002	82	74	72	74	74	70	69	80
240-138829-8	FB-12607-102220-SK-003	101	87	79	81	80	79	76	88
LCS 320-425563/2-A	Lab Control Sample	100	88	76	77	77	76	74	86
MB 320-425563/1-A	Method Blank	100	82	81	84	83	79	75	88

		Percent Isotope Dilution Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
240-138829-1	GW-12607-102220-SK-009	110	98	113	85
240-138829-2	GW-12607-102220-SK-010	113	95	112	87
240-138829-3	GW-12607-102220-SK-011	150	108	114	71
240-138829-4	GW-12607-102220-SK-012	144	127	114	83
240-138829-5	GW-12607-102220-SK-013	128	98	105	65
240-138829-6	EB-12607-102220-SK-001	103	105	86	80
240-138829-7	EB-12607-102220-SK-002	67	75	63	69
240-138829-8	FB-12607-102220-SK-003	75	84	70	77
LCS 320-425563/2-A	Lab Control Sample	70	72	69	80
MB 320-425563/1-A	Method Blank	83	81	76	84

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 240-138829-2
Project/Site: 12607-T31, RACER Eckles Rd

PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-138921-1
Client Project/Site: 12607-T06, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
11/3/2020 2:35:50 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

Job ID: 240-138921-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-138921-1

Comments
No additional comments.

Receipt
The samples were received on 10/24/2020 9:40 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.3º C.

Metals
Method 6010B: Some requested practical quantitation limits (PQLs) fall below the laboratory's verified standard quantitation limit. The continuing calibration blanks and method blanks may not support the lower PQL.

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

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

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 240-138921-1
Project/Site: 12607-T06, RACER Eckles Rd

Qualifiers

Metals

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

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-138921-1	GW-12607-102320-SK-014	Water	10/23/20 09:40	10/24/20 09:40	
240-138921-2	GW-12607-102320-SK-015	Water	10/23/20 10:25	10/24/20 09:40	
240-138921-3	GW-12607-102320-SK-016	Water	10/23/20 11:40	10/24/20 09:40	
240-138921-4	GW-12607-102320-SK-017	Water	10/23/20 12:55	10/24/20 09:40	
240-138921-5	GW-12607-102320-SK-018	Water	10/23/20 13:45	10/24/20 09:40	
240-138921-6	GW-12607-102320-SK-019	Water	10/23/20 15:10	10/24/20 09:40	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

Client Sample ID: GW-12607-102320-SK-014 — Lab Sample ID: 240-138921-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	42		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	33		20	2.2	ug/L	1		6010B	Total Recoverable
Chromium	6.9		5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	32	J	40	2.2	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12607-102320-SK-015 — Lab Sample ID: 240-138921-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	15	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102320-SK-016 — Lab Sample ID: 240-138921-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	360		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102320-SK-017 — Lab Sample ID: 240-138921-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	1400		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102320-SK-018 — Lab Sample ID: 240-138921-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	19000		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102320-SK-019 — Lab Sample ID: 240-138921-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	39		20	2.2	ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN
7196A	Chromium, Hexavalent	SW846	TAL CAN
7196A	Chromium, Trivalent (Colorimetric)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102320-SK-014
Date Collected: 10/23/20 09:40
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	42		5.0	0.63	ug/L		10/28/20 14:00	10/29/20 16:29	1
Nickel	33		20	2.2	ug/L		10/28/20 14:00	10/29/20 16:29	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102320-SK-015
Date Collected: 10/23/20 10:25
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 16:37	1
Nickel	**15**	**J**	20	2.2	ug/L		10/28/20 14:00	10/29/20 16:37	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102320-SK-016
Date Collected: 10/23/20 11:40
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 16:42	1
Nickel	**360**		20	2.2	ug/L		10/28/20 14:00	10/29/20 16:42	1

Client: GHD Services Inc.
Job ID: 240-138921-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102320-SK-017
Lab Sample ID: 240-138921-4
Date Collected: 10/23/20 12:55
Matrix: Water
Date Received: 10/24/20 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 16:46	1
Nickel	**1400**		20	2.2	ug/L		10/28/20 14:00	10/29/20 16:46	1

Client: GHD Services Inc.
Job ID: 240-138921-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102320-SK-018
Lab Sample ID: 240-138921-5
Date Collected: 10/23/20 13:45
Matrix: Water
Date Received: 10/24/20 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 16:50	1
Nickel	**19000**		20	2.2	ug/L		10/28/20 14:00	10/29/20 16:50	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102320-SK-019
Date Collected: 10/23/20 15:10
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 16:55	1
Nickel	**39**		20	2.2	ug/L		10/28/20 14:00	10/29/20 16:55	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-102320-SK-014
Date Collected: 10/23/20 09:40
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	6.9		5.0	0.63	ug/L		10/28/20 14:00	10/29/20 16:33	1
Nickel	32	J	40	2.2	ug/L		10/28/20 14:00	10/29/20 16:33	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

General Chemistry

Client Sample ID: GW-12607-102320-SK-019
Date Collected: 10/23/20 15:10
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			10/24/20 10:40	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			11/03/20 12:31	1

QC Association Summary

Client: GHD Services Inc.
Job ID: 240-138921-1
Project/Site: 12607-T06, RACER Eckles Rd

Metals

Prep Batch: 458120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138921-1	GW-12607-102320-SK-014	Dissolved	Water	3005A	
240-138921-1	GW-12607-102320-SK-014	Total Recoverable	Water	3005A	
240-138921-2	GW-12607-102320-SK-015	Total Recoverable	Water	3005A	
240-138921-3	GW-12607-102320-SK-016	Total Recoverable	Water	3005A	
240-138921-4	GW-12607-102320-SK-017	Total Recoverable	Water	3005A	
240-138921-5	GW-12607-102320-SK-018	Total Recoverable	Water	3005A	
240-138921-6	GW-12607-102320-SK-019	Total Recoverable	Water	3005A	
MB 240-458120/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-458120/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 458486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138921-1	GW-12607-102320-SK-014	Dissolved	Water	6010B	458120
240-138921-1	GW-12607-102320-SK-014	Total Recoverable	Water	6010B	458120
240-138921-2	GW-12607-102320-SK-015	Total Recoverable	Water	6010B	458120
240-138921-3	GW-12607-102320-SK-016	Total Recoverable	Water	6010B	458120
240-138921-4	GW-12607-102320-SK-017	Total Recoverable	Water	6010B	458120
240-138921-5	GW-12607-102320-SK-018	Total Recoverable	Water	6010B	458120
240-138921-6	GW-12607-102320-SK-019	Total Recoverable	Water	6010B	458120
MB 240-458120/1-A	Method Blank	Total Recoverable	Water	6010B	458120
LCS 240-458120/2-A	Lab Control Sample	Total Recoverable	Water	6010B	458120

General Chemistry

Analysis Batch: 457589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138921-6	GW-12607-102320-SK-019	Total/NA	Water	7196A	
MB 240-457589/3	Method Blank	Total/NA	Water	7196A	
LCS 240-457589/4	Lab Control Sample	Total/NA	Water	7196A	
240-138921-6 MS	GW-12607-102320-SK-019	Total/NA	Water	7196A	
240-138921-6 MSD	GW-12607-102320-SK-019	Total/NA	Water	7196A	

Analysis Batch: 459094

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138921-6	GW-12607-102320-SK-019	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-458120/1-A
Matrix: Water
Analysis Batch: 458486

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 458120

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 15:12	1
Nickel	20	U	20	2.2	ug/L		10/28/20 14:00	10/29/20 15:12	1

Lab Sample ID: LCS 240-458120/2-A
Matrix: Water
Analysis Batch: 458486

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 458120

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1000	965		ug/L		97	80 - 120
Nickel	1000	1010		ug/L		101	80 - 120

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-457589/3
Matrix: Water
Analysis Batch: 457589

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			10/24/20 10:38	1

Lab Sample ID: LCS 240-457589/4
Matrix: Water
Analysis Batch: 457589

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.267		mg/L		107	80 - 123

Lab Sample ID: 240-138921-6 MS
Matrix: Water
Analysis Batch: 457589

Client Sample ID: GW-12607-102320-SK-019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.010	U	0.250	0.282		mg/L		113	31 - 151

Lab Sample ID: 240-138921-6 MSD
Matrix: Water
Analysis Batch: 457589

Client Sample ID: GW-12607-102320-SK-019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	0.010	U	0.250	0.261		mg/L		104	31 - 151	8	20

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-138921-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-102320-SK-014
Lab Sample ID: 240-138921-1
Date Collected: 10/23/20 09:40
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			458120	10/28/20 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	458486	10/29/20 16:33	WKD	TAL CAN
Total Recoverable	Prep	3005A			458120	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 16:29	WKD	TAL CAN

Client Sample ID: GW-12607-102320-SK-015
Lab Sample ID: 240-138921-2
Date Collected: 10/23/20 10:25
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458120	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 16:37	WKD	TAL CAN

Client Sample ID: GW-12607-102320-SK-016
Lab Sample ID: 240-138921-3
Date Collected: 10/23/20 11:40
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458120	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 16:42	WKD	TAL CAN

Client Sample ID: GW-12607-102320-SK-017
Lab Sample ID: 240-138921-4
Date Collected: 10/23/20 12:55
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458120	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 16:46	WKD	TAL CAN

Client Sample ID: GW-12607-102320-SK-018
Lab Sample ID: 240-138921-5
Date Collected: 10/23/20 13:45
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458120	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 16:50	WKD	TAL CAN

Client Sample ID: GW-12607-102320-SK-019
Lab Sample ID: 240-138921-6
Date Collected: 10/23/20 15:10
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458120	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 16:55	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:31	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457589	10/24/20 10:40	BLW	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138921-1

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-138921-1
Project/Site: 12607-T06, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

Chain of Custody Record 460204

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MICHIGAN

Address: 190 T.A.# 24005880 3.4/4.3

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: Chris Meincke	Site Contact: S. Kippen	Date: 10-23-2020	COC No:
Company Name: GHD	Tel/Email: (248) 935-7346	Lab Contact:	Carrier: Fed Ex	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: Scott Kippen
City/State/Zip: Farmington Hills, M.I 48331	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 248 893-3400	TAT if different from Below			Walk-in Client:
Fax: chem.det@ghd.com	☒ 2 weeks			Lab Sampling:
Project Name: Eckles Rd - Racer	☐ 1 week			
Site: Livonia M.I.	☐ 2 days			Job / SDG No.:
PO# 5500 T06420 & T31420	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Chromium	Nickel	Hex. Chromium	Dissolved Metals	PFAS	Sample Specific Notes:
GW-12607-102320-SK-014	10/23/20	9:40	G	GW	3			X	X		X	X	
-015		10:25			2			X	X			X	
-016		11:40			2			X	X			X	
-017		12:55			2			X	X			X	
-018		13:45			2			X	X			X	
-019		15:10			3			X	X	X		X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
R. Latka	GHD	10/23/2020 16:40		ETA	10-23-20 940
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

240-138921 Chain of Custody

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 138921

Client GHD Site Name

Cooler Received on 10-24-20 Opened on 10-24-20

Cooler unpacked by: Matthew

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 4.3 °C
   IR GUN #IR-12 (CF +0.5°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

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

Contacted PM Date by via Verbal Voice Mail Other

Concerning

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen:

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-138921-2
Client Project/Site: 12607-T31, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
10/30/2020 4:52:25 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138921-2

Job ID: 240-138921-2

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-138921-2

Comments
No additional comments.

Receipt
The samples were received on 10/24/2020 9:40 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.3º C.

LCMS
Method 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analytes were outside of the established ratio limits. The qualitative identification of the analytes have some degree of uncertainty. However, analyst judgment was used to positively identify the analytes: GW-12607-102320-SK-014 (240-138921-1), GW-12607-102320-SK-015 (240-138921-2), GW-12607-102320-SK-016 (240-138921-3), GW-12607-102320-SK-017 (240-138921-4), GW-12607-102320-SK-018 (240-138921-5) and GW-12607-102320-SK-019 (240-138921-6).

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for 13C2 PFDA in the following sample: GW-12607-102320-SK-018 (240-138921-5). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

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

Organic Prep
Method 3535: The following sample was light yellow and contained a thin layer of sediment at the bottom of the bottle prior to extraction: GW-12607-102320-SK-018 (240-138921-5).

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: GW-12607-102320-SK-014 (240-138921-1), GW-12607-102320-SK-015 (240-138921-2), GW-12607-102320-SK-016 (240-138921-3), GW-12607-102320-SK-017 (240-138921-4) and GW-12607-102320-SK-019 (240-138921-6).

Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-426016.

Method 3535: The following samples were observed to be light yellow after final voluming: GW-12607-102320-SK-014 (240-138921-1) and GW-12607-102320-SK-018 (240-138921-5).

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138921-2

Qualifiers

LCMS

Qualifier	Qualifier Description
*5	Isotope dilution analyte is outside acceptance limits.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138921-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-138921-1	GW-12607-102320-SK-014	Water	10/23/20 09:40	10/24/20 09:40	
240-138921-2	GW-12607-102320-SK-015	Water	10/23/20 10:25	10/24/20 09:40	
240-138921-3	GW-12607-102320-SK-016	Water	10/23/20 11:40	10/24/20 09:40	
240-138921-4	GW-12607-102320-SK-017	Water	10/23/20 12:55	10/24/20 09:40	
240-138921-5	GW-12607-102320-SK-018	Water	10/23/20 13:45	10/24/20 09:40	
240-138921-6	GW-12607-102320-SK-019	Water	10/23/20 15:10	10/24/20 09:40	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138921-2

Client Sample ID: GW-12607-102320-SK-014 — Lab Sample ID: 240-138921-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.1		4.3	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.92	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.4	I	1.7	0.50	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.7		1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	11		1.7	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.96	J	1.7	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7		1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	2.4	I	1.7	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	16	I	1.7	0.49	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	3.4	I	1.7	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	120	I	1.7	0.47	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102320-SK-015 — Lab Sample ID: 240-138921-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.5		4.4	2.1	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.5	J	1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.97	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	5.4		1.8	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.31	J	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	1.0	J I	1.8	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.6	I	1.8	0.50	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	I	1.8	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	56	I	1.8	0.47	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102320-SK-016 — Lab Sample ID: 240-138921-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.9		4.3	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.97	J	1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.5	J	1.7	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.1		1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.3	I	1.7	0.49	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.1	I	1.7	0.47	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102320-SK-017 — Lab Sample ID: 240-138921-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.4		4.3	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.51	J	1.7	0.43	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.44	J	1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.3		1.7	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.31	J	1.7	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.7	I	1.7	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.5	I	1.7	0.47	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138921-2

Client Sample ID: GW-12607-102320-SK-018 — Lab Sample ID: 240-138921-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.3		4.4	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.5		1.7	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	2.2	I	1.7	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	23	I	1.7	0.50	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.82	J I	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	11	I	1.7	0.47	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102320-SK-019 — Lab Sample ID: 240-138921-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.9		4.3	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.9		1.7	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.8		1.7	0.50	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8		1.7	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	6.1		1.7	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.9	I	1.7	0.49	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.79	J I	1.7	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	14	I	1.7	0.47	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138921-2

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102320-SK-014
Date Collected: 10/23/20 09:40
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.1**		4.3	2.1	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluoropentanoic acid (PFPeA)	**0.92**	**J**	1.7	0.42	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorohexanoic acid (PFHxA)	**2.4**	**I**	1.7	0.50	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluoroheptanoic acid (PFHpA)	**1.7**		1.7	0.22	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorooctanoic acid (PFOA)	**11**		1.7	0.74	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorononanoic acid (PFNA)	**0.96**	**J**	1.7	0.23	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorodecanoic acid (PFDA)	1.7	U	1.7	0.27	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluoroundecanoic acid (PFUnA)	1.7	U	1.7	0.95	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorododecanoic acid (PFDoA)	1.7	U	1.7	0.48	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorotridecanoic acid (PFTriA)	1.7	U	1.7	1.1	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorotetradecanoic acid (PFTeA)	1.7	U	1.7	0.63	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorobutanesulfonic acid (PFBS)	**1.7**		1.7	0.17	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluoropentanesulfonic acid (PFPeS)	**2.4**	**I**	1.7	0.26	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorohexanesulfonic acid (PFHxS)	**16**	**I**	1.7	0.49	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	**3.4**	**I**	1.7	0.16	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorooctanesulfonic acid (PFOS)	**120**	**I**	1.7	0.47	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorononanesulfonic acid (PFNS)	1.7	U	1.7	0.32	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorodecanesulfonic acid (PFDS)	1.7	U	1.7	0.28	ng/L		10/27/20 18:43	10/28/20 19:40	1
Perfluorooctanesulfonamide (FOSA)	1.7	U	1.7	0.85	ng/L		10/27/20 18:43	10/28/20 19:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.3	U	4.3	1.0	ng/L		10/27/20 18:43	10/28/20 19:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.3	U	4.3	1.1	ng/L		10/27/20 18:43	10/28/20 19:40	1
4:2 FTS	1.7	U	1.7	0.21	ng/L		10/27/20 18:43	10/28/20 19:40	1
6:2 FTS	4.3	U	4.3	2.2	ng/L		10/27/20 18:43	10/28/20 19:40	1
8:2 FTS	1.7	U	1.7	0.40	ng/L		10/27/20 18:43	10/28/20 19:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.7	U	1.7	0.35	ng/L		10/27/20 18:43	10/28/20 19:40	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/27/20 18:43	10/28/20 19:40	1
F-53B Major	1.7	U	1.7	0.21	ng/L		10/27/20 18:43	10/28/20 19:40	1
F-53B Minor	1.7	U	1.7	0.28	ng/L		10/27/20 18:43	10/28/20 19:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*52*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C5 PFPeA	*52*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C2 PFHxA	*67*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C4 PFHpA	*104*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C4 PFOA	*97*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C5 PFNA	*116*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C2 PFDA	*130*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C2 PFUnA	*120*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C2 PFDoA	*118*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C2 PFTeDA	*104*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C3 PFBS	*100*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
18O2 PFHxS	*120*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C4 PFOS	*126*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*
13C8 FOSA	*118*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:40*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102320-SK-014
Date Collected: 10/23/20 09:40
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-1
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	92		25 - 150	10/27/20 18:43	10/28/20 19:40	1
d5-NEtFOSAA	104		25 - 150	10/27/20 18:43	10/28/20 19:40	1
M2-6:2 FTS	84		25 - 150	10/27/20 18:43	10/28/20 19:40	1
M2-8:2 FTS	128		25 - 150	10/27/20 18:43	10/28/20 19:40	1
M2-4:2 FTS	56		25 - 150	10/27/20 18:43	10/28/20 19:40	1
13C3 HFPO-DA	112		25 - 150	10/27/20 18:43	10/28/20 19:40	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102320-SK-015
Date Collected: 10/23/20 10:25
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.5**		4.4	2.1	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	0.43	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorohexanoic acid (PFHxA)	**1.5**	**J**	1.8	0.51	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluoroheptanoic acid (PFHpA)	**0.97**	**J**	1.8	0.22	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorooctanoic acid (PFOA)	**5.4**		1.8	0.75	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorononanoic acid (PFNA)	**0.31**	**J**	1.8	0.24	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.27	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.97	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.48	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.1	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.64	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.18	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluoropentanesulfonic acid (PFPeS)	**1.0**	**J I**	1.8	0.26	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorohexanesulfonic acid (PFHxS)	**5.6**	**I**	1.8	0.50	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.9**	**I**	1.8	0.17	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorooctanesulfonic acid (PFOS)	**56**	**I**	1.8	0.47	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		10/27/20 18:43	10/28/20 19:49	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.86	ng/L		10/27/20 18:43	10/28/20 19:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		10/27/20 18:43	10/28/20 19:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.1	ng/L		10/27/20 18:43	10/28/20 19:49	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/27/20 18:43	10/28/20 19:49	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		10/27/20 18:43	10/28/20 19:49	1
8:2 FTS	1.8	U	1.8	0.40	ng/L		10/27/20 18:43	10/28/20 19:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.35	ng/L		10/27/20 18:43	10/28/20 19:49	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/27/20 18:43	10/28/20 19:49	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/27/20 18:43	10/28/20 19:49	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		10/27/20 18:43	10/28/20 19:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*56*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C5 PFPeA	*53*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C2 PFHxA	*84*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C4 PFHpA	*90*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C4 PFOA	*90*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C5 PFNA	*92*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C2 PFDA	*100*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C2 PFUnA	*84*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C2 PFDoA	*80*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C2 PFTeDA	*83*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C3 PFBS	*84*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
18O2 PFHxS	*95*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C4 PFOS	*93*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*
13C8 FOSA	*88*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:49*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102320-SK-015
Date Collected: 10/23/20 10:25
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-2
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	69		25 - 150	10/27/20 18:43	10/28/20 19:49	1
d5-NEtFOSAA	80		25 - 150	10/27/20 18:43	10/28/20 19:49	1
M2-6:2 FTS	85		25 - 150	10/27/20 18:43	10/28/20 19:49	1
M2-8:2 FTS	102		25 - 150	10/27/20 18:43	10/28/20 19:49	1
M2-4:2 FTS	97		25 - 150	10/27/20 18:43	10/28/20 19:49	1
13C3 HFPO-DA	91		25 - 150	10/27/20 18:43	10/28/20 19:49	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102320-SK-016
Date Collected: 10/23/20 11:40
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.9**		4.3	2.1	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluoropentanoic acid (PFPeA)	**0.97**	**J**	1.7	0.42	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorohexanoic acid (PFHxA)	1.7	U	1.7	0.50	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluoroheptanoic acid (PFHpA)	1.7	U	1.7	0.22	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorooctanoic acid (PFOA)	**1.5**	**J**	1.7	0.74	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorononanoic acid (PFNA)	1.7	U	1.7	0.23	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorodecanoic acid (PFDA)	1.7	U	1.7	0.27	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluoroundecanoic acid (PFUnA)	1.7	U	1.7	0.95	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorododecanoic acid (PFDoA)	1.7	U	1.7	0.48	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorotridecanoic acid (PFTriA)	1.7	U	1.7	1.1	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorotetradecanoic acid (PFTeA)	1.7	U	1.7	0.63	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorobutanesulfonic acid (PFBS)	**2.1**		1.7	0.17	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluoropentanesulfonic acid (PFPeS)	1.7	U	1.7	0.26	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorohexanesulfonic acid (PFHxS)	**2.3**	**I**	1.7	0.49	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.7	U	1.7	0.16	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorooctanesulfonic acid (PFOS)	**2.1**	**I**	1.7	0.47	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorononanesulfonic acid (PFNS)	1.7	U	1.7	0.32	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorodecanesulfonic acid (PFDS)	1.7	U	1.7	0.28	ng/L		10/27/20 18:43	10/28/20 19:59	1
Perfluorooctanesulfonamide (FOSA)	1.7	U	1.7	0.85	ng/L		10/27/20 18:43	10/28/20 19:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.3	U	4.3	1.0	ng/L		10/27/20 18:43	10/28/20 19:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.3	U	4.3	1.1	ng/L		10/27/20 18:43	10/28/20 19:59	1
4:2 FTS	1.7	U	1.7	0.21	ng/L		10/27/20 18:43	10/28/20 19:59	1
6:2 FTS	4.3	U	4.3	2.2	ng/L		10/27/20 18:43	10/28/20 19:59	1
8:2 FTS	1.7	U	1.7	0.40	ng/L		10/27/20 18:43	10/28/20 19:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.7	U	1.7	0.35	ng/L		10/27/20 18:43	10/28/20 19:59	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/27/20 18:43	10/28/20 19:59	1
F-53B Major	1.7	U	1.7	0.21	ng/L		10/27/20 18:43	10/28/20 19:59	1
F-53B Minor	1.7	U	1.7	0.28	ng/L		10/27/20 18:43	10/28/20 19:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*76*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C5 PFPeA	*80*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C2 PFHxA	*93*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C4 PFHpA	*91*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C4 PFOA	*93*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C5 PFNA	*94*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C2 PFDA	*93*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C2 PFUnA	*82*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C2 PFDoA	*83*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C2 PFTeDA	*80*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C3 PFBS	*87*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
18O2 PFHxS	*89*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C4 PFOS	*89*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*
13C8 FOSA	*87*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:59*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102320-SK-016
Date Collected: 10/23/20 11:40
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-3
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	67		25 - 150	10/27/20 18:43	10/28/20 19:59	1
d5-NEtFOSAA	70		25 - 150	10/27/20 18:43	10/28/20 19:59	1
M2-6:2 FTS	96		25 - 150	10/27/20 18:43	10/28/20 19:59	1
M2-8:2 FTS	93		25 - 150	10/27/20 18:43	10/28/20 19:59	1
M2-4:2 FTS	113		25 - 150	10/27/20 18:43	10/28/20 19:59	1
13C3 HFPO-DA	86		25 - 150	10/27/20 18:43	10/28/20 19:59	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102320-SK-017
Date Collected: 10/23/20 12:55
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.4**		4.3	2.1	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluoropentanoic acid (PFPeA)	**0.51**	**J**	1.7	0.43	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorohexanoic acid (PFHxA)	1.7	U	1.7	0.50	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluoroheptanoic acid (PFHpA)	**0.44**	**J**	1.7	0.22	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorooctanoic acid (PFOA)	**2.3**		1.7	0.74	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorononanoic acid (PFNA)	1.7	U	1.7	0.23	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorodecanoic acid (PFDA)	1.7	U	1.7	0.27	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluoroundecanoic acid (PFUnA)	1.7	U	1.7	0.96	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorododecanoic acid (PFDoA)	1.7	U	1.7	0.48	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorotridecanoic acid (PFTriA)	1.7	U	1.7	1.1	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorotetradecanoic acid (PFTeA)	1.7	U	1.7	0.63	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.7	0.17	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluoropentanesulfonic acid (PFPeS)	**0.31**	**J**	1.7	0.26	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorohexanesulfonic acid (PFHxS)	**1.7**	**I**	1.7	0.50	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.7	U	1.7	0.17	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorooctanesulfonic acid (PFOS)	**2.5**	**I**	1.7	0.47	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorononanesulfonic acid (PFNS)	1.7	U	1.7	0.32	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorodecanesulfonic acid (PFDS)	1.7	U	1.7	0.28	ng/L		10/27/20 18:43	10/28/20 20:08	1
Perfluorooctanesulfonamide (FOSA)	1.7	U	1.7	0.85	ng/L		10/27/20 18:43	10/28/20 20:08	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.3	U	4.3	1.0	ng/L		10/27/20 18:43	10/28/20 20:08	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.3	U	4.3	1.1	ng/L		10/27/20 18:43	10/28/20 20:08	1
4:2 FTS	1.7	U	1.7	0.21	ng/L		10/27/20 18:43	10/28/20 20:08	1
6:2 FTS	4.3	U	4.3	2.2	ng/L		10/27/20 18:43	10/28/20 20:08	1
8:2 FTS	1.7	U	1.7	0.40	ng/L		10/27/20 18:43	10/28/20 20:08	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.7	U	1.7	0.35	ng/L		10/27/20 18:43	10/28/20 20:08	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/27/20 18:43	10/28/20 20:08	1
F-53B Major	1.7	U	1.7	0.21	ng/L		10/27/20 18:43	10/28/20 20:08	1
F-53B Minor	1.7	U	1.7	0.28	ng/L		10/27/20 18:43	10/28/20 20:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*70*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C5 PFPeA	*75*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C2 PFHxA	*89*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C4 PFHpA	*94*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C4 PFOA	*96*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C5 PFNA	*97*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C2 PFDA	*92*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C2 PFUnA	*82*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C2 PFDoA	*82*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C2 PFTeDA	*79*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C3 PFBS	*93*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
18O2 PFHxS	*94*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C4 PFOS	*95*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*
13C8 FOSA	*92*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:08*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102320-SK-017
Date Collected: 10/23/20 12:55
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-4
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	65		25 - 150	10/27/20 18:43	10/28/20 20:08	1
d5-NEtFOSAA	69		25 - 150	10/27/20 18:43	10/28/20 20:08	1
M2-6:2 FTS	98		25 - 150	10/27/20 18:43	10/28/20 20:08	1
M2-8:2 FTS	97		25 - 150	10/27/20 18:43	10/28/20 20:08	1
M2-4:2 FTS	102		25 - 150	10/27/20 18:43	10/28/20 20:08	1
13C3 HFPO-DA	92		25 - 150	10/27/20 18:43	10/28/20 20:08	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102320-SK-018
Date Collected: 10/23/20 13:45
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.3**		4.4	2.1	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluoropentanoic acid (PFPeA)	1.7	U	1.7	0.43	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorohexanoic acid (PFHxA)	1.7	U	1.7	0.50	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluoroheptanoic acid (PFHpA)	**1.5**	**J**	1.7	0.22	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorooctanoic acid (PFOA)	**8.5**		1.7	0.74	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorononanoic acid (PFNA)	1.7	U	1.7	0.24	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorodecanoic acid (PFDA)	1.7	U	1.7	0.27	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluoroundecanoic acid (PFUnA)	1.7	U	1.7	0.96	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorododecanoic acid (PFDoA)	1.7	U	1.7	0.48	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorotridecanoic acid (PFTriA)	1.7	U	1.7	1.1	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorotetradecanoic acid (PFTeA)	1.7	U	1.7	0.64	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorobutanesulfonic acid (PFBS)	**1.5**	**J**	1.7	0.17	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluoropentanesulfonic acid (PFPeS)	**2.2**	**I**	1.7	0.26	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorohexanesulfonic acid (PFHxS)	**23**	**I**	1.7	0.50	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.82**	**J I**	1.7	0.17	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorooctanesulfonic acid (PFOS)	**11**	**I**	1.7	0.47	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorononanesulfonic acid (PFNS)	1.7	U	1.7	0.32	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorodecanesulfonic acid (PFDS)	1.7	U	1.7	0.28	ng/L		10/27/20 18:43	10/28/20 20:17	1
Perfluorooctanesulfonamide (FOSA)	1.7	U	1.7	0.85	ng/L		10/27/20 18:43	10/28/20 20:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.0	ng/L		10/27/20 18:43	10/28/20 20:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.1	ng/L		10/27/20 18:43	10/28/20 20:17	1
4:2 FTS	1.7	U	1.7	0.21	ng/L		10/27/20 18:43	10/28/20 20:17	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		10/27/20 18:43	10/28/20 20:17	1
8:2 FTS	1.7	U	1.7	0.40	ng/L		10/27/20 18:43	10/28/20 20:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.7	U	1.7	0.35	ng/L		10/27/20 18:43	10/28/20 20:17	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/27/20 18:43	10/28/20 20:17	1
F-53B Major	1.7	U	1.7	0.21	ng/L		10/27/20 18:43	10/28/20 20:17	1
F-53B Minor	1.7	U	1.7	0.28	ng/L		10/27/20 18:43	10/28/20 20:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*69*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C5 PFPeA	*71*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C2 PFHxA	*49*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C4 PFHpA	*114*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C4 PFOA	*98*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C5 PFNA	*134*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C2 PFDA	*151*	**5*	*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C2 PFUnA	*137*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C2 PFDoA	*132*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C2 PFTeDA	*121*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C3 PFBS	*148*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
18O2 PFHxS	*136*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C4 PFOS	*136*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*
13C8 FOSA	*140*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:17*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102320-SK-018
Date Collected: 10/23/20 13:45
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-5
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	111		25 - 150	10/27/20 18:43	10/28/20 20:17	1
d5-NEtFOSAA	116		25 - 150	10/27/20 18:43	10/28/20 20:17	1
M2-6:2 FTS	77		25 - 150	10/27/20 18:43	10/28/20 20:17	1
M2-8:2 FTS	149		25 - 150	10/27/20 18:43	10/28/20 20:17	1
M2-4:2 FTS	52		25 - 150	10/27/20 18:43	10/28/20 20:17	1
13C3 HFPO-DA	114		25 - 150	10/27/20 18:43	10/28/20 20:17	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102320-SK-019
Lab Sample ID: 240-138921-6
Date Collected: 10/23/20 15:10
Matrix: Water
Date Received: 10/24/20 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.9**		4.3	2.1	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluoropentanoic acid (PFPeA)	**1.9**		1.7	0.42	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorohexanoic acid (PFHxA)	**2.8**		1.7	0.50	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluoroheptanoic acid (PFHpA)	**1.8**		1.7	0.22	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorooctanoic acid (PFOA)	**6.1**		1.7	0.74	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorononanoic acid (PFNA)	1.7	U	1.7	0.23	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorodecanoic acid (PFDA)	1.7	U	1.7	0.27	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluoroundecanoic acid (PFUnA)	1.7	U	1.7	0.95	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorododecanoic acid (PFDoA)	1.7	U	1.7	0.48	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorotridecanoic acid (PFTriA)	1.7	U	1.7	1.1	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorotetradecanoic acid (PFTeA)	1.7	U	1.7	0.63	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.7	0.17	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluoropentanesulfonic acid (PFPeS)	1.7	U	1.7	0.26	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorohexanesulfonic acid (PFHxS)	**2.9**	**I**	1.7	0.49	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.79**	**J I**	1.7	0.16	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorooctanesulfonic acid (PFOS)	**14**	**I**	1.7	0.47	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorononanesulfonic acid (PFNS)	1.7	U	1.7	0.32	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorodecanesulfonic acid (PFDS)	1.7	U	1.7	0.28	ng/L		10/27/20 18:43	10/28/20 20:26	1
Perfluorooctanesulfonamide (FOSA)	1.7	U	1.7	0.85	ng/L		10/27/20 18:43	10/28/20 20:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.3	U	4.3	1.0	ng/L		10/27/20 18:43	10/28/20 20:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.3	U	4.3	1.1	ng/L		10/27/20 18:43	10/28/20 20:26	1
4:2 FTS	1.7	U	1.7	0.21	ng/L		10/27/20 18:43	10/28/20 20:26	1
6:2 FTS	4.3	U	4.3	2.2	ng/L		10/27/20 18:43	10/28/20 20:26	1
8:2 FTS	1.7	U	1.7	0.40	ng/L		10/27/20 18:43	10/28/20 20:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.7	U	1.7	0.35	ng/L		10/27/20 18:43	10/28/20 20:26	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		10/27/20 18:43	10/28/20 20:26	1
F-53B Major	1.7	U	1.7	0.21	ng/L		10/27/20 18:43	10/28/20 20:26	1
F-53B Minor	1.7	U	1.7	0.28	ng/L		10/27/20 18:43	10/28/20 20:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*67*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C5 PFPeA	*62*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C2 PFHxA	*93*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C4 PFHpA	*94*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C4 PFOA	*97*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C5 PFNA	*98*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C2 PFDA	*98*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C2 PFUnA	*87*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C2 PFDoA	*86*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C2 PFTeDA	*74*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C3 PFBS	*85*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
18O2 PFHxS	*91*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C4 PFOS	*91*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*
13C8 FOSA	*95*		*25 - 150*	*10/27/20 18:43*	*10/28/20 20:26*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102320-SK-019
Date Collected: 10/23/20 15:10
Date Received: 10/24/20 09:40

Lab Sample ID: 240-138921-6
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	55		25 - 150	10/27/20 18:43	10/28/20 20:26	1
d5-NEtFOSAA	63		25 - 150	10/27/20 18:43	10/28/20 20:26	1
M2-6:2 FTS	100		25 - 150	10/27/20 18:43	10/28/20 20:26	1
M2-8:2 FTS	94		25 - 150	10/27/20 18:43	10/28/20 20:26	1
M2-4:2 FTS	109		25 - 150	10/27/20 18:43	10/28/20 20:26	1
13C3 HFPO-DA	90		25 - 150	10/27/20 18:43	10/28/20 20:26	1

QC Association Summary

Client: GHD Services Inc.
Job ID: 240-138921-2
Project/Site: 12607-T31, RACER Eckles Rd

LCMS

Prep Batch: 426016

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138921-1	GW-12607-102320-SK-014	Total/NA	Water	3535	
240-138921-2	GW-12607-102320-SK-015	Total/NA	Water	3535	
240-138921-3	GW-12607-102320-SK-016	Total/NA	Water	3535	
240-138921-4	GW-12607-102320-SK-017	Total/NA	Water	3535	
240-138921-5	GW-12607-102320-SK-018	Total/NA	Water	3535	
240-138921-6	GW-12607-102320-SK-019	Total/NA	Water	3535	
MB 320-426016/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-426016/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-426016/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 426589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138921-1	GW-12607-102320-SK-014	Total/NA	Water	537 (modified)	426016
240-138921-2	GW-12607-102320-SK-015	Total/NA	Water	537 (modified)	426016
240-138921-3	GW-12607-102320-SK-016	Total/NA	Water	537 (modified)	426016
240-138921-4	GW-12607-102320-SK-017	Total/NA	Water	537 (modified)	426016
240-138921-5	GW-12607-102320-SK-018	Total/NA	Water	537 (modified)	426016
240-138921-6	GW-12607-102320-SK-019	Total/NA	Water	537 (modified)	426016
MB 320-426016/1-A	Method Blank	Total/NA	Water	537 (modified)	426016
LCS 320-426016/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	426016
LCSD 320-426016/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	426016

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-426016/1-A
Matrix: Water
Analysis Batch: 426589

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426016

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.0	U	5.0	2.4	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.73	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.0	0.57	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.37	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		10/27/20 18:43	10/28/20 19:13	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.98	ng/L		10/27/20 18:43	10/28/20 19:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.0	U	5.0	1.2	ng/L		10/27/20 18:43	10/28/20 19:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.0	U	5.0	1.3	ng/L		10/27/20 18:43	10/28/20 19:13	1
4:2 FTS	2.0	U	2.0	0.24	ng/L		10/27/20 18:43	10/28/20 19:13	1
6:2 FTS	5.0	U	5.0	2.5	ng/L		10/27/20 18:43	10/28/20 19:13	1
8:2 FTS	2.0	U	2.0	0.46	ng/L		10/27/20 18:43	10/28/20 19:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.0	U	2.0	0.40	ng/L		10/27/20 18:43	10/28/20 19:13	1
HFPO-DA (GenX)	4.0	U	4.0	1.5	ng/L		10/27/20 18:43	10/28/20 19:13	1
F-53B Major	2.0	U	2.0	0.24	ng/L		10/27/20 18:43	10/28/20 19:13	1
F-53B Minor	2.0	U	2.0	0.32	ng/L		10/27/20 18:43	10/28/20 19:13	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*100*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C5 PFPeA	*97*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C2 PFHxA	*100*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C4 PFHpA	*99*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C4 PFOA	*102*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C5 PFNA	*98*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C2 PFDA	*102*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C2 PFUnA	*89*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C2 PFDoA	*96*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C2 PFTeDA	*85*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C3 PFBS	*99*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
18O2 PFHxS	*98*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C4 PFOS	*96*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
13C8 FOSA	*94*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*10/27/20 18:43*	*10/28/20 19:13*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-426016/1-A
Matrix: Water
Analysis Batch: 426589

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426016

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	97		25 - 150	10/27/20 18:43	10/28/20 19:13	1
M2-6:2 FTS	108		25 - 150	10/27/20 18:43	10/28/20 19:13	1
M2-8:2 FTS	107		25 - 150	10/27/20 18:43	10/28/20 19:13	1
M2-4:2 FTS	107		25 - 150	10/27/20 18:43	10/28/20 19:13	1
13C3 HFPO-DA	95		25 - 150	10/27/20 18:43	10/28/20 19:13	1

Lab Sample ID: LCS 320-426016/2-A
Matrix: Water
Analysis Batch: 426589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426016

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.7		ng/L		104	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	39.3		ng/L		98	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	39.9		ng/L		100	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	42.8		ng/L		107	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	40.3		ng/L		101	70 - 130
Perfluorononanoic acid (PFNA)	40.0	44.0		ng/L		110	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	44.1		ng/L		110	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	43.9		ng/L		110	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	44.5		ng/L		111	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	44.5		ng/L		111	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	38.7		ng/L		97	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	35.4		ng/L		100	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.4		ng/L		105	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.2		ng/L		94	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.1		ng/L		105	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	36.1		ng/L		97	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	40.4		ng/L		105	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.1		ng/L		102	71 - 131
Perfluorooctanesulfonamide (FOSA)	40.0	44.6		ng/L		111	73 - 133
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.4		ng/L		108	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.2		ng/L		100	76 - 136
4:2 FTS	37.4	43.1		ng/L		115	79 - 139
6:2 FTS	37.9	36.4		ng/L		96	59 - 175
8:2 FTS	38.3	41.5		ng/L		108	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	39.9		ng/L		106	79 - 139
HFPO-DA (GenX)	40.0	41.6		ng/L		104	51 - 173
F-53B Major	37.3	39.3		ng/L		105	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-426016/2-A
Matrix: Water
Analysis Batch: 426589

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426016

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			37.7	34.9		ng/L		93	54 - 114		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*103*		*25 - 150*
13C5 PFPeA	*101*		*25 - 150*
13C2 PFHxA	*103*		*25 - 150*
13C4 PFHpA	*100*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C5 PFNA	*104*		*25 - 150*
13C2 PFDA	*107*		*25 - 150*
13C2 PFUnA	*97*		*25 - 150*
13C2 PFDoA	*92*		*25 - 150*
13C2 PFTeDA	*93*		*25 - 150*
13C3 PFBS	*102*		*25 - 150*
18O2 PFHxS	*104*		*25 - 150*
13C4 PFOS	*103*		*25 - 150*
13C8 FOSA	*100*		*25 - 150*
d3-NMeFOSAA	*95*		*25 - 150*
d5-NEtFOSAA	*103*		*25 - 150*
M2-6:2 FTS	*111*		*25 - 150*
M2-8:2 FTS	*108*		*25 - 150*
M2-4:2 FTS	*102*		*25 - 150*
13C3 HFPO-DA	*97*		*25 - 150*

Lab Sample ID: LCSD 320-426016/3-A
Matrix: Water
Analysis Batch: 426589

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426016

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	41.0		ng/L		103	76 - 136	2	30
Perfluoropentanoic acid (PFPeA)			40.0	39.4		ng/L		98	71 - 131	0	30
Perfluorohexanoic acid (PFHxA)			40.0	39.6		ng/L		99	73 - 133	1	30
Perfluoroheptanoic acid (PFHpA)			40.0	42.3		ng/L		106	72 - 132	1	30
Perfluorooctanoic acid (PFOA)			40.0	39.8		ng/L		100	70 - 130	1	30
Perfluorononanoic acid (PFNA)			40.0	41.0		ng/L		102	75 - 135	7	30
Perfluorodecanoic acid (PFDA)			40.0	42.4		ng/L		106	76 - 136	4	30
Perfluoroundecanoic acid (PFUnA)			40.0	45.9		ng/L		115	68 - 128	4	30
Perfluorododecanoic acid (PFDoA)			40.0	39.2		ng/L		98	71 - 131	13	30
Perfluorotridecanoic acid (PFTriA)			40.0	37.6		ng/L		94	71 - 131	17	30
Perfluorotetradecanoic acid (PFTeA)			40.0	41.0		ng/L		102	70 - 130	6	30
Perfluorobutanesulfonic acid (PFBS)			35.4	34.9		ng/L		99	67 - 127	2	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	40.7		ng/L		109	66 - 126	3	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	36.2		ng/L		99	59 - 119	6	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-426016/3-A
Matrix: Water
Analysis Batch: 426589

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426016

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	38.2		ng/L		100	76 - 136	5	30
Perfluorooctanesulfonic acid (PFOS)			37.1	34.9		ng/L		94	70 - 130	3	30
Perfluorononanesulfonic acid (PFNS)			38.4	40.0		ng/L		104	75 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)			38.6	39.3		ng/L		102	71 - 131	0	30
Perfluorooctanesulfonamide (FOSA)			40.0	42.4		ng/L		106	73 - 133	5	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	40.1		ng/L		100	76 - 136	8	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	40.3		ng/L		101	76 - 136	0	30
4:2 FTS			37.4	39.9		ng/L		107	79 - 139	8	30
6:2 FTS			37.9	35.5		ng/L		94	59 - 175	2	30
8:2 FTS			38.3	42.7		ng/L		111	75 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	36.8		ng/L		98	79 - 139	8	30
HFPO-DA (GenX)			40.0	41.6		ng/L		104	51 - 173	0	30
F-53B Major			37.3	38.1		ng/L		102	75 - 135	3	30
F-53B Minor			37.7	34.0		ng/L		90	54 - 114	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*87*		*25 - 150*
13C5 PFPeA	*88*		*25 - 150*
13C2 PFHxA	*88*		*25 - 150*
13C4 PFHpA	*86*		*25 - 150*
13C4 PFOA	*88*		*25 - 150*
13C5 PFNA	*88*		*25 - 150*
13C2 PFDA	*88*		*25 - 150*
13C2 PFUnA	*83*		*25 - 150*
13C2 PFDoA	*86*		*25 - 150*
13C2 PFTeDA	*73*		*25 - 150*
13C3 PFBS	*88*		*25 - 150*
18O2 PFHxS	*86*		*25 - 150*
13C4 PFOS	*89*		*25 - 150*
13C8 FOSA	*80*		*25 - 150*
d3-NMeFOSAA	*82*		*25 - 150*
d5-NEtFOSAA	*82*		*25 - 150*
M2-6:2 FTS	*97*		*25 - 150*
M2-8:2 FTS	*89*		*25 - 150*
M2-4:2 FTS	*86*		*25 - 150*
13C3 HFPO-DA	*84*		*25 - 150*

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-138921-2
Project/Site: 12607-T31, RACER Eckles Rd

Client Sample ID: GW-12607-102320-SK-014
Lab Sample ID: 240-138921-1
Date Collected: 10/23/20 09:40
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426016	10/27/20 18:43	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	426589	10/28/20 19:40	JY1	TAL SAC

Client Sample ID: GW-12607-102320-SK-015
Lab Sample ID: 240-138921-2
Date Collected: 10/23/20 10:25
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426016	10/27/20 18:43	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	426589	10/28/20 19:49	JY1	TAL SAC

Client Sample ID: GW-12607-102320-SK-016
Lab Sample ID: 240-138921-3
Date Collected: 10/23/20 11:40
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426016	10/27/20 18:43	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	426589	10/28/20 19:59	JY1	TAL SAC

Client Sample ID: GW-12607-102320-SK-017
Lab Sample ID: 240-138921-4
Date Collected: 10/23/20 12:55
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426016	10/27/20 18:43	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	426589	10/28/20 20:08	JY1	TAL SAC

Client Sample ID: GW-12607-102320-SK-018
Lab Sample ID: 240-138921-5
Date Collected: 10/23/20 13:45
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426016	10/27/20 18:43	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	426589	10/28/20 20:17	JY1	TAL SAC

Client Sample ID: GW-12607-102320-SK-019
Lab Sample ID: 240-138921-6
Date Collected: 10/23/20 15:10
Matrix: Water
Date Received: 10/24/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426016	10/27/20 18:43	AP	TAL SAC
Total/NA	Analysis	537 (modified)		1	426589	10/28/20 20:26	JY1	TAL SAC

Laboratory References:
TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-138921-2
Project/Site: 12607-T31, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	10-31-20
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
Nevada	State	CA000442021-1	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-20
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record 460204

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MICHIGAN

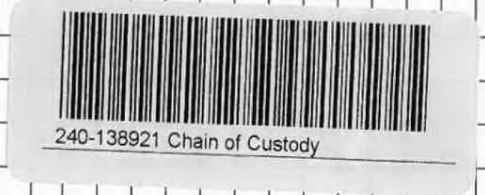
Address: 190 T.A.# 24005880 3.4/4.3

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: Chris Meincke	Site Contact: S. Kippen	Date: 10-23-2020	COC No:
Company Name: GHD	Tel/Email: (248) 935-7346	Lab Contact:	Carrier: Fed Ex	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: Scott Kippen
City/State/Zip: Farmington Hills, M.I 48331	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 248 893-3400	TAT if different from Below			Walk-in Client:
Fax: chem.det@ghd.com	☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: Eckles Rd - Racer				Job / SDG No.:
Site: Livonia M.I.				
PO# 5500 T06420 & T31420 PFAS				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Chromium	Nickel	Hex. Chromium	Dissolved Metals	PFAS	Sample Specific Notes:
GW-12607-102320-SK-014	10/23/20	9:40	G	GW	3			X	X		X	X	
-015		10:25			2			X	X			X	
-016		11:40			2			X	X			X	
-017		12:55			2			X	X			X	
-018		13:45			2			X	X			X	
-019		15:10			3			X	X	X		X	



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
R. Latka	GHD	10/23/2020 16:40		ETA	10-23-20 940
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 138921

Client GHD Site Name

Cooler Received on 10-24-20 Opened on 10-24-20

Cooler unpacked by: Mathew

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 4.3 °C
   IR GUN #IR-12 (CF +0.5°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

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

Contacted PM Date by via Verbal Voice Mail Other

Concerning

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen:

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-127108.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Denise.Heckler@Eurofinset.com	State of Origin: Michigan	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-138921-2
Address: 880 Riverside Parkway,	Due Date Requested: 11/5/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: 12607-T31, RACER Eckles Rd	Project #: 24005880			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_PFC (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GW-12607-102320-SK-014 (240-138921-1)	10/23/20	09:40 Eastern		Water			X	1	
GW-12607-102320-SK-015 (240-138921-2)	10/23/20	10:25 Eastern		Water			X	1	
GW-12607-102320-SK-016 (240-138921-3)	10/23/20	11:40 Eastern		Water			X	1	
GW-12607-102320-SK-017 (240-138921-4)	10/23/20	12:55 Eastern		Water			X	1	
GW-12607-102320-SK-018 (240-138921-5)	10/23/20	13:45 Eastern		Water			X	1	
GW-12607-102320-SK-019 (240-138921-6)	10/23/20	15:10 Eastern		Water			X	1	

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

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

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		10-26-20 1054	240		10/27/20 950	EATSAC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.8 & 7.3

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-138921-2

Login Number: 138921
List Number: 2
Creator: Saephan, Kae C

List Source: Eurofins TestAmerica, Sacramento
List Creation: 10/27/20 02:35 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	ob: 1.8c corr: 2.3c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138921-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-138921-1	GW-12607-102320-SK-014	52	52	67	104	97	116	130	120
240-138921-2	GW-12607-102320-SK-015	56	53	84	90	90	92	100	84
240-138921-3	GW-12607-102320-SK-016	76	80	93	91	93	94	93	82
240-138921-4	GW-12607-102320-SK-017	70	75	89	94	96	97	92	82
240-138921-5	GW-12607-102320-SK-018	69	71	49	114	98	134	151 *5	137
240-138921-6	GW-12607-102320-SK-019	67	62	93	94	97	98	98	87
LCS 320-426016/2-A	Lab Control Sample	103	101	103	100	103	104	107	97
LCSD 320-426016/3-A	Lab Control Sample Dup	87	88	88	86	88	88	88	83
MB 320-426016/1-A	Method Blank	100	97	100	99	102	98	102	89

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
240-138921-1	GW-12607-102320-SK-014	118	104	100	120	126	118	92	104
240-138921-2	GW-12607-102320-SK-015	80	83	84	95	93	88	69	80
240-138921-3	GW-12607-102320-SK-016	83	80	87	89	89	87	67	70
240-138921-4	GW-12607-102320-SK-017	82	79	93	94	95	92	65	69
240-138921-5	GW-12607-102320-SK-018	132	121	148	136	136	140	111	116
240-138921-6	GW-12607-102320-SK-019	86	74	85	91	91	95	55	63
LCS 320-426016/2-A	Lab Control Sample	92	93	102	104	103	100	95	103
LCSD 320-426016/3-A	Lab Control Sample Dup	86	73	88	86	89	80	82	82
MB 320-426016/1-A	Method Blank	96	85	99	98	96	94	91	97

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)				
240-138921-1	GW-12607-102320-SK-014	84	128	56	112				
240-138921-2	GW-12607-102320-SK-015	85	102	97	91				
240-138921-3	GW-12607-102320-SK-016	96	93	113	86				
240-138921-4	GW-12607-102320-SK-017	98	97	102	92				
240-138921-5	GW-12607-102320-SK-018	77	149	52	114				
240-138921-6	GW-12607-102320-SK-019	100	94	109	90				
LCS 320-426016/2-A	Lab Control Sample	111	108	102	97				
LCSD 320-426016/3-A	Lab Control Sample Dup	97	89	86	84				
MB 320-426016/1-A	Method Blank	108	107	107	95				

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 240-138921-2
Project/Site: 12607-T31, RACER Eckles Rd

d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

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Sacramento Sample Receiving Notes

240-138921 Field Sheet

Tracking # : 9148 7501 8860

Job: _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: DM11 Corr. Factor: (+) / -) 0.5 °C

Ice ✓ Wet _____ Gel _____ Other _____

Cooler Custody Seal: —

Cooler ID: —

Temp Observed: 1.8 °C Corrected: 2.3 °C

From: Temp Blank ☐ Sample ☑

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐

Initials: ST Date: 10/27/20

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: JS Date: 10/27/20

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☐	☐	☐
Samples received within hold time?	☑	☐	☐
NCM Filed?	☐	☐	☑
Log Release checked in TALS?	☐	☐	☑

Initials: JS Date: 10/27/20

WR3-030

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-138986-1
Client Project/Site: 12607-T31, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
11/5/2020 8:00:04 AM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 240-138986-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-138986-1

Comments
No additional comments.

Receipt
The samples were received on 10/27/2020 9:40 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.1º C.

LCMS
Method 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgment was used to positively identify the analyte.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for 13C2 PFDoA and M2-8:2 FTS the following sample: GW-12607-102620-DR-023 (240-138986-4). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The following sample exhibited elevated matrix interferences for Perfluorohexanesulfonic acid (PFHxS) causing elevation of the reporting limit (RL). The reporting limit for the affected analyte has been raised to be equal to the matrix, and a "G" qualifier applied : GW-12607-102620-DR-022 (240-138986-3)

Method 537 (modified): Results for sample GW-12607-102620-DR-024 (240-138986-5) were reported from the analysis of a diluted extract due to matrix interference of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit for 13C2 PFHxA and M2-4:2 FTS: GW-12607-102620-DR-024 (240-138986-5). This sample is reported at dilution with improved IDA recoveries, which are still below the method recommended limit. However, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

Method 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit for 13C4 PFBA: GW-12607-102620-DR-024 (240-138986-5). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample(s).

Method 537 (modified): The following sample has chromatographic interferences that could adversely impact the identification and quantitation of Perfluorobutanoic acid (PFBA): GW-12607-102620-DR-024 (240-138986-5). This interference could cause a high biased result.

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with: preparation batch 320-426445.

Method 3535: The following samples contained a thin layer of sediment at the bottom of the bottle prior to extraction: GW-12607-102620-DR-020 (240-138986-1), GW-12607-102620-DR-022 (240-138986-3), GW-12607-102620-DR-024 (240-138986-5) and GW-12607-102620-DR-025 (240-138986-6).

Method 3535: The following sample was green prior to extraction: GW-12607-102620-DR-024 (240-138986-5).

Method 3535: The following samples are light yellow after extraction/final volume: GW-12607-102620-DR-024 (240-138986-5) and GW-12607-102620-DR-025 (240-138986-6).

Job ID: 240-138986-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

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

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 240-138986-1
Project/Site: 12607-T31, RACER Eckles Rd

Qualifiers

LCMS

Qualifier	Qualifier Description
*5	Isotope dilution analyte is outside acceptance limits.
CI	The peak identified by the data system exhibited chromatographic interference that could not be resolved. There is reason to suspect there may be a high bias.
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138986-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-138986-1	GW-12607-102620-DR-020	Water	10/26/20 09:55	10/27/20 09:40	
240-138986-2	GW-12607-102620-DR-021	Water	10/26/20 10:40	10/27/20 09:40	
240-138986-3	GW-12607-102620-DR-022	Water	10/26/20 11:30	10/27/20 09:40	
240-138986-4	GW-12607-102620-DR-023	Water	10/26/20 12:30	10/27/20 09:40	
240-138986-5	GW-12607-102620-DR-024	Water	10/26/20 13:25	10/27/20 09:40	
240-138986-6	GW-12607-102620-DR-025	Water	10/26/20 14:10	10/27/20 09:40	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138986-1

Client Sample ID: GW-12607-102620-DR-020 — Lab Sample ID: 240-138986-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.5		4.5	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.3	J	1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.31	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102620-DR-021 — Lab Sample ID: 240-138986-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	13		4.5	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.6		1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.5	J	1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.40	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.0	J	1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.3		1.8	0.18	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102620-DR-022 — Lab Sample ID: 240-138986-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.1		4.5	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.9		1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.5		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.7	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102620-DR-023 — Lab Sample ID: 240-138986-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	12		4.7	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.2	J	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.3		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.28	J	1.9	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.6	I	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	4.7	I	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	26	I	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	3.2	I	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	130	I	1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102620-DR-024 — Lab Sample ID: 240-138986-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	21	CI	4.5	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.9		1.8	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.7		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	3.9	I	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15	I	1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.2	J I	1.8	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	14	I	1.8	0.49	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138986-1

Client Sample ID: GW-12607-102620-DR-025 — Lab Sample ID: 240-138986-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	24		4.7	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	8.2		1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	9.0		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.4		1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	14		1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	4.0		1.9	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.3	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.6		1.9	0.53	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	260		1.9	0.50	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138986-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102620-DR-020
Date Collected: 10/26/20 09:55
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.5**		4.5	2.2	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluoropentanoic acid (PFPeA)	**1.3**	**J**	1.8	0.44	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	0.52	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluoroheptanoic acid (PFHpA)	**0.31**	**J**	1.8	0.22	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.76	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.99	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.65	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.8	0.18	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.27	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	0.51	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.48	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/29/20 04:09	10/29/20 14:42	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.88	ng/L		10/29/20 04:09	10/29/20 14:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		10/29/20 04:09	10/29/20 14:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		10/29/20 04:09	10/29/20 14:42	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		10/29/20 04:09	10/29/20 14:42	1
6:2 FTS	4.5	U	4.5	2.2	ng/L		10/29/20 04:09	10/29/20 14:42	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/29/20 04:09	10/29/20 14:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		10/29/20 04:09	10/29/20 14:42	1
HFPO-DA (GenX)	3.6	U	3.6	1.3	ng/L		10/29/20 04:09	10/29/20 14:42	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/29/20 04:09	10/29/20 14:42	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/29/20 04:09	10/29/20 14:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*46*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C5 PFPeA	*59*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C2 PFHxA	*32*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C4 PFHpA	*81*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C4 PFOA	*85*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C5 PFNA	*83*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C2 PFDA	*85*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C2 PFUnA	*79*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C2 PFDoA	*79*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C2 PFTeDA	*80*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C3 PFBS	*73*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
18O2 PFHxS	*82*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C4 PFOS	*86*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
13C8 FOSA	*74*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
d3-NMeFOSAA	*60*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*
d5-NEtFOSAA	*66*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:42*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102620-DR-020
Date Collected: 10/26/20 09:55
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-1
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	83		25 - 150	10/29/20 04:09	10/29/20 14:42	1
M2-8:2 FTS	70		25 - 150	10/29/20 04:09	10/29/20 14:42	1
M2-4:2 FTS	39		25 - 150	10/29/20 04:09	10/29/20 14:42	1
13C3 HFPO-DA	75		25 - 150	10/29/20 04:09	10/29/20 14:42	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102620-DR-021
Date Collected: 10/26/20 10:40
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**13**		4.5	2.1	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluoropentanoic acid (PFPeA)	**2.6**		1.8	0.44	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorohexanoic acid (PFHxA)	**1.5**	**J**	1.8	0.52	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluoroheptanoic acid (PFHpA)	**0.40**	**J**	1.8	0.22	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	1.8	0.76	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.98	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.65	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorobutanesulfonic acid (PFBS)	**3.3**		1.8	0.18	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.27	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	0.51	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.48	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		10/29/20 04:09	10/29/20 14:52	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.87	ng/L		10/29/20 04:09	10/29/20 14:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		10/29/20 04:09	10/29/20 14:52	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		10/29/20 04:09	10/29/20 14:52	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/29/20 04:09	10/29/20 14:52	1
6:2 FTS	4.5	U	4.5	2.2	ng/L		10/29/20 04:09	10/29/20 14:52	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/29/20 04:09	10/29/20 14:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		10/29/20 04:09	10/29/20 14:52	1
HFPO-DA (GenX)	3.6	U	3.6	1.3	ng/L		10/29/20 04:09	10/29/20 14:52	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/29/20 04:09	10/29/20 14:52	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		10/29/20 04:09	10/29/20 14:52	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*49*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C5 PFPeA	*62*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C2 PFHxA	*71*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C4 PFHpA	*80*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C4 PFOA	*87*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C5 PFNA	*83*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C2 PFDA	*74*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C2 PFUnA	*79*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C2 PFDoA	*83*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C2 PFTeDA	*78*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C3 PFBS	*73*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
18O2 PFHxS	*83*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C4 PFOS	*84*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
13C8 FOSA	*74*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
d3-NMeFOSAA	*66*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*
d5-NEtFOSAA	*72*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:52*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102620-DR-021
Date Collected: 10/26/20 10:40
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-2
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	86		25 - 150	10/29/20 04:09	10/29/20 14:52	1
M2-8:2 FTS	73		25 - 150	10/29/20 04:09	10/29/20 14:52	1
M2-4:2 FTS	84		25 - 150	10/29/20 04:09	10/29/20 14:52	1
13C3 HFPO-DA	71		25 - 150	10/29/20 04:09	10/29/20 14:52	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102620-DR-022
Date Collected: 10/26/20 11:30
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.1**		4.5	2.2	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluoropentanoic acid (PFPeA)	**1.9**		1.8	0.44	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorohexanoic acid (PFHxA)	**2.5**		1.8	0.52	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluoroheptanoic acid (PFHpA)	**1.7**	**J**	1.8	0.23	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorooctanoic acid (PFOA)	**2.1**		1.8	0.77	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.99	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.66	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.8	0.18	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.27	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U G	1.9	1.9	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.49	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/29/20 04:09	10/29/20 15:01	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.88	ng/L		10/29/20 04:09	10/29/20 15:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		10/29/20 04:09	10/29/20 15:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		10/29/20 04:09	10/29/20 15:01	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		10/29/20 04:09	10/29/20 15:01	1
6:2 FTS	4.5	U	4.5	2.3	ng/L		10/29/20 04:09	10/29/20 15:01	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/29/20 04:09	10/29/20 15:01	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		10/29/20 04:09	10/29/20 15:01	1
HFPO-DA (GenX)	3.6	U	3.6	1.4	ng/L		10/29/20 04:09	10/29/20 15:01	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/29/20 04:09	10/29/20 15:01	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/29/20 04:09	10/29/20 15:01	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*40*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C5 PFPeA	*54*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C2 PFHxA	*58*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C4 PFHpA	*78*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C4 PFOA	*90*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C5 PFNA	*90*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C2 PFDA	*88*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C2 PFUnA	*86*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C2 PFDoA	*93*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C3 PFBS	*84*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
18O2 PFHxS	*86*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C4 PFOS	*88*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
13C8 FOSA	*79*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
d3-NMeFOSAA	*68*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*
d5-NEtFOSAA	*73*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:01*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102620-DR-022
Date Collected: 10/26/20 11:30
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-3
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	107		25 - 150	10/29/20 04:09	10/29/20 15:01	1
M2-8:2 FTS	80		25 - 150	10/29/20 04:09	10/29/20 15:01	1
M2-4:2 FTS	69		25 - 150	10/29/20 04:09	10/29/20 15:01	1
13C3 HFPO-DA	74		25 - 150	10/29/20 04:09	10/29/20 15:01	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102620-DR-023
Date Collected: 10/26/20 12:30
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**12**		4.7	2.3	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.55	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluoroheptanoic acid (PFHpA)	**1.2**	**J**	1.9	0.24	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorooctanoic acid (PFOA)	**4.3**		1.9	0.80	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorononanoic acid (PFNA)	**0.28**	**J**	1.9	0.25	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.69	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorobutanesulfonic acid (PFBS)	**4.6**	**I**	1.9	0.19	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluoropentanesulfonic acid (PFPeS)	**4.7**	**I**	1.9	0.28	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorohexanesulfonic acid (PFHxS)	**26**	**I**	1.9	0.54	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluoroheptanesulfonic Acid (PFHpS)	**3.2**	**I**	1.9	0.18	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorooctanesulfonic acid (PFOS)	**130**	**I**	1.9	0.51	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		10/29/20 04:09	10/29/20 15:10	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.92	ng/L		10/29/20 04:09	10/29/20 15:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		10/29/20 04:09	10/29/20 15:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		10/29/20 04:09	10/29/20 15:10	1
4:2 FTS	1.9	U	1.9	0.23	ng/L		10/29/20 04:09	10/29/20 15:10	1
6:2 FTS	4.7	U	4.7	2.4	ng/L		10/29/20 04:09	10/29/20 15:10	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		10/29/20 04:09	10/29/20 15:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.38	ng/L		10/29/20 04:09	10/29/20 15:10	1
HFPO-DA (GenX)	3.8	U	3.8	1.4	ng/L		10/29/20 04:09	10/29/20 15:10	1
F-53B Major	1.9	U	1.9	0.23	ng/L		10/29/20 04:09	10/29/20 15:10	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		10/29/20 04:09	10/29/20 15:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*64*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C5 PFPeA	*80*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C2 PFHxA	*70*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C4 PFHpA	*112*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C4 PFOA	*98*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C5 PFNA	*135*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C2 PFDA	*146*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C2 PFUnA	*125*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C2 PFDoA	*163*	**5*	*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C2 PFTeDA	*128*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C3 PFBS	*123*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
18O2 PFHxS	*135*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C4 PFOS	*139*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*
13C8 FOSA	*126*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:10*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102620-DR-023
Date Collected: 10/26/20 12:30
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-4
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	107		25 - 150	10/29/20 04:09	10/29/20 15:10	1
d5-NEtFOSAA	103		25 - 150	10/29/20 04:09	10/29/20 15:10	1
M2-6:2 FTS	138		25 - 150	10/29/20 04:09	10/29/20 15:10	1
M2-8:2 FTS	167	*5	25 - 150	10/29/20 04:09	10/29/20 15:10	1
M2-4:2 FTS	115		25 - 150	10/29/20 04:09	10/29/20 15:10	1
13C3 HFPO-DA	114		25 - 150	10/29/20 04:09	10/29/20 15:10	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102620-DR-024
Date Collected: 10/26/20 13:25
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**21**	**CI**	4.5	2.2	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	0.44	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluoroheptanoic acid (PFHpA)	**1.5**	**J**	1.8	0.23	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorooctanoic acid (PFOA)	**4.9**		1.8	0.77	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.99	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.66	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorobutanesulfonic acid (PFBS)	**4.7**		1.8	0.18	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluoropentanesulfonic acid (PFPeS)	**3.9**	**I**	1.8	0.27	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorohexanesulfonic acid (PFHxS)	**15**	**I**	1.8	0.52	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.2**	**J I**	1.8	0.17	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorooctanesulfonic acid (PFOS)	**14**	**I**	1.8	0.49	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/29/20 04:09	10/29/20 15:19	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.89	ng/L		10/29/20 04:09	10/29/20 15:19	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		10/29/20 04:09	10/29/20 15:19	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		10/29/20 04:09	10/29/20 15:19	1
6:2 FTS	4.5	U	4.5	2.3	ng/L		10/29/20 04:09	10/29/20 15:19	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		10/29/20 04:09	10/29/20 15:19	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		10/29/20 04:09	10/29/20 15:19	1
HFPO-DA (GenX)	3.6	U	3.6	1.4	ng/L		10/29/20 04:09	10/29/20 15:19	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/29/20 04:09	10/29/20 15:19	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/29/20 04:09	10/29/20 15:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*20*	**5*	*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C5 PFPeA	*32*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C4 PFHpA	*82*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C4 PFOA	*94*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C5 PFNA	*113*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C2 PFDA	*111*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C2 PFUnA	*101*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C2 PFDoA	*110*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C2 PFTeDA	*78*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C3 PFBS	*97*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
18O2 PFHxS	*107*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C4 PFOS	*124*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
13C8 FOSA	*99*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
d3-NMeFOSAA	*61*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
d5-NEtFOSAA	*58*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*
M2-6:2 FTS	*94*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:19*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102620-DR-024
Date Collected: 10/26/20 13:25
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-5
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2 FTS	91		25 - 150	10/29/20 04:09	10/29/20 15:19	1
13C3 HFPO-DA	81		25 - 150	10/29/20 04:09	10/29/20 15:19	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102620-DR-025
Date Collected: 10/26/20 14:10
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**24**		4.7	2.2	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluoropentanoic acid (PFPeA)	**8.2**		1.9	0.46	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorohexanoic acid (PFHxA)	**9.0**		1.9	0.54	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluoroheptanoic acid (PFHpA)	**6.4**		1.9	0.23	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorooctanoic acid (PFOA)	**14**		1.9	0.79	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorononanoic acid (PFNA)	**4.0**		1.9	0.25	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.68	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorobutanesulfonic acid (PFBS)	**1.3**	**J**	1.9	0.19	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorohexanesulfonic acid (PFHxS)	**3.6**		1.9	0.53	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorooctanesulfonic acid (PFOS)	**260**		1.9	0.50	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		10/29/20 04:09	10/29/20 15:28	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.91	ng/L		10/29/20 04:09	10/29/20 15:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		10/29/20 04:09	10/29/20 15:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		10/29/20 04:09	10/29/20 15:28	1
4:2 FTS	1.9	U	1.9	0.22	ng/L		10/29/20 04:09	10/29/20 15:28	1
6:2 FTS	4.7	U	4.7	2.3	ng/L		10/29/20 04:09	10/29/20 15:28	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		10/29/20 04:09	10/29/20 15:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.37	ng/L		10/29/20 04:09	10/29/20 15:28	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		10/29/20 04:09	10/29/20 15:28	1
F-53B Major	1.9	U	1.9	0.22	ng/L		10/29/20 04:09	10/29/20 15:28	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		10/29/20 04:09	10/29/20 15:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*40*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C5 PFPeA	*55*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C2 PFHxA	*79*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C4 PFHpA	*85*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C4 PFOA	*89*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C5 PFNA	*85*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C2 PFDA	*92*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C2 PFUnA	*98*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C2 PFDoA	*91*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C2 PFTeDA	*91*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C3 PFBS	*78*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
18O2 PFHxS	*94*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C4 PFOS	*89*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*
13C8 FOSA	*79*		*25 - 150*	*10/29/20 04:09*	*10/29/20 15:28*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102620-DR-025
Date Collected: 10/26/20 14:10
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138986-6
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	64		25 - 150	10/29/20 04:09	10/29/20 15:28	1
d5-NEtFOSAA	74		25 - 150	10/29/20 04:09	10/29/20 15:28	1
M2-6:2 FTS	131		25 - 150	10/29/20 04:09	10/29/20 15:28	1
M2-8:2 FTS	114		25 - 150	10/29/20 04:09	10/29/20 15:28	1
M2-4:2 FTS	105		25 - 150	10/29/20 04:09	10/29/20 15:28	1
13C3 HFPO-DA	83		25 - 150	10/29/20 04:09	10/29/20 15:28	1

Client: GHD Services Inc.
Job ID: 240-138986-1
Project/Site: 12607-T31, RACER Eckles Rd

Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Client Sample ID: GW-12607-102620-DR-024
Lab Sample ID: 240-138986-5
Date Collected: 10/26/20 13:25
Matrix: Water
Date Received: 10/27/20 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	36	U	36	10	ng/L		10/29/20 04:09	10/30/20 11:08	20
4:2 FTS	36	U	36	4.3	ng/L		10/29/20 04:09	10/30/20 11:08	20

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*22*	**5*	*25 - 150*	*10/29/20 04:09*	*10/30/20 11:08*	*20*
M2-4:2 FTS	*22*	**5*	*25 - 150*	*10/29/20 04:09*	*10/30/20 11:08*	*20*

LCMS

Prep Batch: 426445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138986-1	GW-12607-102620-DR-020	Total/NA	Water	3535	
240-138986-2	GW-12607-102620-DR-021	Total/NA	Water	3535	
240-138986-3	GW-12607-102620-DR-022	Total/NA	Water	3535	
240-138986-4	GW-12607-102620-DR-023	Total/NA	Water	3535	
240-138986-5 - DL	GW-12607-102620-DR-024	Total/NA	Water	3535	
240-138986-5	GW-12607-102620-DR-024	Total/NA	Water	3535	
240-138986-6	GW-12607-102620-DR-025	Total/NA	Water	3535	
MB 320-426445/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-426445/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-426445/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 426676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138986-1	GW-12607-102620-DR-020	Total/NA	Water	537 (modified)	426445
240-138986-2	GW-12607-102620-DR-021	Total/NA	Water	537 (modified)	426445
240-138986-3	GW-12607-102620-DR-022	Total/NA	Water	537 (modified)	426445
240-138986-4	GW-12607-102620-DR-023	Total/NA	Water	537 (modified)	426445
240-138986-5	GW-12607-102620-DR-024	Total/NA	Water	537 (modified)	426445
240-138986-6	GW-12607-102620-DR-025	Total/NA	Water	537 (modified)	426445
MB 320-426445/1-A	Method Blank	Total/NA	Water	537 (modified)	426445
LCS 320-426445/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	426445
LCSD 320-426445/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	426445

Analysis Batch: 426951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138986-5 - DL	GW-12607-102620-DR-024	Total/NA	Water	537 (modified)	426445

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-426445/1-A
Matrix: Water
Analysis Batch: 426676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426445

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.0	U	5.0	2.4	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.73	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.0	0.57	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.37	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		10/29/20 04:09	10/29/20 14:06	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.98	ng/L		10/29/20 04:09	10/29/20 14:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.0	U	5.0	1.2	ng/L		10/29/20 04:09	10/29/20 14:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.0	U	5.0	1.3	ng/L		10/29/20 04:09	10/29/20 14:06	1
4:2 FTS	2.0	U	2.0	0.24	ng/L		10/29/20 04:09	10/29/20 14:06	1
6:2 FTS	5.0	U	5.0	2.5	ng/L		10/29/20 04:09	10/29/20 14:06	1
8:2 FTS	2.0	U	2.0	0.46	ng/L		10/29/20 04:09	10/29/20 14:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.0	U	2.0	0.40	ng/L		10/29/20 04:09	10/29/20 14:06	1
HFPO-DA (GenX)	4.0	U	4.0	1.5	ng/L		10/29/20 04:09	10/29/20 14:06	1
F-53B Major	2.0	U	2.0	0.24	ng/L		10/29/20 04:09	10/29/20 14:06	1
F-53B Minor	2.0	U	2.0	0.32	ng/L		10/29/20 04:09	10/29/20 14:06	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*72*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C5 PFPeA	*78*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C2 PFHxA	*80*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C4 PFHpA	*79*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C4 PFOA	*93*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C5 PFNA	*85*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C2 PFDA	*79*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C2 PFUnA	*82*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C2 PFDoA	*92*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C2 PFTeDA	*80*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C3 PFBS	*75*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
18O2 PFHxS	*77*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C4 PFOS	*80*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
13C8 FOSA	*70*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*
d3-NMeFOSAA	*67*		*25 - 150*	*10/29/20 04:09*	*10/29/20 14:06*	*1*

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138986-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-426445/1-A
Matrix: Water
Analysis Batch: 426676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426445

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	72		25 - 150	10/29/20 04:09	10/29/20 14:06	1
M2-6:2 FTS	80		25 - 150	10/29/20 04:09	10/29/20 14:06	1
M2-8:2 FTS	70		25 - 150	10/29/20 04:09	10/29/20 14:06	1
M2-4:2 FTS	74		25 - 150	10/29/20 04:09	10/29/20 14:06	1
13C3 HFPO-DA	75		25 - 150	10/29/20 04:09	10/29/20 14:06	1

Lab Sample ID: LCS 320-426445/2-A
Matrix: Water
Analysis Batch: 426676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426445

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	43.4		ng/L		109	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	38.6		ng/L		97	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	40.2		ng/L		100	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	42.8		ng/L		107	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	40.6		ng/L		102	70 - 130
Perfluorononanoic acid (PFNA)	40.0	43.1		ng/L		108	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	42.4		ng/L		106	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	40.3		ng/L		101	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	37.3		ng/L		93	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	37.6		ng/L		94	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	41.0		ng/L		102	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	35.6		ng/L		101	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	40.7		ng/L		108	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.5		ng/L		95	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.7		ng/L		107	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	36.4		ng/L		98	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	38.3		ng/L		100	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	37.7		ng/L		98	71 - 131
Perfluorooctanesulfonamide (FOSA)	40.0	44.5		ng/L		111	73 - 133
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	43.4		ng/L		108	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.7		ng/L		102	76 - 136
4:2 FTS	37.4	41.7		ng/L		111	79 - 139
6:2 FTS	37.9	36.7		ng/L		97	59 - 175
8:2 FTS	38.3	43.2		ng/L		113	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	39.7		ng/L		105	79 - 139
HFPO-DA (GenX)	40.0	42.5		ng/L		106	51 - 173
F-53B Major	37.3	37.0		ng/L		99	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-426445/2-A
Matrix: Water
Analysis Batch: 426676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426445

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			37.7	35.5		ng/L		94	54 - 114		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*71*		*25 - 150*
13C5 PFPeA	*74*		*25 - 150*
13C2 PFHxA	*80*		*25 - 150*
13C4 PFHpA	*75*		*25 - 150*
13C4 PFOA	*87*		*25 - 150*
13C5 PFNA	*81*		*25 - 150*
13C2 PFDA	*80*		*25 - 150*
13C2 PFUnA	*85*		*25 - 150*
13C2 PFDoA	*85*		*25 - 150*
13C2 PFTeDA	*77*		*25 - 150*
13C3 PFBS	*74*		*25 - 150*
18O2 PFHxS	*76*		*25 - 150*
13C4 PFOS	*78*		*25 - 150*
13C8 FOSA	*66*		*25 - 150*
d3-NMeFOSAA	*64*		*25 - 150*
d5-NEtFOSAA	*67*		*25 - 150*
M2-6:2 FTS	*72*		*25 - 150*
M2-8:2 FTS	*67*		*25 - 150*
M2-4:2 FTS	*69*		*25 - 150*
13C3 HFPO-DA	*72*		*25 - 150*

Lab Sample ID: LCSD 320-426445/3-A
Matrix: Water
Analysis Batch: 426676

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426445

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	43.1		ng/L		108	76 - 136	1	30
Perfluoropentanoic acid (PFPeA)			40.0	38.3		ng/L		96	71 - 131	1	30
Perfluorohexanoic acid (PFHxA)			40.0	39.4		ng/L		99	73 - 133	2	30
Perfluoroheptanoic acid (PFHpA)			40.0	40.9		ng/L		102	72 - 132	5	30
Perfluorooctanoic acid (PFOA)			40.0	36.6		ng/L		92	70 - 130	10	30
Perfluorononanoic acid (PFNA)			40.0	41.7		ng/L		104	75 - 135	3	30
Perfluorodecanoic acid (PFDA)			40.0	39.1		ng/L		98	76 - 136	8	30
Perfluoroundecanoic acid (PFUnA)			40.0	39.9		ng/L		100	68 - 128	1	30
Perfluorododecanoic acid (PFDoA)			40.0	35.7		ng/L		89	71 - 131	5	30
Perfluorotridecanoic acid (PFTriA)			40.0	37.1		ng/L		93	71 - 131	1	30
Perfluorotetradecanoic acid (PFTeA)			40.0	46.5		ng/L		116	70 - 130	13	30
Perfluorobutanesulfonic acid (PFBS)			35.4	36.4		ng/L		103	67 - 127	2	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	39.3		ng/L		105	66 - 126	3	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	34.3		ng/L		94	59 - 119	1	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-426445/3-A
Matrix: Water
Analysis Batch: 426676

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426445

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	40.4		ng/L		106	76 - 136	1	30
Perfluorooctanesulfonic acid (PFOS)			37.1	36.1		ng/L		97	70 - 130	1	30
Perfluorononanesulfonic acid (PFNS)			38.4	38.9		ng/L		101	75 - 135	2	30
Perfluorodecanesulfonic acid (PFDS)			38.6	38.2		ng/L		99	71 - 131	1	30
Perfluorooctanesulfonamide (FOSA)			40.0	41.8		ng/L		104	73 - 133	6	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	40.8		ng/L		102	76 - 136	6	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	42.4		ng/L		106	76 - 136	4	30
4:2 FTS			37.4	39.1		ng/L		105	79 - 139	6	30
6:2 FTS			37.9	34.7		ng/L		92	59 - 175	6	30
8:2 FTS			38.3	41.8		ng/L		109	75 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	39.2		ng/L		104	79 - 139	1	30
HFPO-DA (GenX)			40.0	41.6		ng/L		104	51 - 173	2	30
F-53B Major			37.3	37.1		ng/L		100	75 - 135	0	30
F-53B Minor			37.7	36.1		ng/L		96	54 - 114	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*78*		*25 - 150*
13C5 PFPeA	*85*		*25 - 150*
13C2 PFHxA	*88*		*25 - 150*
13C4 PFHpA	*89*		*25 - 150*
13C4 PFOA	*102*		*25 - 150*
13C5 PFNA	*93*		*25 - 150*
13C2 PFDA	*90*		*25 - 150*
13C2 PFUnA	*96*		*25 - 150*
13C2 PFDoA	*99*		*25 - 150*
13C2 PFTeDA	*91*		*25 - 150*
13C3 PFBS	*83*		*25 - 150*
18O2 PFHxS	*86*		*25 - 150*
13C4 PFOS	*87*		*25 - 150*
13C8 FOSA	*77*		*25 - 150*
d3-NMeFOSAA	*75*		*25 - 150*
d5-NEtFOSAA	*78*		*25 - 150*
M2-6:2 FTS	*88*		*25 - 150*
M2-8:2 FTS	*76*		*25 - 150*
M2-4:2 FTS	*81*		*25 - 150*
13C3 HFPO-DA	*83*		*25 - 150*

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-138986-1
Project/Site: 12607-T31, RACER Eckles Rd

Client Sample ID: GW-12607-102620-DR-020
Lab Sample ID: 240-138986-1
Date Collected: 10/26/20 09:55
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426445	10/29/20 04:09	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	426676	10/29/20 14:42	S1M	TAL SAC

Client Sample ID: GW-12607-102620-DR-021
Lab Sample ID: 240-138986-2
Date Collected: 10/26/20 10:40
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426445	10/29/20 04:09	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	426676	10/29/20 14:52	S1M	TAL SAC

Client Sample ID: GW-12607-102620-DR-022
Lab Sample ID: 240-138986-3
Date Collected: 10/26/20 11:30
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426445	10/29/20 04:09	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	426676	10/29/20 15:01	S1M	TAL SAC

Client Sample ID: GW-12607-102620-DR-023
Lab Sample ID: 240-138986-4
Date Collected: 10/26/20 12:30
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426445	10/29/20 04:09	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	426676	10/29/20 15:10	S1M	TAL SAC

Client Sample ID: GW-12607-102620-DR-024
Lab Sample ID: 240-138986-5
Date Collected: 10/26/20 13:25
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		426445	10/29/20 04:09	EG	TAL SAC
Total/NA	Analysis	537 (modified)	DL	20	426951	10/30/20 11:08	D1R	TAL SAC
Total/NA	Prep	3535			426445	10/29/20 04:09	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	426676	10/29/20 15:19	S1M	TAL SAC

Client Sample ID: GW-12607-102620-DR-025
Lab Sample ID: 240-138986-6
Date Collected: 10/26/20 14:10
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426445	10/29/20 04:09	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	426676	10/29/20 15:28	S1M	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-138986-1
Project/Site: 12607-T31, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	10-31-20
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
Nevada	State	CA000442021-1	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-20
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record 374507

eurofins North Canton | Environment Testing TestAmerica

TA # 24005880

Address: _____

0.7 / 1.1

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: C Meincke	Site Contact: D. Rivers	Date: 10/26/2020	COC No: 012607A-T37Y20
Company Name: GHD Services	Tel/Email: (248) 935-2346	Lab Contact: D. Heckler	Carrier: FED EX	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: D. Rivers
City/State/Zip: Farmington Hills, MI 48331	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: (248) 893-3400	TAT if different from Below _____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: RACER-Eckles Rd	☐ 1 week			
Site: Livonia, MI	☐ 2 days			Job / SDG No.:
PO# 012607-T37Y20	☐ 1 day			012607A-T37Y20

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	PFAS	Sample Specific Notes:
GW-12607-102620-DR-020	10/26/2020	955	G	WG	2			X	
-021		1040			2			X	
-022		1130			2			X	
-023		1230			2			X	
-024		1325			2			X	
-025		1410			2			X	

240-138986 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	GHD	10/26/2020 1700		ETA	10-27-20 940
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 138986**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: Matt Snyder

Cooler Received on 10-27-20 Opened on 10-27-20

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # 7A Foam Box Client Cooler Box Other _____

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 0.2 °C Corrected Cooler Temp. 1.1 °C
   IR GUN #IR-12 (CF +0.5°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N) and sample type of grab/comp (Y/N)?	(Y)	(N)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	(Yes)	No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC?	Yes	(No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

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

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

Concerning _____

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-127148.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Denise.Heckler@Eurofinset.com	State of Origin: Michigan	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-138986-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 11/6/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: 12607-T31, RACER Eckles Rd	Project #: 24005880			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_PFC (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GW-12607-102620-DR-020 (240-138986-1)	10/26/20	09:55 Eastern		Water			X	2	
GW-12607-102620-DR-021 (240-138986-2)	10/26/20	10:40 Eastern		Water			X	2	
GW-12607-102620-DR-022 (240-138986-3)	10/26/20	11:30 Eastern		Water			X	2	
GW-12607-102620-DR-023 (240-138986-4)	10/26/20	12:30 Eastern		Water			X	2	
GW-12607-102620-DR-024 (240-138986-5)	10/26/20	13:25 Eastern		Water			X	2	
GW-12607-102620-DR-025 (240-138986-6)	10/26/20	14:10 Eastern		Water			X	2	

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

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

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

	Date/Time	Company		Date/Time	Company
Relinquished by:	10-27-20 1235	240	Received by:	10/28/20 0945	ETA-SAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: OB: 1.2 CORR: 0.7

Ver: 01/16/2019

• GREEN DISCOLORATION 10/28/20

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-138986-1

Login Number: 138986
List Number: 2
Creator: Saephan, Kae C

List Source: Eurofins TestAmerica, Sacramento
List Creation: 10/28/20 12:35 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	ob: 1.2c corr: 0.7c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-138986-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-138986-1	GW-12607-102620-DR-020	46	59	32	81	85	83	85	79
240-138986-2	GW-12607-102620-DR-021	49	62	71	80	87	83	74	79
240-138986-3	GW-12607-102620-DR-022	40	54	58	78	90	90	88	86
240-138986-4	GW-12607-102620-DR-023	64	80	70	112	98	135	146	125
240-138986-5	GW-12607-102620-DR-024	20 *5	32		82	94	113	111	101
240-138986-5 - DL	GW-12607-102620-DR-024			22 *5					
240-138986-6	GW-12607-102620-DR-025	40	55	79	85	89	85	92	98
LCS 320-426445/2-A	Lab Control Sample	71	74	80	75	87	81	80	85
LCSD 320-426445/3-A	Lab Control Sample Dup	78	85	88	89	102	93	90	96
MB 320-426445/1-A	Method Blank	72	78	80	79	93	85	79	82

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
240-138986-1	GW-12607-102620-DR-020	79	80	73	82	86	74	60	66
240-138986-2	GW-12607-102620-DR-021	83	78	73	83	84	74	66	72
240-138986-3	GW-12607-102620-DR-022	93	89	84	86	88	79	68	73
240-138986-4	GW-12607-102620-DR-023	163 *5	128	123	135	139	126	107	103
240-138986-5	GW-12607-102620-DR-024	110	78	97	107	124	99	61	58
240-138986-5 - DL	GW-12607-102620-DR-024								
240-138986-6	GW-12607-102620-DR-025	91	91	78	94	89	79	64	74
LCS 320-426445/2-A	Lab Control Sample	85	77	74	76	78	66	64	67
LCSD 320-426445/3-A	Lab Control Sample Dup	99	91	83	86	87	77	75	78
MB 320-426445/1-A	Method Blank	92	80	75	77	80	70	67	72

		Percent Isotope Dilution Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
240-138986-1	GW-12607-102620-DR-020	83	70	39	75
240-138986-2	GW-12607-102620-DR-021	86	73	84	71
240-138986-3	GW-12607-102620-DR-022	107	80	69	74
240-138986-4	GW-12607-102620-DR-023	138	167 *5	115	114
240-138986-5	GW-12607-102620-DR-024	94	91		81
240-138986-5 - DL	GW-12607-102620-DR-024			22 *5	
240-138986-6	GW-12607-102620-DR-025	131	114	105	83
LCS 320-426445/2-A	Lab Control Sample	72	67	69	72
LCSD 320-426445/3-A	Lab Control Sample Dup	88	76	81	83
MB 320-426445/1-A	Method Blank	80	70	74	75

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 240-138986-1
Project/Site: 12607-T31, RACER Eckles Rd

PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

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Sacramento Sample Receiving Notes

240-138986 Field Sheet

Tracking #: 914875019102

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other _____

Job: _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: AK-5 Corr. Factor: (+) 0.5 °C

Ice X Wet X Gel _____ Other _____

Cooler Custody Seal: —

Cooler ID: —

Temp Observed: 1.2 °C Corrected: 0.7 °C

From: Temp Blank ☑ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐

Initials: [signature] Date: 10/28/20

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: [signature] Date: 10/28/20

Notes: ~~X~~ SAMPLE #5 (2/2) - GREEN DISCOLORATION.
[signature] 10/28/20 FILED.

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
Samples received within hold time?	☑	☐	☐
NCM Filed?	☑	☐	☐
Log Release checked in TALS?	☐	☐	☑

Initials: [signature] Date: 10/28/20

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-138987-1
Client Project/Site: 12607-T06, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
11/3/2020 2:41:03 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138987-1

Job ID: 240-138987-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-138987-1

Comments
No additional comments.

Receipt
The samples were received on 10/27/2020 9:40 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.1º C.

Metals
Method 6010B: Some requested practical quantitation limits (PQLs) fall below the laboratory's verified standard quantitation limit. The continuing calibration blanks and method blanks may not support the lower PQL.

Method 6010B: The following sample was diluted due to the nature of the sample matrix: GW-12607-102620-DR-024 (240-138987-5). Elevated reporting limits (RLs) are provided.

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

General Chemistry
Method 7196A: The following sample matrix has been determined to be reductive in nature, which has the potential to convert hexavalent chromium to trivalent chromium: GW-12607-102620-DR-024 (240-138987-5). This reducing matrix may cause a low bias in the matrix spike (MS) or post spike results. Sample has therefore been re-analyzed at a dilution. The undiluted will be reported as secondary and the primary will be the diluted sample with the matrix interference removed.

Method 7196A: The following sample was diluted due to the nature of the sample matrix: GW-12607-102620-DR-024 (240-138987-5). Elevated reporting limits (RLs) are provided.

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

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 240-138987-1
Project/Site: 12607-T06, RACER Eckles Rd

Qualifiers

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138987-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-138987-1	GW-12607-102620-DR-020	Water	10/26/20 09:55	10/27/20 09:40	
240-138987-2	GW-12607-102620-DR-021	Water	10/26/20 10:40	10/27/20 09:40	
240-138987-3	GW-12607-102620-DR-022	Water	10/26/20 11:30	10/27/20 09:40	
240-138987-4	GW-12607-102620-DR-023	Water	10/26/20 12:30	10/27/20 09:40	
240-138987-5	GW-12607-102620-DR-024	Water	10/26/20 13:25	10/27/20 09:40	
240-138987-6	GW-12607-102620-DR-025	Water	10/26/20 14:10	10/27/20 09:40	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138987-1

Client Sample ID: GW-12607-102620-DR-020 — Lab Sample ID: 240-138987-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	14000		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102620-DR-021 — Lab Sample ID: 240-138987-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	2200		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102620-DR-022 — Lab Sample ID: 240-138987-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	110		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102620-DR-023 — Lab Sample ID: 240-138987-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	85		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	130		20	2.2	ug/L	1		6010B	Total Recoverable
Cr (VI)	0.012		0.010	0.0070	mg/L	1		7196A	Total/NA
Cr (III)	0.072		0.010	0.0020	mg/L	1		7196A	Total/NA

Client Sample ID: GW-12607-102620-DR-024 — Lab Sample ID: 240-138987-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	4000000		4000	440	ug/L	200		6010B	Total Recoverable

Client Sample ID: GW-12607-102620-DR-025 — Lab Sample ID: 240-138987-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	16		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	23		20	2.2	ug/L	1		6010B	Total Recoverable
Cr (III)	0.016		0.010	0.0020	mg/L	1		7196A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138987-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN
7196A	Chromium, Hexavalent	SW846	TAL CAN
7196A	Chromium, Trivalent (Colorimetric)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138987-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102620-DR-020
Date Collected: 10/26/20 09:55
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138987-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	14000		20	2.2	ug/L		10/28/20 14:00	10/29/20 22:45	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138987-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102620-DR-021
Date Collected: 10/26/20 10:40
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138987-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	2200		20	2.2	ug/L		10/28/20 14:00	10/29/20 22:49	1

Client: GHD Services Inc.
Job ID: 240-138987-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102620-DR-022
Lab Sample ID: 240-138987-3
Date Collected: 10/26/20 11:30
Matrix: Water
Date Received: 10/27/20 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 22:54	1
Nickel	**110**		20	2.2	ug/L		10/28/20 14:00	10/29/20 22:54	1

Client: GHD Services Inc.
Job ID: 240-138987-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102620-DR-023
Lab Sample ID: 240-138987-4
Date Collected: 10/26/20 12:30
Matrix: Water
Date Received: 10/27/20 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	85		5.0	0.63	ug/L		10/28/20 14:00	10/29/20 22:58	1
Nickel	130		20	2.2	ug/L		10/28/20 14:00	10/29/20 22:58	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138987-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102620-DR-024
Date Collected: 10/26/20 13:25
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138987-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	100	U	100	13	ug/L		10/28/20 14:00	10/29/20 23:02	20
Nickel	**4000000**		4000	440	ug/L		10/28/20 14:00	10/30/20 08:07	200

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138987-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102620-DR-025
Date Collected: 10/26/20 14:10
Date Received: 10/27/20 09:40

Lab Sample ID: 240-138987-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	16		5.0	0.63	ug/L		10/28/20 14:00	10/29/20 23:15	1
Nickel	23		20	2.2	ug/L		10/28/20 14:00	10/29/20 23:15	1

Client: GHD Services Inc.
Job ID: 240-138987-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102620-DR-023
Lab Sample ID: 240-138987-4
Date Collected: 10/26/20 12:30
Matrix: Water
Date Received: 10/27/20 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.012		0.010	0.0070	mg/L			10/27/20 12:05	1
Cr (III)	0.072		0.010	0.0020	mg/L			11/03/20 12:39	1

Client: GHD Services Inc.
Job ID: 240-138987-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102620-DR-024
Lab Sample ID: 240-138987-5
Date Collected: 10/26/20 13:25
Matrix: Water
Date Received: 10/27/20 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U F1	0.010	0.0070	mg/L			10/27/20 11:59	1
Cr (VI)	0.20	U	0.20	0.14	mg/L			10/27/20 12:43	20
Cr (III)	0.010	U	0.010	0.0020	mg/L			11/03/20 12:39	1

Client: GHD Services Inc.
Job ID: 240-138987-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102620-DR-025
Lab Sample ID: 240-138987-6
Date Collected: 10/26/20 14:10
Matrix: Water
Date Received: 10/27/20 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			10/27/20 12:07	1
Cr (III)	**0.016**		0.010	0.0020	mg/L			11/03/20 12:39	1

Metals

Prep Batch: 458105

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138987-1	GW-12607-102620-DR-020	Total Recoverable	Water	3005A	
240-138987-2	GW-12607-102620-DR-021	Total Recoverable	Water	3005A	
240-138987-3	GW-12607-102620-DR-022	Total Recoverable	Water	3005A	
240-138987-4	GW-12607-102620-DR-023	Total Recoverable	Water	3005A	
240-138987-5	GW-12607-102620-DR-024	Total Recoverable	Water	3005A	
240-138987-6	GW-12607-102620-DR-025	Total Recoverable	Water	3005A	
MB 240-458105/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-458105/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 458486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138987-1	GW-12607-102620-DR-020	Total Recoverable	Water	6010B	458105
240-138987-2	GW-12607-102620-DR-021	Total Recoverable	Water	6010B	458105
240-138987-3	GW-12607-102620-DR-022	Total Recoverable	Water	6010B	458105
240-138987-4	GW-12607-102620-DR-023	Total Recoverable	Water	6010B	458105
240-138987-5	GW-12607-102620-DR-024	Total Recoverable	Water	6010B	458105
240-138987-6	GW-12607-102620-DR-025	Total Recoverable	Water	6010B	458105
MB 240-458105/1-A	Method Blank	Total Recoverable	Water	6010B	458105
LCS 240-458105/2-A	Lab Control Sample	Total Recoverable	Water	6010B	458105

Analysis Batch: 458562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138987-5	GW-12607-102620-DR-024	Total Recoverable	Water	6010B	458105

General Chemistry

Analysis Batch: 457959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138987-4	GW-12607-102620-DR-023	Total/NA	Water	7196A	
240-138987-5	GW-12607-102620-DR-024	Total/NA	Water	7196A	
240-138987-5	GW-12607-102620-DR-024	Total/NA	Water	7196A	
240-138987-6	GW-12607-102620-DR-025	Total/NA	Water	7196A	
MB 240-457959/11	Method Blank	Total/NA	Water	7196A	
LCS 240-457959/12	Lab Control Sample	Total/NA	Water	7196A	
240-138987-5 MS	GW-12607-102620-DR-024	Total/NA	Water	7196A	
240-138987-5 MS	GW-12607-102620-DR-024	Total/NA	Water	7196A	
240-138987-5 MSD	GW-12607-102620-DR-024	Total/NA	Water	7196A	
240-138987-5 MSD	GW-12607-102620-DR-024	Total/NA	Water	7196A	

Analysis Batch: 459094

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-138987-4	GW-12607-102620-DR-023	Total/NA	Water	7196A	
240-138987-5	GW-12607-102620-DR-024	Total/NA	Water	7196A	
240-138987-6	GW-12607-102620-DR-025	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-458105/1-A
Matrix: Water
Analysis Batch: 458486

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 458105

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/28/20 14:00	10/29/20 22:12	1
Nickel	20	U	20	2.2	ug/L		10/28/20 14:00	10/29/20 22:12	1

Lab Sample ID: LCS 240-458105/2-A
Matrix: Water
Analysis Batch: 458486

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 458105

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1000	915		ug/L		92	80 - 120
Nickel	1000	990		ug/L		99	80 - 120

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-457959/11
Matrix: Water
Analysis Batch: 457959

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			10/27/20 12:16	1

Lab Sample ID: LCS 240-457959/12
Matrix: Water
Analysis Batch: 457959

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.240		mg/L		96	80 - 123

Lab Sample ID: 240-138987-5 MS
Matrix: Water
Analysis Batch: 457959

Client Sample ID: GW-12607-102620-DR-024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.010	U F1	0.250	0.010	U F1	mg/L		0	31 - 151

Lab Sample ID: 240-138987-5 MS
Matrix: Water
Analysis Batch: 457959

Client Sample ID: GW-12607-102620-DR-024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.20	U	5.00	3.39		mg/L		68	31 - 151

Lab Sample ID: 240-138987-5 MSD
Matrix: Water
Analysis Batch: 457959

Client Sample ID: GW-12607-102620-DR-024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	0.010	U F1	0.250	0.010	U F1	mg/L		0	31 - 151	NC	20

Method: 7196A - Chromium, Hexavalent (Continued)

Lab Sample ID: 240-138987-5 MSD
Matrix: Water
Analysis Batch: 457959

Client Sample ID: GW-12607-102620-DR-024
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	0.20	U	5.00	3.30		mg/L		66	31 - 151	3	20

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-138987-1

Client Sample ID: GW-12607-102620-DR-020
Lab Sample ID: 240-138987-1
Date Collected: 10/26/20 09:55
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458105	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 22:45	WKD	TAL CAN

Client Sample ID: GW-12607-102620-DR-021
Lab Sample ID: 240-138987-2
Date Collected: 10/26/20 10:40
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458105	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 22:49	WKD	TAL CAN

Client Sample ID: GW-12607-102620-DR-022
Lab Sample ID: 240-138987-3
Date Collected: 10/26/20 11:30
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458105	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 22:54	WKD	TAL CAN

Client Sample ID: GW-12607-102620-DR-023
Lab Sample ID: 240-138987-4
Date Collected: 10/26/20 12:30
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458105	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 22:58	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:39	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457959	10/27/20 12:05	JWW	TAL CAN

Client Sample ID: GW-12607-102620-DR-024
Lab Sample ID: 240-138987-5
Date Collected: 10/26/20 13:25
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458105	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		20	458486	10/29/20 23:02	WKD	TAL CAN
Total Recoverable	Prep	3005A			458105	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		200	458562	10/30/20 08:07	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:39	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457959	10/27/20 11:59	JWW	TAL CAN
Total/NA	Analysis	7196A		20	457959	10/27/20 12:43	JWW	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-138987-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-102620-DR-025
Lab Sample ID: 240-138987-6

Date Collected: 10/26/20 14:10
Matrix: Water
Date Received: 10/27/20 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458105	10/28/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458486	10/29/20 23:15	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:39	KLC	TAL CAN
Total/NA	Analysis	7196A		1	457959	10/27/20 12:07	JWW	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-138987-1
Project/Site: 12607-T06, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

Chain of Custody Record

374508

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North Canton

TA# 24005880

TAL-8210

Address: _____ 0.2/2.1

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: G. Meincke	Site Contact: D. Rivas	Date: 10/26/2020	COC No: 012607A-T06Y20
Company Name: GHD Services	Tel/Email: (248) 935-2346	Lab Contact: D. Heckler	Carrier: FED EX	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: D. Rivas
City/State/Zip: Farmington Hills, MI 48331	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: (248) 893-3400	TAT if different from Below _____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: RACER - Eckles Rd	☐ 1 week			
Site: Livonia, MI	☐ 2 days			Job / SDG No.:
PO# 012607A-T06Y20	☐ 1 day			012607A-T06Y20

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Nickel	Chromium Total chromium PR	Hex Chromium	Sample Specific Notes:
GW-12607-102620-DR-020	10/26/2020	955	G	WG	1			X			
-021		1040			1			X			
-022		1130			1			X	X		
-023		1230			2			X	X	X	
-024		1325			2			X	X	X	
-025		1410			2			X	X	X	

240-138987 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	GHD	10/26/2020 1700		ETA	10-27-20 940
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 138987**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: Matt Snyder

Cooler Received on 10-27-20 Opened on 10-27-20

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # 7 Foam Box Client Cooler Box Other _____

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. 0.2 °C Corrected Cooler Temp. 1.1 °C
   IR GUN #IR-12 (CF +0.5°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N) and sample type of grab/comp (Y/N)?	(Y)	(N) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	(Yes)	No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC?	Yes	(No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

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

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

Concerning _____

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
GW-12607-102620-DR-020	240-138987-A-1	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102620-DR-021	240-138987-A-2	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102620-DR-022	240-138987-A-3	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102620-DR-023	240-138987-B-4	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102620-DR-024	240-138987-B-5	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102620-DR-025	240-138987-B-6	Plastic 250ml - with Nitric Acid	<2			

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-139046-1
Client Project/Site: 12607-T06, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
11/6/2020 9:35:47 AM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 240-139046-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-139046-1

Comments
No additional comments.

Receipt
The samples were received on 10/28/2020 10:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.8º C.

Metals
Method 6010B: Some requested practical quantitation limits (PQLs) below the laboratory's verified standard quantitation limit. The continuing calibration blanks and method blanks may not support the lower PQL.

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

General Chemistry
Method 7196A: The following sample(s) was received with less than 2 days remaining on the holding time or less than one shift (8 hours) remaining on a test with a holding time of 48 hours or less. As such, the laboratory had insufficient time remaining to perform the analysis within holding time: GW-12607-102720-DR-027 (240-139046-2), GW-12607-102720-DR-028 (240-139046-3) and GW-12607-102720-DR-029 (240-139046-4).

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Qualifiers

Metals

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

General Chemistry

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

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-139046-1	GW-12607-102720-DR-026	Water	10/27/20 10:55	10/28/20 10:00	
240-139046-2	GW-12607-102720-DR-027	Water	10/27/20 12:00	10/28/20 10:00	
240-139046-3	GW-12607-102720-DR-028	Water	10/27/20 12:45	10/28/20 10:00	
240-139046-4	GW-12607-102720-DR-029	Water	10/27/20 13:20	10/28/20 10:00	
240-139046-5	GW-12607-102720-DR-030	Water	10/27/20 14:15	10/28/20 10:00	
240-139046-6	GW-12607-102720-DR-031	Water	10/27/20 14:30	10/28/20 10:00	
240-139046-7	GW-12607-102720-DR-032	Water	10/27/20 14:35	10/28/20 10:00	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Client Sample ID: GW-12607-102720-DR-026 — Lab Sample ID: 240-139046-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	130000		200	22	ug/L	10		6010B	Total Recoverable

Client Sample ID: GW-12607-102720-DR-027 — Lab Sample ID: 240-139046-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.86	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	220		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102720-DR-028 — Lab Sample ID: 240-139046-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	740		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102720-DR-029 — Lab Sample ID: 240-139046-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	4.5	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	120		20	2.2	ug/L	1		6010B	Total Recoverable
Cr (III)	0.0045	J	0.010	0.0020	mg/L	1		7196A	Total/NA

Client Sample ID: GW-12607-102720-DR-030 — Lab Sample ID: 240-139046-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	140		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	240		20	2.2	ug/L	1		6010B	Total Recoverable
Cr (III)	0.14		0.010	0.0020	mg/L	1		7196A	Total/NA

Client Sample ID: GW-12607-102720-DR-031 — Lab Sample ID: 240-139046-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	140		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	240		20	2.2	ug/L	1		6010B	Total Recoverable
Cr (III)	0.14		0.010	0.0020	mg/L	1		7196A	Total/NA

Client Sample ID: GW-12607-102720-DR-032 — Lab Sample ID: 240-139046-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	27		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	7.1	J	20	2.2	ug/L	1		6010B	Total Recoverable
Cr (VI)	0.025		0.010	0.0070	mg/L	1		7196A	Total/NA
Cr (III)	0.0022	J	0.010	0.0020	mg/L	1		7196A	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN
7196A	Chromium, Hexavalent	SW846	TAL CAN
7196A	Chromium, Trivalent (Colorimetric)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client: GHD Services Inc.
Job ID: 240-139046-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102720-DR-026
Lab Sample ID: 240-139046-1
Date Collected: 10/27/20 10:55
Matrix: Water
Date Received: 10/28/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/29/20 14:00	10/30/20 18:20	1
Nickel	**130000**		200	22	ug/L		10/29/20 14:00	10/31/20 10:39	10

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102720-DR-027
Date Collected: 10/27/20 12:00
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139046-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.86	J	5.0	0.63	ug/L		10/29/20 14:00	10/30/20 18:24	1
Nickel	220		20	2.2	ug/L		10/29/20 14:00	10/30/20 18:24	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102720-DR-028
Date Collected: 10/27/20 12:45
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139046-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/29/20 14:00	10/30/20 18:28	1
Nickel	**740**		20	2.2	ug/L		10/29/20 14:00	10/30/20 18:28	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102720-DR-029
Date Collected: 10/27/20 13:20
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139046-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	4.5	J	5.0	0.63	ug/L		10/29/20 14:00	10/30/20 18:33	1
Nickel	120		20	2.2	ug/L		10/29/20 14:00	10/30/20 18:33	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102720-DR-030
Date Collected: 10/27/20 14:15
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139046-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	140		5.0	0.63	ug/L		10/29/20 14:00	10/30/20 18:37	1
Nickel	240		20	2.2	ug/L		10/29/20 14:00	10/30/20 18:37	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102720-DR-031
Date Collected: 10/27/20 14:30
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139046-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	140		5.0	0.63	ug/L		10/29/20 14:00	10/30/20 18:42	1
Nickel	240		20	2.2	ug/L		10/29/20 14:00	10/30/20 18:42	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102720-DR-032
Date Collected: 10/27/20 14:35
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139046-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	27		5.0	0.63	ug/L		10/29/20 14:00	10/30/20 18:46	1
Nickel	7.1	J	20	2.2	ug/L		10/29/20 14:00	10/30/20 18:46	1

Client: GHD Services Inc.
Job ID: 240-139046-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102720-DR-027
Lab Sample ID: 240-139046-2
Date Collected: 10/27/20 12:00
Matrix: Water
Date Received: 10/28/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U H	0.010	0.0070	mg/L			10/28/20 14:01	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			11/03/20 12:39	1

Client: GHD Services Inc.
Job ID: 240-139046-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102720-DR-028
Lab Sample ID: 240-139046-3
Date Collected: 10/27/20 12:45
Matrix: Water
Date Received: 10/28/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U H	0.010	0.0070	mg/L			10/28/20 14:01	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			11/03/20 12:39	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

General Chemistry

Client Sample ID: GW-12607-102720-DR-029
Date Collected: 10/27/20 13:20
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139046-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U H	0.010	0.0070	mg/L			10/28/20 14:01	1
Cr (III)	**0.0045**	**J**	0.010	0.0020	mg/L			11/06/20 08:08	1

Client: GHD Services Inc.
Job ID: 240-139046-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102720-DR-030
Lab Sample ID: 240-139046-5
Date Collected: 10/27/20 14:15
Matrix: Water
Date Received: 10/28/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			10/28/20 14:01	1
Cr (III)	**0.14**		0.010	0.0020	mg/L			11/03/20 12:39	1

Client: GHD Services Inc.
Job ID: 240-139046-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-102720-DR-031
Lab Sample ID: 240-139046-6
Date Collected: 10/27/20 14:30
Matrix: Water
Date Received: 10/28/20 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			10/28/20 14:01	1
Cr (III)	**0.14**		0.010	0.0020	mg/L			11/03/20 12:39	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

General Chemistry

Client Sample ID: GW-12607-102720-DR-032
Date Collected: 10/27/20 14:35
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139046-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.025		0.010	0.0070	mg/L			10/28/20 14:01	1
Cr (III)	0.0022	J	0.010	0.0020	mg/L			11/03/20 12:39	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139046-1

Metals

Prep Batch: 458334

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139046-1	GW-12607-102720-DR-026	Total Recoverable	Water	3005A	
240-139046-2	GW-12607-102720-DR-027	Total Recoverable	Water	3005A	
240-139046-3	GW-12607-102720-DR-028	Total Recoverable	Water	3005A	
240-139046-4	GW-12607-102720-DR-029	Total Recoverable	Water	3005A	
240-139046-5	GW-12607-102720-DR-030	Total Recoverable	Water	3005A	
240-139046-6	GW-12607-102720-DR-031	Total Recoverable	Water	3005A	
240-139046-7	GW-12607-102720-DR-032	Total Recoverable	Water	3005A	
MB 240-458334/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-458334/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 458562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139046-1	GW-12607-102720-DR-026	Total Recoverable	Water	6010B	458334
240-139046-2	GW-12607-102720-DR-027	Total Recoverable	Water	6010B	458334
240-139046-3	GW-12607-102720-DR-028	Total Recoverable	Water	6010B	458334
240-139046-4	GW-12607-102720-DR-029	Total Recoverable	Water	6010B	458334
240-139046-5	GW-12607-102720-DR-030	Total Recoverable	Water	6010B	458334
240-139046-6	GW-12607-102720-DR-031	Total Recoverable	Water	6010B	458334
240-139046-7	GW-12607-102720-DR-032	Total Recoverable	Water	6010B	458334
MB 240-458334/1-A	Method Blank	Total Recoverable	Water	6010B	458334
LCS 240-458334/2-A	Lab Control Sample	Total Recoverable	Water	6010B	458334

Analysis Batch: 458774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139046-1	GW-12607-102720-DR-026	Total Recoverable	Water	6010B	458334

General Chemistry

Analysis Batch: 458193

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139046-2	GW-12607-102720-DR-027	Total/NA	Water	7196A	
240-139046-3	GW-12607-102720-DR-028	Total/NA	Water	7196A	
240-139046-4	GW-12607-102720-DR-029	Total/NA	Water	7196A	
240-139046-5	GW-12607-102720-DR-030	Total/NA	Water	7196A	
240-139046-6	GW-12607-102720-DR-031	Total/NA	Water	7196A	
240-139046-7	GW-12607-102720-DR-032	Total/NA	Water	7196A	
MB 240-458193/3	Method Blank	Total/NA	Water	7196A	
LCS 240-458193/4	Lab Control Sample	Total/NA	Water	7196A	
240-139046-2 MS	GW-12607-102720-DR-027	Total/NA	Water	7196A	
240-139046-2 MSD	GW-12607-102720-DR-027	Total/NA	Water	7196A	

Analysis Batch: 459094

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139046-2	GW-12607-102720-DR-027	Total/NA	Water	7196A	
240-139046-3	GW-12607-102720-DR-028	Total/NA	Water	7196A	
240-139046-5	GW-12607-102720-DR-030	Total/NA	Water	7196A	
240-139046-6	GW-12607-102720-DR-031	Total/NA	Water	7196A	
240-139046-7	GW-12607-102720-DR-032	Total/NA	Water	7196A	

QC Association Summary

Client: GHD Services Inc.
Job ID: 240-139046-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Analysis Batch: 459599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139046-4	GW-12607-102720-DR-029	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-458334/1-A
Matrix: Water
Analysis Batch: 458562

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 458334

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		10/29/20 14:00	10/30/20 16:51	1
Nickel	20	U	20	2.2	ug/L		10/29/20 14:00	10/30/20 16:51	1

Lab Sample ID: LCS 240-458334/2-A
Matrix: Water
Analysis Batch: 458562

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 458334

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1000	1000		ug/L		100	80 - 120
Nickel	1000	1020		ug/L		102	80 - 120

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-458193/3
Matrix: Water
Analysis Batch: 458193

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			10/28/20 14:01	1

Lab Sample ID: LCS 240-458193/4
Matrix: Water
Analysis Batch: 458193

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.247		mg/L		99	80 - 123

Lab Sample ID: 240-139046-2 MS
Matrix: Water
Analysis Batch: 458193

Client Sample ID: GW-12607-102720-DR-027
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.010	U H	0.250	0.243		mg/L		97	31 - 151

Lab Sample ID: 240-139046-2 MSD
Matrix: Water
Analysis Batch: 458193

Client Sample ID: GW-12607-102720-DR-027
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	0.010	U H	0.250	0.234		mg/L		94	31 - 151	4	20

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-139046-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-102720-DR-026
Lab Sample ID: 240-139046-1
Date Collected: 10/27/20 10:55
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458334	10/29/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458562	10/30/20 18:20	WKD	TAL CAN
Total Recoverable	Prep	3005A			458334	10/29/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		10	458774	10/31/20 10:39	WKD	TAL CAN

Client Sample ID: GW-12607-102720-DR-027
Lab Sample ID: 240-139046-2
Date Collected: 10/27/20 12:00
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458334	10/29/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458562	10/30/20 18:24	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:39	KLC	TAL CAN
Total/NA	Analysis	7196A		1	458193	10/28/20 14:01	KLR	TAL CAN

Client Sample ID: GW-12607-102720-DR-028
Lab Sample ID: 240-139046-3
Date Collected: 10/27/20 12:45
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458334	10/29/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458562	10/30/20 18:28	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:39	KLC	TAL CAN
Total/NA	Analysis	7196A		1	458193	10/28/20 14:01	KLR	TAL CAN

Client Sample ID: GW-12607-102720-DR-029
Lab Sample ID: 240-139046-4
Date Collected: 10/27/20 13:20
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458334	10/29/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458562	10/30/20 18:33	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459599	11/06/20 08:08	KLC	TAL CAN
Total/NA	Analysis	7196A		1	458193	10/28/20 14:01	KLR	TAL CAN

Client Sample ID: GW-12607-102720-DR-030
Lab Sample ID: 240-139046-5
Date Collected: 10/27/20 14:15
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458334	10/29/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458562	10/30/20 18:37	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:39	KLC	TAL CAN
Total/NA	Analysis	7196A		1	458193	10/28/20 14:01	KLR	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-139046-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-102720-DR-031
Lab Sample ID: 240-139046-6

Date Collected: 10/27/20 14:30
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458334	10/29/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458562	10/30/20 18:42	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:39	KLC	TAL CAN
Total/NA	Analysis	7196A		1	458193	10/28/20 14:01	KLR	TAL CAN

Client Sample ID: GW-12607-102720-DR-032
Lab Sample ID: 240-139046-7

Date Collected: 10/27/20 14:35
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458334	10/29/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458562	10/30/20 18:46	WKD	TAL CAN
Total/NA	Analysis	7196A		1	459094	11/03/20 12:39	KLC	TAL CAN
Total/NA	Analysis	7196A		1	458193	10/28/20 14:01	KLR	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-139046-1
Project/Site: 12607-T06, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

Chain of Custody Record 491855

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North Canton

TA# 240058 80

TAL-8210

Address: _____ 29/3.8

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: C Meincker	Site Contact: D. Rivers	Date: 10/27/2020	COC No: 012607A-T06Y20
Company Name: GHD Services	Tel/Email:	Lab Contact: P. Heckler	Carrier: FED EX	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: D. Rivers
City/State/Zip: Farmington Hills, MI 48331	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: (248) 893-3400	TAT if different from Below _____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: RACER - Eckles Rd	☐ 1 week			
Site: Livonia, MI	☐ 2 days			Job / SDG No.:
PO# 012607A-T06Y20	☐ 1 day			012607A-T06Y20

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Nickel	Chromium	Hex Chromium	Sample Specific Notes:
GW-12607-102720-DR-026	10/27/2020	1055	G	WG	1			X	X		
-027		1200			2			X	X	X	
-028		1245			2			X	X	X	
-029		1320			2			X	X	X	
-030		1415			2			X	X	X	
-031		1430			2			X	X	X	
-032		1435			2			X	X	X	

240-139046 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	GHD	10/27/20. 1700		ETA	10-28-20 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 139046
Canton Facility

Client GHD Site Name

Cooler Received on 10-25-20 Opened on 10-26-20

Cooler unpacked by: Matthew

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # NA Foam Box Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF **+0.9** °C) Observed Cooler Temp. 2.9 °C Corrected Cooler Temp. 3.6 °C
   IR GUN #IR-12 (CF **+0.5**°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)?	(Yes)	No
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	(Yes)	No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC?	Yes	(No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

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

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

Concerning ____

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

Samples processed by:

~~NO HEx Chromium Sample 26~~

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: ____

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
GW-12607-102720-DR-026	240-139046-A-1	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102720-DR-027	240-139046-B-2	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102720-DR-028	240-139046-B-3	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102720-DR-029	240-139046-B-4	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102720-DR-030	240-139046-B-5	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102720-DR-031	240-139046-B-6	Plastic 250ml - with Nitric Acid	<2			
GW-12607-102720-DR-032	240-139046-B-7	Plastic 250ml - with Nitric Acid	<2			

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-139047-1
Client Project/Site: 12607-T31, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
11/5/2020 8:04:10 AM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-139047-1

Job ID: 240-139047-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-139047-1

Comments
No additional comments.

Receipt
The samples were received on 10/28/2020 10:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.8º C.

LCMS
Method 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analytes was outside of the established ratio limits. The qualitative identification of the analytes has some degree of uncertainty. However, analyst judgment was used to positively identify the analytes.

Method 537 (modified): Results for sample GW-12607-102720-DR-029 (240-139047-4) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method 537 (modified): The following samples exhibited elevated noise or matrix interferences for one or more analytes: GW-12607-102720-DR-028 (240-139047-3), GW-12607-102720-DR-029 (240-139047-4), GW-12607-102720-DR-030 (240-139047-5), GW-12607-102720-DR-031 (240-139047-6) and GW-12607-102720-DR-032 (240-139047-7) . The reporting limit (RL) for the affected analytes has been raised, and a "G" qualifier applied.

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-426784.

Method 3535: The following sample was light brown prior to extraction: GW-12607-102720-DR-026 (240-139047-1).

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-139047-1

Qualifiers

LCMS

Qualifier	Qualifier Description
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-139047-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-139047-1	GW-12607-102720-DR-026	Water	10/27/20 10:55	10/28/20 10:00	
240-139047-2	GW-12607-102720-DR-027	Water	10/27/20 12:00	10/28/20 10:00	
240-139047-3	GW-12607-102720-DR-028	Water	10/27/20 12:45	10/28/20 10:00	
240-139047-4	GW-12607-102720-DR-029	Water	10/27/20 13:20	10/28/20 10:00	
240-139047-5	GW-12607-102720-DR-030	Water	10/27/20 14:15	10/28/20 10:00	
240-139047-6	GW-12607-102720-DR-031	Water	10/27/20 14:30	10/28/20 10:00	
240-139047-7	GW-12607-102720-DR-032	Water	10/27/20 14:35	10/28/20 10:00	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-139047-1

Client Sample ID: GW-12607-102720-DR-026 — Lab Sample ID: 240-139047-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.8	J	4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.72	J	1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.85	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	14	I	1.8	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102720-DR-027 — Lab Sample ID: 240-139047-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.1		4.7	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.5		1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.1	J	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.85	J	1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.8		1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.9		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.34	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.0	I	1.9	0.53	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	13	I	1.9	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102720-DR-028 — Lab Sample ID: 240-139047-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.1		4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.5	J	1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.3	J	1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.1	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	5.8		1.8	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102720-DR-029 — Lab Sample ID: 240-139047-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanesulfonic acid (PFPeS)	6.3	J I	19	2.9	ng/L	10		537 (modified)	Total/NA

Client Sample ID: GW-12607-102720-DR-030 — Lab Sample ID: 240-139047-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.8		4.5	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.0	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	5.4		1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	5.1	I	1.8	0.27	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102720-DR-031 — Lab Sample ID: 240-139047-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.6		4.5	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.0	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	5.5		1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.32	J	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.2		1.8	0.18	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample ID: GW-12607-102720-DR-031 (Continued)

Lab Sample ID: 240-139047-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanesulfonic acid (PFPeS)	8.2		1.8	0.27	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-102720-DR-032

Lab Sample ID: 240-139047-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	9.2		4.7	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.8		1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.7		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.4		1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	14		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.41	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.0		1.9	0.54	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-139047-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102720-DR-026
Date Collected: 10/27/20 10:55
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.8**	**J**	4.6	2.2	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluoropentanoic acid (PFPeA)	**0.72**	**J**	1.8	0.45	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	0.54	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	0.23	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.79	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.29	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.51	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.67	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorobutanesulfonic acid (PFBS)	**0.85**	**J**	1.8	0.18	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.28	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorohexanesulfonic acid (PFHxS)	**14**	**I**	1.8	0.53	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.18	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.50	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.30	ng/L		10/29/20 18:24	10/30/20 14:53	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.91	ng/L		10/29/20 18:24	10/30/20 14:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		10/29/20 18:24	10/30/20 14:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		10/29/20 18:24	10/30/20 14:53	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		10/29/20 18:24	10/30/20 14:53	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		10/29/20 18:24	10/30/20 14:53	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		10/29/20 18:24	10/30/20 14:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.37	ng/L		10/29/20 18:24	10/30/20 14:53	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		10/29/20 18:24	10/30/20 14:53	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/29/20 18:24	10/30/20 14:53	1
F-53B Minor	1.8	U	1.8	0.30	ng/L		10/29/20 18:24	10/30/20 14:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C5 PFPeA	*94*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C2 PFHxA	*42*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C4 PFHpA	*136*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C4 PFOA	*150*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C5 PFNA	*135*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C2 PFDA	*126*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C2 PFUnA	*99*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C2 PFDoA	*92*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C2 PFTeDA	*101*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C3 PFBS	*130*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
18O2 PFHxS	*134*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C4 PFOS	*124*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
13C8 FOSA	*123*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*
d3-NMeFOSAA	*97*		*25 - 150*	*10/29/20 18:24*	*10/30/20 14:53*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102720-DR-026
Date Collected: 10/27/20 10:55
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-1
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	98		25 - 150	10/29/20 18:24	10/30/20 14:53	1
M2-6:2 FTS	117		25 - 150	10/29/20 18:24	10/30/20 14:53	1
M2-8:2 FTS	104		25 - 150	10/29/20 18:24	10/30/20 14:53	1
M2-4:2 FTS	42		25 - 150	10/29/20 18:24	10/30/20 14:53	1
13C3 HFPO-DA	130		25 - 150	10/29/20 18:24	10/30/20 14:53	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102720-DR-027
Date Collected: 10/27/20 12:00
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.1**		4.7	2.2	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluoropentanoic acid (PFPeA)	**2.5**		1.9	0.46	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorohexanoic acid (PFHxA)	**1.1**	**J**	1.9	0.54	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluoroheptanoic acid (PFHpA)	**0.85**	**J**	1.9	0.23	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorooctanoic acid (PFOA)	**3.8**		1.9	0.79	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.68	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorobutanesulfonic acid (PFBS)	**1.9**		1.9	0.19	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluoropentanesulfonic acid (PFPeS)	**0.34**	**J**	1.9	0.28	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorohexanesulfonic acid (PFHxS)	**2.0**	**I**	1.9	0.53	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorooctanesulfonic acid (PFOS)	**13**	**I**	1.9	0.50	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		10/29/20 18:24	10/30/20 15:02	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.91	ng/L		10/29/20 18:24	10/30/20 15:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		10/29/20 18:24	10/30/20 15:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		10/29/20 18:24	10/30/20 15:02	1
4:2 FTS	1.9	U	1.9	0.22	ng/L		10/29/20 18:24	10/30/20 15:02	1
6:2 FTS	4.7	U	4.7	2.3	ng/L		10/29/20 18:24	10/30/20 15:02	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		10/29/20 18:24	10/30/20 15:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.37	ng/L		10/29/20 18:24	10/30/20 15:02	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		10/29/20 18:24	10/30/20 15:02	1
F-53B Major	1.9	U	1.9	0.22	ng/L		10/29/20 18:24	10/30/20 15:02	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		10/29/20 18:24	10/30/20 15:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*56*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C5 PFPeA	*65*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C2 PFHxA	*80*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C4 PFHpA	*87*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C4 PFOA	*96*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C5 PFNA	*93*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C2 PFDA	*89*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C2 PFUnA	*93*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C2 PFDoA	*86*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C3 PFBS	*84*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
18O2 PFHxS	*92*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C4 PFOS	*91*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*
13C8 FOSA	*85*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:02*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102720-DR-027
Date Collected: 10/27/20 12:00
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-2
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	86		25 - 150	10/29/20 18:24	10/30/20 15:02	1
d5-NEtFOSAA	96		25 - 150	10/29/20 18:24	10/30/20 15:02	1
M2-6:2 FTS	95		25 - 150	10/29/20 18:24	10/30/20 15:02	1
M2-8:2 FTS	95		25 - 150	10/29/20 18:24	10/30/20 15:02	1
M2-4:2 FTS	103		25 - 150	10/29/20 18:24	10/30/20 15:02	1
13C3 HFPO-DA	85		25 - 150	10/29/20 18:24	10/30/20 15:02	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102720-DR-028
Date Collected: 10/27/20 12:45
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.1**		4.6	2.2	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluoropentanoic acid (PFPeA)	**1.5**	**J**	1.8	0.45	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorohexanoic acid (PFHxA)	**1.3**	**J**	1.8	0.53	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluoroheptanoic acid (PFHpA)	**1.1**	**J**	1.8	0.23	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorooctanoic acid (PFOA)	**5.8**		1.8	0.78	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.67	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorobutanesulfonic acid (PFBS)	**1.5**	**J**	1.8	0.18	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.28	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorohexanesulfonic acid (PFHxS)	4.3	U G	4.3	4.3	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorooctanesulfonic acid (PFOS)	11	U G	11	11	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/29/20 18:24	10/30/20 15:11	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.90	ng/L		10/29/20 18:24	10/30/20 15:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		10/29/20 18:24	10/30/20 15:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		10/29/20 18:24	10/30/20 15:11	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		10/29/20 18:24	10/30/20 15:11	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		10/29/20 18:24	10/30/20 15:11	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		10/29/20 18:24	10/30/20 15:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.37	ng/L		10/29/20 18:24	10/30/20 15:11	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		10/29/20 18:24	10/30/20 15:11	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/29/20 18:24	10/30/20 15:11	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/29/20 18:24	10/30/20 15:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*53*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C5 PFPeA	*63*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C2 PFHxA	*64*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C4 PFHpA	*80*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C4 PFOA	*85*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C5 PFNA	*87*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C2 PFDA	*88*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C2 PFUnA	*84*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C2 PFDoA	*77*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C2 PFTeDA	*77*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C3 PFBS	*84*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
18O2 PFHxS	*84*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C4 PFOS	*83*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
13C8 FOSA	*78*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
d3-NMeFOSAA	*83*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*
d5-NEtFOSAA	*91*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:11*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102720-DR-028
Date Collected: 10/27/20 12:45
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-3
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	79		25 - 150	10/29/20 18:24	10/30/20 15:11	1
M2-8:2 FTS	82		25 - 150	10/29/20 18:24	10/30/20 15:11	1
M2-4:2 FTS	69		25 - 150	10/29/20 18:24	10/30/20 15:11	1
13C3 HFPO-DA	78		25 - 150	10/29/20 18:24	10/30/20 15:11	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102720-DR-029
Date Collected: 10/27/20 13:20
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	49	U	49	23	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluoropentanoic acid (PFPeA)	19	U	19	4.8	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorohexanoic acid (PFHxA)	19	U	19	5.6	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluoroheptanoic acid (PFHpA)	19	U	19	2.4	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorooctanoic acid (PFOA)	19	U	19	8.3	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorononanoic acid (PFNA)	19	U	19	2.6	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorodecanoic acid (PFDA)	19	U	19	3.0	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluoroundecanoic acid (PFUnA)	19	U	19	11	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorododecanoic acid (PFDoA)	19	U	19	5.3	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorotridecanoic acid (PFTriA)	19	U	19	13	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorotetradecanoic acid (PFTeA)	19	U	19	7.1	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorobutanesulfonic acid (PFBS)	19	U	19	1.9	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluoropentanesulfonic acid (PFPeS)	**6.3**	**J I**	19	2.9	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorohexanesulfonic acid (PFHxS)	22	U G	22	22	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluoroheptanesulfonic Acid (PFHpS)	19	U	19	1.8	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorooctanesulfonic acid (PFOS)	40	U G	40	40	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorononanesulfonic acid (PFNS)	19	U	19	3.6	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorodecanesulfonic acid (PFDS)	19	U	19	3.1	ng/L		10/29/20 18:24	11/01/20 12:23	10
Perfluorooctanesulfonamide (FOSA)	19	U	19	9.5	ng/L		10/29/20 18:24	11/01/20 12:23	10
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	49	U	49	12	ng/L		10/29/20 18:24	11/01/20 12:23	10
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	49	U	49	13	ng/L		10/29/20 18:24	11/01/20 12:23	10
4:2 FTS	19	U	19	2.3	ng/L		10/29/20 18:24	11/01/20 12:23	10
6:2 FTS	49	U	49	24	ng/L		10/29/20 18:24	11/01/20 12:23	10
8:2 FTS	19	U	19	4.5	ng/L		10/29/20 18:24	11/01/20 12:23	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	19	U	19	3.9	ng/L		10/29/20 18:24	11/01/20 12:23	10
HFPO-DA (GenX)	39	U	39	15	ng/L		10/29/20 18:24	11/01/20 12:23	10
F-53B Major	19	U	19	2.3	ng/L		10/29/20 18:24	11/01/20 12:23	10
F-53B Minor	19	U	19	3.1	ng/L		10/29/20 18:24	11/01/20 12:23	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C5 PFPeA	*90*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C2 PFHxA	*94*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C4 PFHpA	*97*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C4 PFOA	*103*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C5 PFNA	*99*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C2 PFDA	*90*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C2 PFUnA	*81*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C2 PFDoA	*76*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C2 PFTeDA	*75*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C3 PFBS	*96*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
18O2 PFHxS	*101*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C4 PFOS	*108*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
13C8 FOSA	*96*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
d3-NMeFOSAA	*108*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*
d5-NEtFOSAA	*102*		*25 - 150*	*10/29/20 18:24*	*11/01/20 12:23*	*10*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102720-DR-029
Date Collected: 10/27/20 13:20
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-4
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	89		25 - 150	10/29/20 18:24	11/01/20 12:23	10
M2-8:2 FTS	76		25 - 150	10/29/20 18:24	11/01/20 12:23	10
M2-4:2 FTS	81		25 - 150	10/29/20 18:24	11/01/20 12:23	10
13C3 HFPO-DA	97		25 - 150	10/29/20 18:24	11/01/20 12:23	10

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102720-DR-030
Date Collected: 10/27/20 14:15
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.8**		4.5	2.1	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	0.44	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	0.52	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluoroheptanoic acid (PFHpA)	**1.0**	**J**	1.8	0.22	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorooctanoic acid (PFOA)	**5.4**		1.8	0.76	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.98	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.65	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.8	0.18	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluoropentanesulfonic acid (PFPeS)	**5.1**	**I**	1.8	0.27	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorohexanesulfonic acid (PFHxS)	24	U G	24	24	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	4.1	U G	4.1	4.1	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorooctanesulfonic acid (PFOS)	140	U G	140	140	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/29/20 18:24	10/30/20 15:29	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.88	ng/L		10/29/20 18:24	10/30/20 15:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		10/29/20 18:24	10/30/20 15:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		10/29/20 18:24	10/30/20 15:29	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		10/29/20 18:24	10/30/20 15:29	1
6:2 FTS	4.5	U	4.5	2.2	ng/L		10/29/20 18:24	10/30/20 15:29	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/29/20 18:24	10/30/20 15:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		10/29/20 18:24	10/30/20 15:29	1
HFPO-DA (GenX)	3.6	U	3.6	1.3	ng/L		10/29/20 18:24	10/30/20 15:29	1
F-53B Major	1.8	U	1.8	0.21	ng/L		10/29/20 18:24	10/30/20 15:29	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/29/20 18:24	10/30/20 15:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*50*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C5 PFPeA	*60*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C2 PFHxA	*79*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C4 PFHpA	*112*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C4 PFOA	*108*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C5 PFNA	*129*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C2 PFDA	*144*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C2 PFUnA	*132*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C2 PFDoA	*142*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C2 PFTeDA	*142*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C3 PFBS	*125*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
18O2 PFHxS	*133*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C4 PFOS	*141*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
13C8 FOSA	*130*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
d3-NMeFOSAA	*118*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*
d5-NEtFOSAA	*120*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:29*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102720-DR-030
Lab Sample ID: 240-139047-5
Date Collected: 10/27/20 14:15
Matrix: Water
Date Received: 10/28/20 10:00

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	90		25 - 150	10/29/20 18:24	10/30/20 15:29	1
M2-8:2 FTS	144		25 - 150	10/29/20 18:24	10/30/20 15:29	1
M2-4:2 FTS	70		25 - 150	10/29/20 18:24	10/30/20 15:29	1
13C3 HFPO-DA	124		25 - 150	10/29/20 18:24	10/30/20 15:29	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102720-DR-031
Date Collected: 10/27/20 14:30
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.6**		4.5	2.2	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	0.44	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	0.52	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluoroheptanoic acid (PFHpA)	**1.0**	**J**	1.8	0.22	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorooctanoic acid (PFOA)	**5.5**		1.8	0.76	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorononanoic acid (PFNA)	**0.32**	**J**	1.8	0.24	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.99	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.65	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorobutanesulfonic acid (PFBS)	**2.2**		1.8	0.18	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluoropentanesulfonic acid (PFPeS)	**8.2**		1.8	0.27	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorohexanesulfonic acid (PFHxS)	24	U G	24	24	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluoroheptanesulfonic Acid (PFHpS)	4.7	U G	4.7	4.7	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorooctanesulfonic acid (PFOS)	150	U G	150	150	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		10/29/20 18:24	10/30/20 15:39	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.88	ng/L		10/29/20 18:24	10/30/20 15:39	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		10/29/20 18:24	10/30/20 15:39	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		10/29/20 18:24	10/30/20 15:39	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		10/29/20 18:24	10/30/20 15:39	1
6:2 FTS	4.5	U	4.5	2.2	ng/L		10/29/20 18:24	10/30/20 15:39	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		10/29/20 18:24	10/30/20 15:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		10/29/20 18:24	10/30/20 15:39	1
HFPO-DA (GenX)	3.6	U	3.6	1.3	ng/L		10/29/20 18:24	10/30/20 15:39	1
F-53B Major	1.8	U	1.8	0.22	ng/L		10/29/20 18:24	10/30/20 15:39	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		10/29/20 18:24	10/30/20 15:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*41*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C5 PFPeA	*47*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C2 PFHxA	*67*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C4 PFHpA	*95*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C4 PFOA	*93*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C5 PFNA	*110*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C2 PFDA	*125*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C2 PFUnA	*109*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C2 PFDoA	*104*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C2 PFTeDA	*113*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C3 PFBS	*101*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
18O2 PFHxS	*120*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C4 PFOS	*122*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
13C8 FOSA	*117*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
d3-NMeFOSAA	*108*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:39*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102720-DR-031
Date Collected: 10/27/20 14:30
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-6
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	76		25 - 150	10/29/20 18:24	10/30/20 15:39	1
M2-8:2 FTS	118		25 - 150	10/29/20 18:24	10/30/20 15:39	1
M2-4:2 FTS	61		25 - 150	10/29/20 18:24	10/30/20 15:39	1
13C3 HFPO-DA	107		25 - 150	10/29/20 18:24	10/30/20 15:39	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-102720-DR-032
Date Collected: 10/27/20 14:35
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.2**		4.7	2.3	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluoropentanoic acid (PFPeA)	**2.8**		1.9	0.46	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorohexanoic acid (PFHxA)	**5.7**		1.9	0.54	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluoroheptanoic acid (PFHpA)	**4.4**		1.9	0.23	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorooctanoic acid (PFOA)	**14**		1.9	0.80	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.69	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorobutanesulfonic acid (PFBS)	**2.0**		1.9	0.19	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluoropentanesulfonic acid (PFPeS)	**0.41**	**J**	1.9	0.28	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorohexanesulfonic acid (PFHxS)	**4.0**		1.9	0.54	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorooctanesulfonic acid (PFOS)	20	U G	20	20	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		10/29/20 18:24	10/30/20 15:48	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.92	ng/L		10/29/20 18:24	10/30/20 15:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		10/29/20 18:24	10/30/20 15:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		10/29/20 18:24	10/30/20 15:48	1
4:2 FTS	1.9	U	1.9	0.23	ng/L		10/29/20 18:24	10/30/20 15:48	1
6:2 FTS	4.7	U	4.7	2.3	ng/L		10/29/20 18:24	10/30/20 15:48	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		10/29/20 18:24	10/30/20 15:48	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.38	ng/L		10/29/20 18:24	10/30/20 15:48	1
HFPO-DA (GenX)	3.8	U	3.8	1.4	ng/L		10/29/20 18:24	10/30/20 15:48	1
F-53B Major	1.9	U	1.9	0.23	ng/L		10/29/20 18:24	10/30/20 15:48	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		10/29/20 18:24	10/30/20 15:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*58*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C5 PFPeA	*67*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C2 PFHxA	*84*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C4 PFHpA	*86*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C4 PFOA	*92*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C5 PFNA	*91*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C2 PFDA	*88*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C2 PFUnA	*88*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C2 PFDoA	*82*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C2 PFTeDA	*79*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C3 PFBS	*79*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
18O2 PFHxS	*84*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C4 PFOS	*85*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
13C8 FOSA	*82*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*
d3-NMeFOSAA	*84*		*25 - 150*	*10/29/20 18:24*	*10/30/20 15:48*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-102720-DR-032
Date Collected: 10/27/20 14:35
Date Received: 10/28/20 10:00

Lab Sample ID: 240-139047-7
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	92		25 - 150	10/29/20 18:24	10/30/20 15:48	1
M2-6:2 FTS	85		25 - 150	10/29/20 18:24	10/30/20 15:48	1
M2-8:2 FTS	82		25 - 150	10/29/20 18:24	10/30/20 15:48	1
M2-4:2 FTS	94		25 - 150	10/29/20 18:24	10/30/20 15:48	1
13C3 HFPO-DA	84		25 - 150	10/29/20 18:24	10/30/20 15:48	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-139047-1

LCMS

Prep Batch: 426784

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139047-1	GW-12607-102720-DR-026	Total/NA	Water	3535	
240-139047-2	GW-12607-102720-DR-027	Total/NA	Water	3535	
240-139047-3	GW-12607-102720-DR-028	Total/NA	Water	3535	
240-139047-4	GW-12607-102720-DR-029	Total/NA	Water	3535	
240-139047-5	GW-12607-102720-DR-030	Total/NA	Water	3535	
240-139047-6	GW-12607-102720-DR-031	Total/NA	Water	3535	
240-139047-7	GW-12607-102720-DR-032	Total/NA	Water	3535	
MB 320-426784/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-426784/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-426784/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 427046

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139047-1	GW-12607-102720-DR-026	Total/NA	Water	537 (modified)	426784
240-139047-2	GW-12607-102720-DR-027	Total/NA	Water	537 (modified)	426784
240-139047-3	GW-12607-102720-DR-028	Total/NA	Water	537 (modified)	426784
240-139047-5	GW-12607-102720-DR-030	Total/NA	Water	537 (modified)	426784
240-139047-6	GW-12607-102720-DR-031	Total/NA	Water	537 (modified)	426784
240-139047-7	GW-12607-102720-DR-032	Total/NA	Water	537 (modified)	426784
MB 320-426784/1-A	Method Blank	Total/NA	Water	537 (modified)	426784
LCS 320-426784/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	426784
LCSD 320-426784/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	426784

Analysis Batch: 427405

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139047-4	GW-12607-102720-DR-029	Total/NA	Water	537 (modified)	426784

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-426784/1-A
Matrix: Water
Analysis Batch: 427046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426784

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.0	U	5.0	2.4	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.73	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.0	0.57	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.37	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		10/29/20 18:24	10/30/20 12:41	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.98	ng/L		10/29/20 18:24	10/30/20 12:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.0	U	5.0	1.2	ng/L		10/29/20 18:24	10/30/20 12:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.0	U	5.0	1.3	ng/L		10/29/20 18:24	10/30/20 12:41	1
4:2 FTS	2.0	U	2.0	0.24	ng/L		10/29/20 18:24	10/30/20 12:41	1
6:2 FTS	5.0	U	5.0	2.5	ng/L		10/29/20 18:24	10/30/20 12:41	1
8:2 FTS	2.0	U	2.0	0.46	ng/L		10/29/20 18:24	10/30/20 12:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.0	U	2.0	0.40	ng/L		10/29/20 18:24	10/30/20 12:41	1
HFPO-DA (GenX)	4.0	U	4.0	1.5	ng/L		10/29/20 18:24	10/30/20 12:41	1
F-53B Major	2.0	U	2.0	0.24	ng/L		10/29/20 18:24	10/30/20 12:41	1
F-53B Minor	2.0	U	2.0	0.32	ng/L		10/29/20 18:24	10/30/20 12:41	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C5 PFPeA	*95*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C2 PFHxA	*93*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C4 PFHpA	*93*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C4 PFOA	*102*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C5 PFNA	*90*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C2 PFDA	*95*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C2 PFUnA	*90*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C2 PFDoA	*80*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C2 PFTeDA	*82*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C3 PFBS	*90*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
18O2 PFHxS	*93*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C4 PFOS	*90*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
13C8 FOSA	*83*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*
d3-NMeFOSAA	*100*		*25 - 150*	*10/29/20 18:24*	*10/30/20 12:41*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-426784/1-A
Matrix: Water
Analysis Batch: 427046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426784

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	114		25 - 150	10/29/20 18:24	10/30/20 12:41	1
M2-6:2 FTS	88		25 - 150	10/29/20 18:24	10/30/20 12:41	1
M2-8:2 FTS	86		25 - 150	10/29/20 18:24	10/30/20 12:41	1
M2-4:2 FTS	92		25 - 150	10/29/20 18:24	10/30/20 12:41	1
13C3 HFPO-DA	93		25 - 150	10/29/20 18:24	10/30/20 12:41	1

Lab Sample ID: LCS 320-426784/2-A
Matrix: Water
Analysis Batch: 427046

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426784

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	45.6		ng/L		114	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	38.9		ng/L		97	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	40.5		ng/L		101	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	42.7		ng/L		107	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	39.3		ng/L		98	70 - 130
Perfluorononanoic acid (PFNA)	40.0	46.1		ng/L		115	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	44.4		ng/L		111	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	46.4		ng/L		116	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	46.4		ng/L		116	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	43.3		ng/L		108	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	47.1		ng/L		118	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	37.5		ng/L		106	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	42.3		ng/L		113	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.1		ng/L		99	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.4		ng/L		104	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	35.6		ng/L		96	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	41.4		ng/L		108	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.7		ng/L		103	71 - 131
Perfluorooctanesulfonamide (FOSA)	40.0	46.9		ng/L		117	73 - 133
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.8		ng/L		105	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.9		ng/L		107	76 - 136
4:2 FTS	37.4	42.7		ng/L		114	79 - 139
6:2 FTS	37.9	36.0		ng/L		95	59 - 175
8:2 FTS	38.3	43.6		ng/L		114	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	40.1		ng/L		107	79 - 139
HFPO-DA (GenX)	40.0	44.1		ng/L		110	51 - 173
F-53B Major	37.3	40.7		ng/L		109	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-426784/2-A
Matrix: Water
Analysis Batch: 427046

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426784

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			37.7	38.2		ng/L		101	54 - 114		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*83*		*25 - 150*
13C5 PFPeA	*90*		*25 - 150*
13C2 PFHxA	*88*		*25 - 150*
13C4 PFHpA	*88*		*25 - 150*
13C4 PFOA	*93*		*25 - 150*
13C5 PFNA	*85*		*25 - 150*
13C2 PFDA	*87*		*25 - 150*
13C2 PFUnA	*81*		*25 - 150*
13C2 PFDoA	*82*		*25 - 150*
13C2 PFTeDA	*74*		*25 - 150*
13C3 PFBS	*84*		*25 - 150*
18O2 PFHxS	*88*		*25 - 150*
13C4 PFOS	*88*		*25 - 150*
13C8 FOSA	*78*		*25 - 150*
d3-NMeFOSAA	*100*		*25 - 150*
d5-NEtFOSAA	*100*		*25 - 150*
M2-6:2 FTS	*80*		*25 - 150*
M2-8:2 FTS	*77*		*25 - 150*
M2-4:2 FTS	*84*		*25 - 150*
13C3 HFPO-DA	*85*		*25 - 150*

Lab Sample ID: LCSD 320-426784/3-A
Matrix: Water
Analysis Batch: 427046

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426784

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	45.0		ng/L		112	76 - 136	1	30
Perfluoropentanoic acid (PFPeA)			40.0	39.7		ng/L		99	71 - 131	2	30
Perfluorohexanoic acid (PFHxA)			40.0	40.5		ng/L		101	73 - 133	0	30
Perfluoroheptanoic acid (PFHpA)			40.0	42.7		ng/L		107	72 - 132	0	30
Perfluorooctanoic acid (PFOA)			40.0	38.9		ng/L		97	70 - 130	1	30
Perfluorononanoic acid (PFNA)			40.0	44.4		ng/L		111	75 - 135	4	30
Perfluorodecanoic acid (PFDA)			40.0	44.6		ng/L		112	76 - 136	1	30
Perfluoroundecanoic acid (PFUnA)			40.0	43.7		ng/L		109	68 - 128	6	30
Perfluorododecanoic acid (PFDoA)			40.0	45.1		ng/L		113	71 - 131	3	30
Perfluorotridecanoic acid (PFTriA)			40.0	40.6		ng/L		101	71 - 131	6	30
Perfluorotetradecanoic acid (PFTeA)			40.0	45.5		ng/L		114	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)			35.4	39.8		ng/L		113	67 - 127	6	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	44.3		ng/L		118	66 - 126	5	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	35.9		ng/L		99	59 - 119	1	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-426784/3-A
Matrix: Water
Analysis Batch: 427046

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426784

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	39.6		ng/L		104	76 - 136	0	30
Perfluorooctanesulfonic acid (PFOS)			37.1	38.0		ng/L		102	70 - 130	7	30
Perfluorononanesulfonic acid (PFNS)			38.4	41.5		ng/L		108	75 - 135	0	30
Perfluorodecanesulfonic acid (PFDS)			38.6	40.3		ng/L		104	71 - 131	1	30
Perfluorooctanesulfonamide (FOSA)			40.0	45.1		ng/L		113	73 - 133	4	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	41.5		ng/L		104	76 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	41.3		ng/L		103	76 - 136	4	30
4:2 FTS			37.4	43.0		ng/L		115	79 - 139	1	30
6:2 FTS			37.9	35.8		ng/L		95	59 - 175	0	30
8:2 FTS			38.3	42.2		ng/L		110	75 - 135	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	41.1		ng/L		109	79 - 139	2	30
HFPO-DA (GenX)			40.0	43.5		ng/L		109	51 - 173	1	30
F-53B Major			37.3	39.8		ng/L		107	75 - 135	2	30
F-53B Minor			37.7	33.6		ng/L		89	54 - 114	13	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*83*		*25 - 150*
13C5 PFPeA	*88*		*25 - 150*
13C2 PFHxA	*88*		*25 - 150*
13C4 PFHpA	*87*		*25 - 150*
13C4 PFOA	*95*		*25 - 150*
13C5 PFNA	*89*		*25 - 150*
13C2 PFDA	*87*		*25 - 150*
13C2 PFUnA	*87*		*25 - 150*
13C2 PFDoA	*76*		*25 - 150*
13C2 PFTeDA	*78*		*25 - 150*
13C3 PFBS	*83*		*25 - 150*
18O2 PFHxS	*87*		*25 - 150*
13C4 PFOS	*89*		*25 - 150*
13C8 FOSA	*77*		*25 - 150*
d3-NMeFOSAA	*97*		*25 - 150*
d5-NEtFOSAA	*101*		*25 - 150*
M2-6:2 FTS	*80*		*25 - 150*
M2-8:2 FTS	*80*		*25 - 150*
M2-4:2 FTS	*84*		*25 - 150*
13C3 HFPO-DA	*87*		*25 - 150*

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-139047-1

Client Sample ID: GW-12607-102720-DR-026
Lab Sample ID: 240-139047-1
Date Collected: 10/27/20 10:55
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426784	10/29/20 18:24	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	427046	10/30/20 14:53	D1R	TAL SAC

Client Sample ID: GW-12607-102720-DR-027
Lab Sample ID: 240-139047-2
Date Collected: 10/27/20 12:00
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426784	10/29/20 18:24	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	427046	10/30/20 15:02	D1R	TAL SAC

Client Sample ID: GW-12607-102720-DR-028
Lab Sample ID: 240-139047-3
Date Collected: 10/27/20 12:45
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426784	10/29/20 18:24	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	427046	10/30/20 15:11	D1R	TAL SAC

Client Sample ID: GW-12607-102720-DR-029
Lab Sample ID: 240-139047-4
Date Collected: 10/27/20 13:20
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426784	10/29/20 18:24	VP	TAL SAC
Total/NA	Analysis	537 (modified)		10	427405	11/01/20 12:23	D1R	TAL SAC

Client Sample ID: GW-12607-102720-DR-030
Lab Sample ID: 240-139047-5
Date Collected: 10/27/20 14:15
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426784	10/29/20 18:24	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	427046	10/30/20 15:29	D1R	TAL SAC

Client Sample ID: GW-12607-102720-DR-031
Lab Sample ID: 240-139047-6
Date Collected: 10/27/20 14:30
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426784	10/29/20 18:24	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	427046	10/30/20 15:39	D1R	TAL SAC

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-139047-1
Project/Site: 12607-T31, RACER Eckles Rd

Client Sample ID: GW-12607-102720-DR-032
Lab Sample ID: 240-139047-7

Date Collected: 10/27/20 14:35
Matrix: Water
Date Received: 10/28/20 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			426784	10/29/20 18:24	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	427046	10/30/20 15:48	D1R	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-139047-1
Project/Site: 12607-T31, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	10-31-20 *
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	08-03-23
Nevada	State	CA000442021-1	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-20
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

2.9/3.8

Chain of Custody Record 491856

eurofins North Canton | Environment Testing TestAmerica

TA#- 240-5880

Address: _____

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: C. Meincke	Site Contact: D. Rivers	Date: 10/27/2020	COC No: 012607A-T37Y20
Company Name: GHD Services	Tel/Email:	Lab Contact: D. Heckler	Carrier: FED EX	1 of 1 COCs
Address: 2610 Haggerty Rd	Analysis Turnaround Time			Sampler: D. Rivers
City/State/Zip: Farmington Hills, MI 48331	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: (248) 893-3401	TAT if different from Below _____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: RACER - Eckles Rd	☐ 1 week			
Site: Livonia, MI	☐ 2 days			Job / SDG No.:
PO# 012607A-T37Y20	☐ 1 day			012607A-T37Y20

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	PFAS	Sample Specific Notes:
GW-12607-102720-DR-026	10/27/2020	1055	G	WG	2			X	
-027		1200			2			X	
-028		1245			2			X	
-029		1320			2			X	
-030		1415			2			X	
-031		1430			2			X	
-032		1435			2			X	

240-139047 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	GHD	10/27/2020 1700		ETA	10-28-20 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 139047**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: Matthew

Cooler Received on 10-28-20 Opened on 10-28-20

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # 7A Foam Box Client Cooler Box Other _____

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other _____

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF **+0.9** °C) Observed Cooler Temp. 2.9 °C Corrected Cooler Temp. 3.6 °C
   IR GUN #IR-12 (CF **+0.5**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp(Y/N)? (Yes) No
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? (Yes) No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC? Yes (No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes (No)
17. Was a LL Hg or Me Hg trip blank present? _____ Yes (No)

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

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

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

NO Hex Chromemium

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-127216.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Denise.Heckler@Eurofinset.com	State of Origin: Michigan	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-139047-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 11/9/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605	PO #:			
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	WO #:			
Email:	Project #: 24005880			
Project Name: 12607, RACER Eckles Rd	SSOW#:			
Site:				

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_PFC (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GW-12607-102720-DR-026 (240-139047-1)	10/27/20	10:55 Eastern		Water			X	2	
GW-12607-102720-DR-027 (240-139047-2)	10/27/20	12:00 Eastern		Water			X	2	
GW-12607-102720-DR-028 (240-139047-3)	10/27/20	12:45 Eastern		Water			X	2	
GW-12607-102720-DR-029 (240-139047-4)	10/27/20	13:20 Eastern		Water			X	2	
GW-12607-102720-DR-030 (240-139047-5)	10/27/20	14:15 Eastern		Water			X	2	
GW-12607-102720-DR-031 (240-139047-6)	10/27/20	14:30 Eastern		Water			X	2	
GW-12607-102720-DR-032 (240-139047-7)	10/27/20	14:35 Eastern		Water			X	2	

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

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

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

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	10-28-20 1235	ALO	[signature]	10/29/20 09:25	ETA-SAC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: OB: 0.9 CORR: 0.4

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-139047-1

Login Number: 139047
List Number: 2
Creator: Saephan, Kae C

List Source: Eurofins TestAmerica, Sacramento
List Creation: 10/29/20 01:46 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	ob: 0.9c corr: 0.4c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-139047-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-139047-1	GW-12607-102720-DR-026	88	94	42	136	150	135	126	99
240-139047-2	GW-12607-102720-DR-027	56	65	80	87	96	93	89	93
240-139047-3	GW-12607-102720-DR-028	53	63	64	80	85	87	88	84
240-139047-4	GW-12607-102720-DR-029	85	90	94	97	103	99	90	81
240-139047-5	GW-12607-102720-DR-030	50	60	79	112	108	129	144	132
240-139047-6	GW-12607-102720-DR-031	41	47	67	95	93	110	125	109
240-139047-7	GW-12607-102720-DR-032	58	67	84	86	92	91	88	88
LCS 320-426784/2-A	Lab Control Sample	83	90	88	88	93	85	87	81
LCSD 320-426784/3-A	Lab Control Sample Dup	83	88	88	87	95	89	87	87
MB 320-426784/1-A	Method Blank	88	95	93	93	102	90	95	90

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
240-139047-1	GW-12607-102720-DR-026	92	101	130	134	124	123	97	98
240-139047-2	GW-12607-102720-DR-027	86	90	84	92	91	85	86	96
240-139047-3	GW-12607-102720-DR-028	77	77	84	84	83	78	83	91
240-139047-4	GW-12607-102720-DR-029	76	75	96	101	108	96	108	102
240-139047-5	GW-12607-102720-DR-030	142	142	125	133	141	130	118	120
240-139047-6	GW-12607-102720-DR-031	104	113	101	120	122	117	108	98
240-139047-7	GW-12607-102720-DR-032	82	79	79	84	85	82	84	92
LCS 320-426784/2-A	Lab Control Sample	82	74	84	88	88	78	100	100
LCSD 320-426784/3-A	Lab Control Sample Dup	76	78	83	87	89	77	97	101
MB 320-426784/1-A	Method Blank	80	82	90	93	90	83	100	114

		Percent Isotope Dilution Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
240-139047-1	GW-12607-102720-DR-026	117	104	42	130
240-139047-2	GW-12607-102720-DR-027	95	95	103	85
240-139047-3	GW-12607-102720-DR-028	79	82	69	78
240-139047-4	GW-12607-102720-DR-029	89	76	81	97
240-139047-5	GW-12607-102720-DR-030	90	144	70	124
240-139047-6	GW-12607-102720-DR-031	76	118	61	107
240-139047-7	GW-12607-102720-DR-032	85	82	94	84
LCS 320-426784/2-A	Lab Control Sample	80	77	84	85
LCSD 320-426784/3-A	Lab Control Sample Dup	80	80	84	87
MB 320-426784/1-A	Method Blank	88	86	92	93

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 240-139047-1
Project/Site: 12607-T31, RACER Eckles Rd

PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

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Sacramento Sample Receiving Notes

240-139047 Field Sheet

Tracking #: 914875019260

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other

Job:

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: AK-5 Corr. Factor: (+0.5) °C

Ice X Wet X Gel ____ Other ____

Cooler Custody Seal: —

Cooler ID: —

Temp Observed: 0.9 °C Corrected: 0.4 °C

From: Temp Blank ☑ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐

Initials: [illegible] Date: 10/29/20

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☐	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: [illegible] Date: 10/29/20

Notes:

Trizma Lot #(s):

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
Samples received within hold time?	☑	☐	☐
NCM Filed?	☐	☐	☑
Log Release checked in TALS?	☐	☐	☑

Initials: [illegible] Date: 10/29/20

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-139198-1
Client Project/Site: 12607-T06, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
11/5/2020 1:47:20 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139198-1

Job ID: 240-139198-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-139198-1

Comments
No additional comments.

Receipt
The samples were received on 10/29/2020 9:30 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.9º C.

Metals
Method 6010B: Some requested practical quantitation limits (PQLs) fall below the laboratory's verified standard quantitation limit. The continuing calibration blanks and method blanks may not support the lower PQL.

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

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 240-139198-1
Project/Site: 12607-T06, RACER Eckles Rd

Qualifiers

Metals

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

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139198-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-139198-1	GW-12607-102820-DR-033	Water	10/28/20 09:25	10/29/20 09:30	
240-139198-2	GW-12607-102820-DR-034	Water	10/28/20 10:10	10/29/20 09:30	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139198-1

Client Sample ID: GW-12607-102820-DR-033 — Lab Sample ID: 240-139198-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	8.8	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-102820-DR-034 — Lab Sample ID: 240-139198-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	14	J	20	2.2	ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139198-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139198-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102820-DR-033
Date Collected: 10/28/20 09:25
Date Received: 10/29/20 09:30

Lab Sample ID: 240-139198-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	8.8	J	20	2.2	ug/L		10/30/20 14:00	11/03/20 00:06	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-139198-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-102820-DR-034
Date Collected: 10/28/20 10:10
Date Received: 10/29/20 09:30

Lab Sample ID: 240-139198-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	14	J	20	2.2	ug/L		10/30/20 14:00	11/03/20 00:11	1

Metals

Prep Batch: 458570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139198-1	GW-12607-102820-DR-033	Total Recoverable	Water	3005A	
240-139198-2	GW-12607-102820-DR-034	Total Recoverable	Water	3005A	
MB 240-458570/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-458570/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 458984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139198-1	GW-12607-102820-DR-033	Total Recoverable	Water	6010B	458570
240-139198-2	GW-12607-102820-DR-034	Total Recoverable	Water	6010B	458570
MB 240-458570/1-A	Method Blank	Total Recoverable	Water	6010B	458570
LCS 240-458570/2-A	Lab Control Sample	Total Recoverable	Water	6010B	458570

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-458570/1-A
Matrix: Water
Analysis Batch: 458984

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 458570

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nickel	20	U	20	2.2	ug/L		10/30/20 14:00	11/02/20 22:34	1

Lab Sample ID: LCS 240-458570/2-A
Matrix: Water
Analysis Batch: 458984

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 458570

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nickel	1000	935		ug/L		94	80 - 120

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-139198-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-102820-DR-033
Lab Sample ID: 240-139198-1

Date Collected: 10/28/20 09:25
Matrix: Water
Date Received: 10/29/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458570	10/30/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458984	11/03/20 00:06	WKD	TAL CAN

Client Sample ID: GW-12607-102820-DR-034
Lab Sample ID: 240-139198-2

Date Collected: 10/28/20 10:10
Matrix: Water
Date Received: 10/29/20 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			458570	10/30/20 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	458984	11/03/20 00:11	WKD	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-139198-1
Project/Site: 12607-T06, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

B0139

Chain of Custody Record 374509

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TA # 240058B6

Address: _____

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: C Meincke	Site Contact: D. Rivers	Date: 10/28/2020	COC No: 012607A-T06Y20
Company Name: GHD Services	Tel/Email:	Lab Contact: D. Heckler	Carrier: FED EX	1 of 1 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: D. Rivers
City/State/Zip: Farmington Hills, MI 48331	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: (248) 893-3400	TAT if different from Below _____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: RACER - Eckles Rd	☐ 1 week			
Site: Livonia MI	☐ 2 days			Job / SDG No.:
PO# 012607A-T06Y20	☐ 1 day			012607A-T06Y20

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Nickel	Sample Specific Notes:
GW-12607-102820-DR-033	10/28/2020	925	G	WG	1			X	
↓ ↓ - ↓ ↓ -034	↓	1010	↓	↓	1			X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	GHD	10/28/2020 1500	[signature]	ETA	10-29-20 930
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: Tony Rogers

Cooler Received on 10-29-20 Opened on 10-29-20

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN# IR-11 (CF **+0.9** °C) Observed Cooler Temp. 3.0 °C Corrected Cooler Temp. 3.9 °C

IR GUN #IR-12 (CF **+0.5**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	(Yes)	No NA pH Strip Lot# **HC907861**
14. Were VOAs on the COC?	Yes	(No)
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

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

Concerning _____

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

Samples processed by:

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
GW-12607-102820-DR-033	240-139198-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____	_____
GW-12607-102820-DR-034	240-139198-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____	_____

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-142183-1
Client Project/Site: 12607, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
12/30/2020 8:26:55 AM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

Job ID: 240-142183-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-142183-1

Comments
The Trip blank was received broken.

Receipt
The samples were received on 12/18/2020 12:00 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.9º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

Qualifiers

GC/MS VOA

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

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-142183-1	GW-12607-121720-DA-027	Water	12/17/20 12:45	12/18/20 12:00	
240-142183-2	GW-12607-121720-DA-028	Water	12/17/20 13:45	12/18/20 12:00	
240-142183-3	GW-12607-121720-DA-029	Water	12/17/20 14:45	12/18/20 12:00	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

Client Sample ID: GW-12607-121720-DA-027 — Lab Sample ID: 240-142183-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.6		1.0	0.10	ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	1.1		1.0	0.24	ug/L	1		8260B	Total/NA

Client Sample ID: GW-12607-121720-DA-028 — Lab Sample ID: 240-142183-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	88		2.5	0.25	ug/L	2.5		8260B	Total/NA
1,1,1-Trichloroethane	19		2.5	0.60	ug/L	2.5		8260B	Total/NA

Client Sample ID: GW-12607-121720-DA-029 — Lab Sample ID: 240-142183-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.32	J	1.0	0.10	ug/L	1		8260B	Total/NA
1,1,1-Trichloroethane	11		1.0	0.24	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-12607-121720-DA-027
Date Collected: 12/17/20 12:45
Date Received: 12/18/20 12:00

Lab Sample ID: 240-142183-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/23/20 20:16	1
Benzene	1.0	U	1.0	0.13	ug/L			12/23/20 20:16	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/23/20 20:16	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/23/20 20:16	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/23/20 20:16	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/23/20 20:16	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/23/20 20:16	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/23/20 20:16	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/23/20 20:16	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/23/20 20:16	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/23/20 20:16	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/23/20 20:16	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/23/20 20:16	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/23/20 20:16	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/23/20 20:16	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/23/20 20:16	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/23/20 20:16	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/23/20 20:16	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/23/20 20:16	1
2-Hexanone	10	U	10	0.54	ug/L			12/23/20 20:16	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/23/20 20:16	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/23/20 20:16	1
Styrene	1.0	U	1.0	0.10	ug/L			12/23/20 20:16	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/23/20 20:16	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/23/20 20:16	1
Toluene	1.0	U	1.0	0.14	ug/L			12/23/20 20:16	1
Trichloroethene	**1.6**		1.0	0.10	ug/L			12/23/20 20:16	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/23/20 20:16	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/23/20 20:16	1
1,1,1-Trichloroethane	**1.1**		1.0	0.24	ug/L			12/23/20 20:16	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/23/20 20:16	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/23/20 20:16	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/23/20 20:16	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/23/20 20:16	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/23/20 20:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/23/20 20:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/23/20 20:16	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/23/20 20:16	1
Methyl acetate	10	U	10	1.7	ug/L			12/23/20 20:16	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/23/20 20:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/23/20 20:16	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/23/20 20:16	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/23/20 20:16	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/23/20 20:16	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/23/20 20:16	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/23/20 20:16	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/23/20 20:16	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/23/20 20:16	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130		12/23/20 20:16	1
4-Bromofluorobenzene (Surr)	95		47 - 134		12/23/20 20:16	1
Toluene-d8 (Surr)	82		69 - 122		12/23/20 20:16	1
Dibromofluoromethane (Surr)	92		78 - 129		12/23/20 20:16	1

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-12607-121720-DA-028
Date Collected: 12/17/20 13:45
Date Received: 12/18/20 12:00

Lab Sample ID: 240-142183-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	25	U	25	14	ug/L			12/28/20 20:40	2.5
Benzene	2.5	U	2.5	0.33	ug/L			12/28/20 20:40	2.5
Bromodichloromethane	2.5	U	2.5	0.43	ug/L			12/28/20 20:40	2.5
Bromoform	2.5	U	2.5	1.9	ug/L			12/28/20 20:40	2.5
Bromomethane	2.5	U	2.5	1.1	ug/L			12/28/20 20:40	2.5
2-Butanone (MEK)	25	U	25	2.9	ug/L			12/28/20 20:40	2.5
Carbon disulfide	13	U	13	0.70	ug/L			12/28/20 20:40	2.5
Carbon tetrachloride	2.5	U	2.5	0.65	ug/L			12/28/20 20:40	2.5
Chlorobenzene	2.5	U	2.5	0.35	ug/L			12/28/20 20:40	2.5
Chloroethane	2.5	U	2.5	2.1	ug/L			12/28/20 20:40	2.5
Chloroform	2.5	U	2.5	0.33	ug/L			12/28/20 20:40	2.5
Chloromethane	2.5	U	2.5	0.50	ug/L			12/28/20 20:40	2.5
1,1-Dichloroethane	2.5	U	2.5	0.43	ug/L			12/28/20 20:40	2.5
1,2-Dichloroethane	2.5	U	2.5	0.53	ug/L			12/28/20 20:40	2.5
1,1-Dichloroethene	2.5	U	2.5	0.48	ug/L			12/28/20 20:40	2.5
1,2-Dichloropropane	2.5	U	2.5	0.38	ug/L			12/28/20 20:40	2.5
cis-1,3-Dichloropropene	2.5	U	2.5	1.5	ug/L			12/28/20 20:40	2.5
trans-1,3-Dichloropropene	2.5	U	2.5	1.7	ug/L			12/28/20 20:40	2.5
Ethylbenzene	2.5	U	2.5	0.28	ug/L			12/28/20 20:40	2.5
2-Hexanone	25	U	25	1.4	ug/L			12/28/20 20:40	2.5
Methylene Chloride	13	U	13	6.6	ug/L			12/28/20 20:40	2.5
4-Methyl-2-pentanone (MIBK)	25	U	25	1.1	ug/L			12/28/20 20:40	2.5
Styrene	2.5	U	2.5	0.25	ug/L			12/28/20 20:40	2.5
1,1,2,2-Tetrachloroethane	2.5	U	2.5	0.33	ug/L			12/28/20 20:40	2.5
Tetrachloroethene	2.5	U	2.5	0.38	ug/L			12/28/20 20:40	2.5
Toluene	2.5	U	2.5	0.35	ug/L			12/28/20 20:40	2.5
Trichloroethene	**88**		2.5	0.25	ug/L			12/28/20 20:40	2.5
Vinyl chloride	2.5	U	2.5	0.50	ug/L			12/28/20 20:40	2.5
Xylenes, Total	5.0	U	5.0	0.38	ug/L			12/28/20 20:40	2.5
1,1,1-Trichloroethane	**19**		2.5	0.60	ug/L			12/28/20 20:40	2.5
1,1,2-Trichloroethane	2.5	U	2.5	0.23	ug/L			12/28/20 20:40	2.5
Cyclohexane	2.5	U	2.5	0.60	ug/L			12/28/20 20:40	2.5
1,2-Dibromo-3-Chloropropane	2.5	U	2.5	2.3	ug/L			12/28/20 20:40	2.5
1,2-Dibromoethane	2.5	U	2.5	0.30	ug/L			12/28/20 20:40	2.5
Dichlorodifluoromethane	2.5	U	2.5	0.88	ug/L			12/28/20 20:40	2.5
cis-1,2-Dichloroethene	2.5	U	2.5	0.40	ug/L			12/28/20 20:40	2.5
trans-1,2-Dichloroethene	2.5	U	2.5	0.48	ug/L			12/28/20 20:40	2.5
Isopropylbenzene	2.5	U	2.5	0.23	ug/L			12/28/20 20:40	2.5
Methyl acetate	25	U	25	4.3	ug/L			12/28/20 20:40	2.5
Methyl tert-butyl ether	2.5	U	2.5	0.18	ug/L			12/28/20 20:40	2.5
1,1,2-Trichloro-1,2,2-trifluoroethane	2.5	U	2.5	1.0	ug/L			12/28/20 20:40	2.5
1,2,4-Trichlorobenzene	2.5	U	2.5	0.65	ug/L			12/28/20 20:40	2.5
1,2-Dichlorobenzene	2.5	U	2.5	0.38	ug/L			12/28/20 20:40	2.5
1,3-Dichlorobenzene	2.5	U	2.5	0.38	ug/L			12/28/20 20:40	2.5
1,4-Dichlorobenzene	2.5	U	2.5	0.40	ug/L			12/28/20 20:40	2.5
Trichlorofluoromethane	2.5	U	2.5	1.1	ug/L			12/28/20 20:40	2.5
Dibromochloromethane	2.5	U	2.5	0.98	ug/L			12/28/20 20:40	2.5
Methylcyclohexane	2.5	U	2.5	0.83	ug/L			12/28/20 20:40	2.5

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	99		75 - 130		12/28/20 20:40	2.5
4-Bromofluorobenzene (Surr)	103		47 - 134		12/28/20 20:40	2.5
Toluene-d8 (Surr)	81		69 - 122		12/28/20 20:40	2.5
Dibromofluoromethane (Surr)	94		78 - 129		12/28/20 20:40	2.5

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-12607-121720-DA-029
Date Collected: 12/17/20 14:45
Date Received: 12/18/20 12:00

Lab Sample ID: 240-142183-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/28/20 21:05	1
Benzene	1.0	U	1.0	0.13	ug/L			12/28/20 21:05	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/28/20 21:05	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/28/20 21:05	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/28/20 21:05	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/28/20 21:05	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/28/20 21:05	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/28/20 21:05	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/28/20 21:05	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/28/20 21:05	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/28/20 21:05	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/28/20 21:05	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/28/20 21:05	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/28/20 21:05	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 21:05	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/28/20 21:05	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/28/20 21:05	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/28/20 21:05	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/28/20 21:05	1
2-Hexanone	10	U	10	0.54	ug/L			12/28/20 21:05	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/28/20 21:05	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/28/20 21:05	1
Styrene	1.0	U	1.0	0.10	ug/L			12/28/20 21:05	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/28/20 21:05	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 21:05	1
Toluene	1.0	U	1.0	0.14	ug/L			12/28/20 21:05	1
Trichloroethene	**0.32**	**J**	1.0	0.10	ug/L			12/28/20 21:05	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 21:05	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/28/20 21:05	1
1,1,1-Trichloroethane	**11**		1.0	0.24	ug/L			12/28/20 21:05	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/28/20 21:05	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/28/20 21:05	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/28/20 21:05	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/28/20 21:05	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/28/20 21:05	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 21:05	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 21:05	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/28/20 21:05	1
Methyl acetate	10	U	10	1.7	ug/L			12/28/20 21:05	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/28/20 21:05	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/28/20 21:05	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/28/20 21:05	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/28/20 21:05	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/28/20 21:05	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/28/20 21:05	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/28/20 21:05	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/28/20 21:05	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/28/20 21:05	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	93		75 - 130		12/28/20 21:05	1
4-Bromofluorobenzene (Surr)	104		47 - 134		12/28/20 21:05	1
Toluene-d8 (Surr)	79		69 - 122		12/28/20 21:05	1
Dibromofluoromethane (Surr)	89		78 - 129		12/28/20 21:05	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

GC/MS VOA

Analysis Batch: 466784

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142183-1	GW-12607-121720-DA-027	Total/NA	Water	8260B	
MB 240-466784/7	Method Blank	Total/NA	Water	8260B	
LCS 240-466784/4	Lab Control Sample	Total/NA	Water	8260B	
240-142183-1 MS	GW-12607-121720-DA-027	Total/NA	Water	8260B	
240-142183-1 MSD	GW-12607-121720-DA-027	Total/NA	Water	8260B	

Analysis Batch: 467182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-142183-2	GW-12607-121720-DA-028	Total/NA	Water	8260B	
240-142183-3	GW-12607-121720-DA-029	Total/NA	Water	8260B	
MB 240-467182/7	Method Blank	Total/NA	Water	8260B	
LCS 240-467182/4	Lab Control Sample	Total/NA	Water	8260B	

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-466784/7
Matrix: Water
Analysis Batch: 466784

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/23/20 14:28	1
Benzene	1.0	U	1.0	0.13	ug/L			12/23/20 14:28	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/23/20 14:28	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/23/20 14:28	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/23/20 14:28	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/23/20 14:28	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/23/20 14:28	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/23/20 14:28	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/23/20 14:28	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/23/20 14:28	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/23/20 14:28	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/23/20 14:28	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/23/20 14:28	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/23/20 14:28	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/23/20 14:28	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/23/20 14:28	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/23/20 14:28	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/23/20 14:28	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/23/20 14:28	1
2-Hexanone	10	U	10	0.54	ug/L			12/23/20 14:28	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/23/20 14:28	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/23/20 14:28	1
Styrene	1.0	U	1.0	0.10	ug/L			12/23/20 14:28	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/23/20 14:28	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/23/20 14:28	1
Toluene	1.0	U	1.0	0.14	ug/L			12/23/20 14:28	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/23/20 14:28	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/23/20 14:28	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/23/20 14:28	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/23/20 14:28	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/23/20 14:28	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/23/20 14:28	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/23/20 14:28	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/23/20 14:28	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/23/20 14:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/23/20 14:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/23/20 14:28	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/23/20 14:28	1
Methyl acetate	10	U	10	1.7	ug/L			12/23/20 14:28	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/23/20 14:28	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/23/20 14:28	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/23/20 14:28	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/23/20 14:28	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/23/20 14:28	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/23/20 14:28	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/23/20 14:28	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/23/20 14:28	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/23/20 14:28	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-466784/7
Matrix: Water
Analysis Batch: 466784

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

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*87*		*75 - 130*		*12/23/20 14:28*	*1*
4-Bromofluorobenzene (Surr)	*91*		*47 - 134*		*12/23/20 14:28*	*1*
Toluene-d8 (Surr)	*85*		*69 - 122*		*12/23/20 14:28*	*1*
Dibromofluoromethane (Surr)	*85*		*78 - 129*		*12/23/20 14:28*	*1*

Lab Sample ID: LCS 240-466784/4
Matrix: Water
Analysis Batch: 466784

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	16.7		ug/L		84	33 - 155
Benzene	10.0	9.71		ug/L		97	77 - 123
Bromodichloromethane	10.0	9.85		ug/L		99	73 - 122
Bromoform	10.0	11.8		ug/L		118	47 - 133
Bromomethane	10.0	11.6		ug/L		116	48 - 144
2-Butanone (MEK)	20.0	13.1		ug/L		66	41 - 151
Carbon disulfide	10.0	9.53		ug/L		95	67 - 127
Carbon tetrachloride	10.0	8.98		ug/L		90	61 - 142
Chlorobenzene	10.0	10.3		ug/L		103	80 - 120
Chloroethane	10.0	9.80		ug/L		98	41 - 147
Chloroform	10.0	9.83		ug/L		98	74 - 127
Chloromethane	10.0	11.7		ug/L		117	46 - 148
1,1-Dichloroethane	10.0	9.23		ug/L		92	74 - 126
1,2-Dichloroethane	10.0	9.75		ug/L		97	66 - 129
1,1-Dichloroethene	10.0	10.0		ug/L		100	73 - 129
1,2-Dichloropropane	10.0	9.46		ug/L		95	79 - 127
cis-1,3-Dichloropropene	10.0	9.06		ug/L		91	68 - 128
trans-1,3-Dichloropropene	10.0	8.36		ug/L		84	64 - 120
Ethylbenzene	10.0	10.0		ug/L		100	80 - 120
2-Hexanone	20.0	14.2		ug/L		71	43 - 142
Methylene Chloride	10.0	11.9		ug/L		119	63 - 134
4-Methyl-2-pentanone (MIBK)	20.0	13.7		ug/L		68	43 - 145
Styrene	10.0	11.0		ug/L		110	75 - 121
1,1,2,2-Tetrachloroethane	10.0	7.98		ug/L		80	45 - 151
Tetrachloroethene	10.0	9.98		ug/L		100	70 - 125
Toluene	10.0	9.18		ug/L		92	79 - 122
Trichloroethene	10.0	10.1		ug/L		101	71 - 121
Vinyl chloride	10.0	9.14		ug/L		91	61 - 134
Xylenes, Total	20.0	21.0		ug/L		105	78 - 122
1,1,1-Trichloroethane	10.0	9.15		ug/L		91	65 - 141
1,1,2-Trichloroethane	10.0	9.42		ug/L		94	79 - 121
Cyclohexane	10.0	8.12		ug/L		81	69 - 133
1,2-Dibromo-3-Chloropropane	10.0	7.75		ug/L		78	34 - 136
1,2-Dibromoethane	10.0	9.64		ug/L		96	73 - 120
Dichlorodifluoromethane	10.0	12.3		ug/L		123	35 - 137
cis-1,2-Dichloroethene	10.0	9.79		ug/L		98	75 - 124
trans-1,2-Dichloroethene	10.0	9.62		ug/L		96	74 - 130
Isopropylbenzene	10.0	11.6		ug/L		116	73 - 123

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-466784/4
Matrix: Water
Analysis Batch: 466784

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl acetate	20.0	14.4		ug/L		72	47 - 140
Methyl tert-butyl ether	10.0	8.10		ug/L		81	57 - 127
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	10.1		ug/L		101	54 - 148
1,2,4-Trichlorobenzene	10.0	9.71		ug/L		97	47 - 120
1,2-Dichlorobenzene	10.0	10.6		ug/L		106	74 - 120
1,3-Dichlorobenzene	10.0	10.8		ug/L		108	74 - 120
1,4-Dichlorobenzene	10.0	10.6		ug/L		106	75 - 120
Trichlorofluoromethane	10.0	10.1		ug/L		101	52 - 148
Dibromochloromethane	10.0	9.89		ug/L		99	75 - 120
Methylcyclohexane	10.0	8.87		ug/L		89	64 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*83*		*75 - 130*
4-Bromofluorobenzene (Surr)	*104*		*47 - 134*
Toluene-d8 (Surr)	*84*		*69 - 122*
Dibromofluoromethane (Surr)	*88*		*78 - 129*

Lab Sample ID: 240-142183-1 MS
Matrix: Water
Analysis Batch: 466784

Client Sample ID: GW-12607-121720-DA-027
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	10	U	20.0	15.5		ug/L		78	32 - 157
Benzene	1.0	U	10.0	9.60		ug/L		96	70 - 121
Bromodichloromethane	1.0	U	10.0	9.36		ug/L		94	69 - 120
Bromoform	1.0	U	10.0	10.8		ug/L		108	41 - 128
Bromomethane	1.0	U	10.0	9.50		ug/L		95	41 - 136
2-Butanone (MEK)	10	U	20.0	13.4		ug/L		67	40 - 147
Carbon disulfide	5.0	U	10.0	8.76		ug/L		88	54 - 131
Carbon tetrachloride	1.0	U	10.0	8.50		ug/L		85	53 - 142
Chlorobenzene	1.0	U	10.0	10.4		ug/L		104	73 - 120
Chloroethane	1.0	U	10.0	6.98		ug/L		70	37 - 142
Chloroform	1.0	U	10.0	9.51		ug/L		95	66 - 126
Chloromethane	1.0	U	10.0	10.0		ug/L		100	33 - 146
1,1-Dichloroethane	1.0	U	10.0	8.86		ug/L		89	71 - 121
1,2-Dichloroethane	1.0	U	10.0	9.92		ug/L		99	65 - 127
1,1-Dichloroethene	1.0	U	10.0	9.31		ug/L		93	64 - 132
1,2-Dichloropropane	1.0	U	10.0	9.35		ug/L		94	73 - 125
cis-1,3-Dichloropropene	1.0	U	10.0	8.30		ug/L		83	56 - 121
trans-1,3-Dichloropropene	1.0	U	10.0	7.69		ug/L		77	53 - 120
Ethylbenzene	1.0	U	10.0	9.60		ug/L		96	66 - 122
2-Hexanone	10	U	20.0	14.9		ug/L		75	44 - 142
Methylene Chloride	5.0	U	10.0	12.2		ug/L		122	59 - 127
4-Methyl-2-pentanone (MIBK)	10	U	20.0	14.3		ug/L		72	40 - 147
Styrene	1.0	U	10.0	11.3		ug/L		113	57 - 126
1,1,2,2-Tetrachloroethane	1.0	U	10.0	8.18		ug/L		82	37 - 149
Tetrachloroethene	1.0	U	10.0	9.49		ug/L		95	52 - 129
Toluene	1.0	U	10.0	9.00		ug/L		90	68 - 124

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-142183-1 MS
Matrix: Water
Analysis Batch: 466784

Client Sample ID: GW-12607-121720-DA-027
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Trichloroethene	1.6		10.0	11.2		ug/L		95	56 - 124
Vinyl chloride	1.0	U	10.0	8.65		ug/L		86	49 - 136
Xylenes, Total	2.0	U	20.0	20.7		ug/L		104	64 - 124
1,1,1-Trichloroethane	1.1		10.0	9.66		ug/L		86	62 - 135
1,1,2-Trichloroethane	1.0	U	10.0	9.57		ug/L		96	73 - 122
Cyclohexane	1.0	U	10.0	7.47		ug/L		75	48 - 136
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	8.64		ug/L		86	31 - 130
1,2-Dibromoethane	1.0	U	10.0	9.88		ug/L		99	66 - 120
Dichlorodifluoromethane	1.0	U	10.0	10.5		ug/L		105	27 - 132
cis-1,2-Dichloroethene	1.0	U	10.0	9.88		ug/L		99	68 - 121
trans-1,2-Dichloroethene	1.0	U	10.0	9.40		ug/L		94	69 - 126
Isopropylbenzene	1.0	U	10.0	10.9		ug/L		109	56 - 122
Methyl acetate	10	U	20.0	13.8		ug/L		69	41 - 137
Methyl tert-butyl ether	1.0	U	10.0	8.27		ug/L		83	50 - 126
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	9.16		ug/L		92	41 - 145
1,2,4-Trichlorobenzene	1.0	U	10.0	9.24		ug/L		92	37 - 120
1,2-Dichlorobenzene	1.0	U	10.0	10.7		ug/L		107	65 - 120
1,3-Dichlorobenzene	1.0	U	10.0	10.1		ug/L		101	64 - 120
1,4-Dichlorobenzene	1.0	U	10.0	10.1		ug/L		101	65 - 120
Trichlorofluoromethane	1.0	U	10.0	8.42		ug/L		84	45 - 152
Dibromochloromethane	1.0	U	10.0	9.66		ug/L		97	66 - 120
Methylcyclohexane	1.0	U	10.0	8.10		ug/L		81	40 - 125

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*82*		*75 - 130*
4-Bromofluorobenzene (Surr)	*107*		*47 - 134*
Toluene-d8 (Surr)	*81*		*69 - 122*
Dibromofluoromethane (Surr)	*88*		*78 - 129*

Lab Sample ID: 240-142183-1 MSD
Matrix: Water
Analysis Batch: 466784

Client Sample ID: GW-12607-121720-DA-027
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	10	U	20.0	16.0		ug/L		80	32 - 157	3	35
Benzene	1.0	U	10.0	9.39		ug/L		94	70 - 121	2	35
Bromodichloromethane	1.0	U	10.0	9.78		ug/L		98	69 - 120	4	35
Bromoform	1.0	U	10.0	10.7		ug/L		107	41 - 128	1	35
Bromomethane	1.0	U	10.0	10.4		ug/L		104	41 - 136	9	35
2-Butanone (MEK)	10	U	20.0	14.1		ug/L		71	40 - 147	5	35
Carbon disulfide	5.0	U	10.0	9.19		ug/L		92	54 - 131	5	35
Carbon tetrachloride	1.0	U	10.0	8.56		ug/L		86	53 - 142	1	35
Chlorobenzene	1.0	U	10.0	9.70		ug/L		97	73 - 120	7	35
Chloroethane	1.0	U	10.0	8.75		ug/L		88	37 - 142	23	35
Chloroform	1.0	U	10.0	9.54		ug/L		95	66 - 126	0	35
Chloromethane	1.0	U	10.0	11.9		ug/L		119	33 - 146	17	35
1,1-Dichloroethane	1.0	U	10.0	9.11		ug/L		91	71 - 121	3	35
1,2-Dichloroethane	1.0	U	10.0	9.97		ug/L		100	65 - 127	1	35

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-142183-1 MSD
Matrix: Water
Analysis Batch: 466784

Client Sample ID: GW-12607-121720-DA-027
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	10.0	10.1		ug/L		101	64 - 132	8	35
1,2-Dichloropropane	1.0	U	10.0	9.38		ug/L		94	73 - 125	0	35
cis-1,3-Dichloropropene	1.0	U	10.0	8.51		ug/L		85	56 - 121	2	35
trans-1,3-Dichloropropene	1.0	U	10.0	7.61		ug/L		76	53 - 120	1	35
Ethylbenzene	1.0	U	10.0	9.12		ug/L		91	66 - 122	5	35
2-Hexanone	10	U	20.0	14.8		ug/L		74	44 - 142	1	35
Methylene Chloride	5.0	U	10.0	11.9		ug/L		119	59 - 127	3	32
4-Methyl-2-pentanone (MIBK)	10	U	20.0	14.3		ug/L		71	40 - 147	0	35
Styrene	1.0	U	10.0	10.1		ug/L		101	57 - 126	11	35
1,1,2,2-Tetrachloroethane	1.0	U	10.0	8.45		ug/L		84	37 - 149	3	35
Tetrachloroethene	1.0	U	10.0	9.07		ug/L		91	52 - 129	5	35
Toluene	1.0	U	10.0	8.67		ug/L		87	68 - 124	4	35
Trichloroethene	1.6		10.0	11.0		ug/L		94	56 - 124	1	35
Vinyl chloride	1.0	U	10.0	8.60		ug/L		86	49 - 136	1	35
Xylenes, Total	2.0	U	20.0	19.4		ug/L		97	64 - 124	6	35
1,1,1-Trichloroethane	1.1		10.0	9.62		ug/L		85	62 - 135	1	35
1,1,2-Trichloroethane	1.0	U	10.0	9.05		ug/L		90	73 - 122	6	35
Cyclohexane	1.0	U	10.0	7.75		ug/L		77	48 - 136	4	35
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	8.69		ug/L		87	31 - 130	1	35
1,2-Dibromoethane	1.0	U	10.0	9.31		ug/L		93	66 - 120	6	35
Dichlorodifluoromethane	1.0	U	10.0	11.2		ug/L		112	27 - 132	6	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.62		ug/L		96	68 - 121	3	35
trans-1,2-Dichloroethene	1.0	U	10.0	9.12		ug/L		91	69 - 126	3	35
Isopropylbenzene	1.0	U	10.0	10.5		ug/L		105	56 - 122	3	20
Methyl acetate	10	U	20.0	13.9		ug/L		69	41 - 137	0	16
Methyl tert-butyl ether	1.0	U	10.0	8.51		ug/L		85	50 - 126	3	17
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	9.13		ug/L		91	41 - 145	0	35
1,2,4-Trichlorobenzene	1.0	U	10.0	9.30		ug/L		93	37 - 120	1	25
1,2-Dichlorobenzene	1.0	U	10.0	10.4		ug/L		104	65 - 120	3	35
1,3-Dichlorobenzene	1.0	U	10.0	10.4		ug/L		104	64 - 120	2	35
1,4-Dichlorobenzene	1.0	U	10.0	10.1		ug/L		101	65 - 120	0	35
Trichlorofluoromethane	1.0	U	10.0	9.57		ug/L		96	45 - 152	13	35
Dibromochloromethane	1.0	U	10.0	8.97		ug/L		90	66 - 120	7	35
Methylcyclohexane	1.0	U	10.0	8.00		ug/L		80	40 - 125	1	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*86*		*75 - 130*
4-Bromofluorobenzene (Surr)	*102*		*47 - 134*
Toluene-d8 (Surr)	*81*		*69 - 122*
Dibromofluoromethane (Surr)	*90*		*78 - 129*

Lab Sample ID: MB 240-467182/7
Matrix: Water
Analysis Batch: 467182

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/28/20 16:55	1
Benzene	1.0	U	1.0	0.13	ug/L			12/28/20 16:55	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-467182/7
Matrix: Water
Analysis Batch: 467182

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/28/20 16:55	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/28/20 16:55	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/28/20 16:55	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/28/20 16:55	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/28/20 16:55	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/28/20 16:55	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/28/20 16:55	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/28/20 16:55	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/28/20 16:55	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/28/20 16:55	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/28/20 16:55	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/28/20 16:55	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 16:55	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/28/20 16:55	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/28/20 16:55	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/28/20 16:55	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/28/20 16:55	1
2-Hexanone	10	U	10	0.54	ug/L			12/28/20 16:55	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/28/20 16:55	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/28/20 16:55	1
Styrene	1.0	U	1.0	0.10	ug/L			12/28/20 16:55	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/28/20 16:55	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/28/20 16:55	1
Toluene	1.0	U	1.0	0.14	ug/L			12/28/20 16:55	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/28/20 16:55	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/28/20 16:55	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/28/20 16:55	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/28/20 16:55	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/28/20 16:55	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/28/20 16:55	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/28/20 16:55	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/28/20 16:55	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/28/20 16:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/28/20 16:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/28/20 16:55	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/28/20 16:55	1
Methyl acetate	10	U	10	1.7	ug/L			12/28/20 16:55	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/28/20 16:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/28/20 16:55	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/28/20 16:55	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/28/20 16:55	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/28/20 16:55	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/28/20 16:55	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/28/20 16:55	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/28/20 16:55	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/28/20 16:55	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-467182/7
Matrix: Water
Analysis Batch: 467182

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

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130		12/28/20 16:55	1
4-Bromofluorobenzene (Surr)	104		47 - 134		12/28/20 16:55	1
Toluene-d8 (Surr)	80		69 - 122		12/28/20 16:55	1
Dibromofluoromethane (Surr)	93		78 - 129		12/28/20 16:55	1

Lab Sample ID: LCS 240-467182/4
Matrix: Water
Analysis Batch: 467182

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	17.8		ug/L		89	33 - 155
Benzene	10.0	9.68		ug/L		97	77 - 123
Bromodichloromethane	10.0	9.81		ug/L		98	73 - 122
Bromoform	10.0	11.4		ug/L		114	47 - 133
Bromomethane	10.0	11.4		ug/L		114	48 - 144
2-Butanone (MEK)	20.0	13.6		ug/L		68	41 - 151
Carbon disulfide	10.0	9.70		ug/L		97	67 - 127
Carbon tetrachloride	10.0	9.47		ug/L		95	61 - 142
Chlorobenzene	10.0	9.74		ug/L		97	80 - 120
Chloroethane	10.0	9.85		ug/L		98	41 - 147
Chloroform	10.0	9.90		ug/L		99	74 - 127
Chloromethane	10.0	12.0		ug/L		120	46 - 148
1,1-Dichloroethane	10.0	9.18		ug/L		92	74 - 126
1,2-Dichloroethane	10.0	9.93		ug/L		99	66 - 129
1,1-Dichloroethene	10.0	9.78		ug/L		98	73 - 129
1,2-Dichloropropane	10.0	9.65		ug/L		97	79 - 127
cis-1,3-Dichloropropene	10.0	8.96		ug/L		90	68 - 128
trans-1,3-Dichloropropene	10.0	8.04		ug/L		80	64 - 120
Ethylbenzene	10.0	9.28		ug/L		93	80 - 120
2-Hexanone	20.0	14.9		ug/L		75	43 - 142
Methylene Chloride	10.0	10.9		ug/L		109	63 - 134
4-Methyl-2-pentanone (MIBK)	20.0	15.1		ug/L		75	43 - 145
Styrene	10.0	10.2		ug/L		102	75 - 121
1,1,2,2-Tetrachloroethane	10.0	7.39		ug/L		74	45 - 151
Tetrachloroethene	10.0	9.08		ug/L		91	70 - 125
Toluene	10.0	8.73		ug/L		87	79 - 122
Trichloroethene	10.0	10.0		ug/L		100	71 - 121
Vinyl chloride	10.0	9.55		ug/L		96	61 - 134
Xylenes, Total	20.0	19.4		ug/L		97	78 - 122
1,1,1-Trichloroethane	10.0	9.33		ug/L		93	65 - 141
1,1,2-Trichloroethane	10.0	8.84		ug/L		88	79 - 121
Cyclohexane	10.0	8.49		ug/L		85	69 - 133
1,2-Dibromo-3-Chloropropane	10.0	8.15		ug/L		81	34 - 136
1,2-Dibromoethane	10.0	9.26		ug/L		93	73 - 120
Dichlorodifluoromethane	10.0	12.1		ug/L		121	35 - 137
cis-1,2-Dichloroethene	10.0	9.63		ug/L		96	75 - 124
trans-1,2-Dichloroethene	10.0	9.00		ug/L		90	74 - 130
Isopropylbenzene	10.0	10.6		ug/L		106	73 - 123

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-467182/4
Matrix: Water
Analysis Batch: 467182

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl acetate	20.0	15.4		ug/L		77	47 - 140
Methyl tert-butyl ether	10.0	8.18		ug/L		82	57 - 127
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	10.5		ug/L		105	54 - 148
1,2,4-Trichlorobenzene	10.0	8.90		ug/L		89	47 - 120
1,2-Dichlorobenzene	10.0	10.0		ug/L		100	74 - 120
1,3-Dichlorobenzene	10.0	9.44		ug/L		94	74 - 120
1,4-Dichlorobenzene	10.0	9.88		ug/L		99	75 - 120
Trichlorofluoromethane	10.0	10.4		ug/L		104	52 - 148
Dibromochloromethane	10.0	9.28		ug/L		93	75 - 120
Methylcyclohexane	10.0	8.92		ug/L		89	64 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*75 - 130*
4-Bromofluorobenzene (Surr)	*105*		*47 - 134*
Toluene-d8 (Surr)	*79*		*69 - 122*
Dibromofluoromethane (Surr)	*88*		*78 - 129*

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(75-130)	(47-134)	(69-122)	(78-129)
240-142183-1	GW-12607-121720-DA-027	91	95	82	92
240-142183-1 MS	GW-12607-121720-DA-027	82	107	81	88
240-142183-1 MSD	GW-12607-121720-DA-027	86	102	81	90
240-142183-2	GW-12607-121720-DA-028	99	103	81	94
240-142183-3	GW-12607-121720-DA-029	93	104	79	89
LCS 240-466784/4	Lab Control Sample	83	104	84	88
LCS 240-467182/4	Lab Control Sample	87	105	79	88
MB 240-466784/7	Method Blank	87	91	85	85
MB 240-467182/7	Method Blank	91	104	80	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-142183-1

Client Sample ID: GW-12607-121720-DA-027
Lab Sample ID: 240-142183-1
Date Collected: 12/17/20 12:45
Matrix: Water
Date Received: 12/18/20 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	466784	12/23/20 20:16	LRW	TAL CAN

Client Sample ID: GW-12607-121720-DA-028
Lab Sample ID: 240-142183-2
Date Collected: 12/17/20 13:45
Matrix: Water
Date Received: 12/18/20 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		2.5	467182	12/28/20 20:40	LRW	TAL CAN

Client Sample ID: GW-12607-121720-DA-029
Lab Sample ID: 240-142183-3
Date Collected: 12/17/20 14:45
Matrix: Water
Date Received: 12/18/20 12:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	467182	12/28/20 21:05	LRW	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-142183-1
Project/Site: 12607, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20
Minnesota	NELAP	OH00048	12-31-20
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21
West Virginia DEP	State	210	12-31-20

TestAmerica Canton
4101 Shuffel Street, N. W.
North Canton, OH 44720
Phone: 330.497.9396 Fax: 330.497.0772

3-0139

Chain of Custody Record

160652

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: C. MENICLE	Site Contact: C. MENICLE	Date: 12/17/20	COC No: 12607-TOS/20-01
Company Name: GHD SERVICES INC	Tel/Fax: 248 993 3400	Lab Contact: D. HEILER	Carrier: FED EX	1 of 1 COCs
Address: 26850 HAGGERTY RD	Analysis Turnaround Time			Sampler: D. ANTUS
City/State/Zip: FARM. HILLS/48331	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 248 893 3400	TAT if different from Below			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: ECKLEORD	☐ 1 week			
Site: LIVONIA, MI	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	VOCs	Sample Specific Notes:
GW-12607-121720-DA-027	12/17/20	1245	G	W	9	N	N	X	
-028	↓	1345	G	↓	3			X	
-029	↓	1445	G	↓	3			X	
TB-12607-121720	—	—	—	↓	1	N	N	X	

240-142183 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:			Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: GHD	Date/Time: 12/17/20 1545		Received by:	Company: FEDEX	Date/Time: 12-18-20 1200
Relinquished by:	Company:	Date/Time:		Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:		Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 142183

Client GHD Site Name

Cooler Received on 12-18-20 Opened on 12-18-20

Cooler unpacked by: Mattson

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # YA Foam Box Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF **+0.9** °C) Observed Cooler Temp. 3.0 °C Corrected Cooler Temp. 3.9 °C
   IR GUN #IR-12 (CF **+0.5**°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)? MS 12-18-20	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?	(Y)	(Y) (Y)
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes No	(NA) pH Strip Lot# **HC907861**
14. Were VOAs on the COC?	(Yes)	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

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

Concerning ____

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

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.

Sample(s) TB VOA were received in a broken container.

Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.

Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-143249-1
Client Project/Site: 12607-T06, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
1/25/2021 11:58:07 AM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

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www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Job ID: 240-143249-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-143249-1

Comments
Metals volume was not received for the EB and FB.

Receipt
The samples were received on 1/15/2021 10:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.2º C.

Metals
Method 6010B: Some requested practical quantitation limits (PQLs) fall below the laboratory's verified standard quantitation limit. The continuing calibration blanks and method blanks may not support the lower PQL.

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Qualifiers

Metals

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

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-143249-1	GW-12607-011321-DA-001	Water	01/13/21 11:45	01/15/21 10:00	
240-143249-4	GW-12607-011321-DA-004	Water	01/13/21 13:55	01/15/21 10:00	
240-143249-5	GW-12607-011321-DA-005	Water	01/13/21 15:00	01/15/21 10:00	
240-143249-6	GW-12607-011421-DA-006	Water	01/14/21 10:05	01/15/21 10:00	
240-143249-7	GW-12607-011421-DA-007	Water	01/14/21 12:55	01/15/21 10:00	
240-143249-8	GW-12607-011421-DA-008	Water	01/14/21 13:00	01/15/21 10:00	
240-143249-9	GW-12607-011421-DA-009	Water	01/14/21 13:00	01/15/21 10:00	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Client Sample ID: GW-12607-011321-DA-001 — Lab Sample ID: 240-143249-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1400		100	23	ug/L	1		6010B	Total Recoverable
Chromium	2.4	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	6.5	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-011321-DA-004 — Lab Sample ID: 240-143249-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	330		100	23	ug/L	1		6010B	Total Recoverable
Chromium	26		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	36		20	2.2	ug/L	1		6010B	Total Recoverable
Boron	330		100	23	ug/L	1		6010B	Dissolved
Chromium	13		5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	14	J	40	2.2	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12607-011321-DA-005 — Lab Sample ID: 240-143249-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1100		100	23	ug/L	1		6010B	Total Recoverable
Chromium	2.7	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	3.7	J	20	2.2	ug/L	1		6010B	Total Recoverable
Boron	1100		100	23	ug/L	1		6010B	Dissolved
Chromium	1.5	J	5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	3.8	J	40	2.2	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12607-011421-DA-006 — Lab Sample ID: 240-143249-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	2400		100	23	ug/L	1		6010B	Total Recoverable
Chromium	2.3	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	3.1	J	20	2.2	ug/L	1		6010B	Total Recoverable
Boron	2400		100	23	ug/L	1		6010B	Dissolved
Chromium	1.8	J	5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	3.8	J	40	2.2	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12607-011421-DA-007 — Lab Sample ID: 240-143249-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	970		100	23	ug/L	1		6010B	Total Recoverable
Chromium	2.0	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	3.3	J	20	2.2	ug/L	1		6010B	Total Recoverable
Boron	990		100	23	ug/L	1		6010B	Dissolved
Chromium	1.8	J	5.0	0.63	ug/L	1		6010B	Dissolved

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Client Sample ID: GW-12607-011421-DA-007 (Continued) — Lab Sample ID: 240-143249-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	3.9	J	40	2.2	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12607-011421-DA-008 — Lab Sample ID: 240-143249-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	4600		100	23	ug/L	1		6010B	Total Recoverable
Chromium	2.3	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	6.3	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-011421-DA-009 — Lab Sample ID: 240-143249-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	4700		100	23	ug/L	1		6010B	Total Recoverable
Chromium	2.3	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	6.7	J	20	2.2	ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011321-DA-001
Date Collected: 01/13/21 11:45
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1400		100	23	ug/L		01/18/21 14:00	01/21/21 02:32	1
Chromium	2.4	J	5.0	0.63	ug/L		01/18/21 14:00	01/21/21 17:13	1
Nickel	6.5	J	20	2.2	ug/L		01/18/21 14:00	01/21/21 02:32	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011321-DA-004
Date Collected: 01/13/21 13:55
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	330		100	23	ug/L		01/18/21 14:00	01/21/21 02:36	1
Chromium	26		5.0	0.63	ug/L		01/18/21 14:00	01/21/21 17:25	1
Nickel	36		20	2.2	ug/L		01/18/21 14:00	01/21/21 02:36	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011321-DA-005
Date Collected: 01/13/21 15:00
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1100		100	23	ug/L		01/18/21 14:00	01/21/21 02:53	1
Chromium	2.7	J	5.0	0.63	ug/L		01/18/21 14:00	01/21/21 17:34	1
Nickel	3.7	J	20	2.2	ug/L		01/18/21 14:00	01/21/21 02:53	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011421-DA-006
Date Collected: 01/14/21 10:05
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2400		100	23	ug/L		01/18/21 14:00	01/21/21 03:02	1
Chromium	2.3	J	5.0	0.63	ug/L		01/18/21 14:00	01/21/21 17:43	1
Nickel	3.1	J	20	2.2	ug/L		01/18/21 14:00	01/21/21 03:02	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011421-DA-007
Date Collected: 01/14/21 12:55
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	970		100	23	ug/L		01/18/21 14:00	01/21/21 03:11	1
Chromium	2.0	J	5.0	0.63	ug/L		01/18/21 14:00	01/21/21 17:52	1
Nickel	3.3	J	20	2.2	ug/L		01/18/21 14:00	01/21/21 03:11	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011421-DA-008
Date Collected: 01/14/21 13:00
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	4600		100	23	ug/L		01/18/21 14:00	01/21/21 03:19	1
Chromium	2.3	J	5.0	0.63	ug/L		01/18/21 14:00	01/21/21 18:00	1
Nickel	6.3	J	20	2.2	ug/L		01/18/21 14:00	01/21/21 03:19	1

Client: GHD Services Inc.
Job ID: 240-143249-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011421-DA-009
Lab Sample ID: 240-143249-9
Date Collected: 01/14/21 13:00
Matrix: Water
Date Received: 01/15/21 10:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	4700		100	23	ug/L		01/18/21 14:00	01/21/21 03:24	1
Chromium	2.3	J	5.0	0.63	ug/L		01/18/21 14:00	01/21/21 18:05	1
Nickel	6.7	J	20	2.2	ug/L		01/18/21 14:00	01/21/21 03:24	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-011321-DA-004
Date Collected: 01/13/21 13:55
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	330		100	23	ug/L		01/18/21 14:00	01/21/21 02:40	1
Chromium	13		5.0	0.63	ug/L		01/18/21 14:00	01/21/21 17:30	1
Nickel	14	J	40	2.2	ug/L		01/18/21 14:00	01/21/21 02:40	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-011321-DA-005
Date Collected: 01/13/21 15:00
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1100		100	23	ug/L		01/18/21 14:00	01/21/21 02:58	1
Chromium	1.5	J	5.0	0.63	ug/L		01/18/21 14:00	01/21/21 17:38	1
Nickel	3.8	J	40	2.2	ug/L		01/18/21 14:00	01/21/21 02:58	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-011421-DA-006
Date Collected: 01/14/21 10:05
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2400		100	23	ug/L		01/18/21 14:00	01/21/21 03:06	1
Chromium	1.8	J	5.0	0.63	ug/L		01/18/21 14:00	01/21/21 17:47	1
Nickel	3.8	J	40	2.2	ug/L		01/18/21 14:00	01/21/21 03:06	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-011421-DA-007
Date Collected: 01/14/21 12:55
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	990		100	23	ug/L		01/18/21 14:00	01/21/21 03:15	1
Chromium	1.8	J	5.0	0.63	ug/L		01/18/21 14:00	01/21/21 17:56	1
Nickel	3.9	J	40	2.2	ug/L		01/18/21 14:00	01/21/21 03:15	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Metals

Prep Batch: 469493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143249-1	GW-12607-011321-DA-001	Total Recoverable	Water	3005A	
240-143249-4	GW-12607-011321-DA-004	Dissolved	Water	3005A	
240-143249-4	GW-12607-011321-DA-004	Total Recoverable	Water	3005A	
240-143249-5	GW-12607-011321-DA-005	Dissolved	Water	3005A	
240-143249-5	GW-12607-011321-DA-005	Total Recoverable	Water	3005A	
240-143249-6	GW-12607-011421-DA-006	Dissolved	Water	3005A	
240-143249-6	GW-12607-011421-DA-006	Total Recoverable	Water	3005A	
240-143249-7	GW-12607-011421-DA-007	Dissolved	Water	3005A	
240-143249-7	GW-12607-011421-DA-007	Total Recoverable	Water	3005A	
240-143249-8	GW-12607-011421-DA-008	Total Recoverable	Water	3005A	
240-143249-9	GW-12607-011421-DA-009	Total Recoverable	Water	3005A	
MB 240-469493/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-469493/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 469971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143249-1	GW-12607-011321-DA-001	Total Recoverable	Water	6010B	469493
240-143249-4	GW-12607-011321-DA-004	Dissolved	Water	6010B	469493
240-143249-4	GW-12607-011321-DA-004	Total Recoverable	Water	6010B	469493
240-143249-5	GW-12607-011321-DA-005	Dissolved	Water	6010B	469493
240-143249-5	GW-12607-011321-DA-005	Total Recoverable	Water	6010B	469493
240-143249-6	GW-12607-011421-DA-006	Dissolved	Water	6010B	469493
240-143249-6	GW-12607-011421-DA-006	Total Recoverable	Water	6010B	469493
240-143249-7	GW-12607-011421-DA-007	Dissolved	Water	6010B	469493
240-143249-7	GW-12607-011421-DA-007	Total Recoverable	Water	6010B	469493
240-143249-8	GW-12607-011421-DA-008	Total Recoverable	Water	6010B	469493
240-143249-9	GW-12607-011421-DA-009	Total Recoverable	Water	6010B	469493
MB 240-469493/1-A	Method Blank	Total Recoverable	Water	6010B	469493
LCS 240-469493/2-A	Lab Control Sample	Total Recoverable	Water	6010B	469493

Analysis Batch: 470021

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143249-1	GW-12607-011321-DA-001	Total Recoverable	Water	6010B	469493
240-143249-4	GW-12607-011321-DA-004	Dissolved	Water	6010B	469493
240-143249-4	GW-12607-011321-DA-004	Total Recoverable	Water	6010B	469493
240-143249-5	GW-12607-011321-DA-005	Dissolved	Water	6010B	469493
240-143249-5	GW-12607-011321-DA-005	Total Recoverable	Water	6010B	469493
240-143249-6	GW-12607-011421-DA-006	Dissolved	Water	6010B	469493
240-143249-6	GW-12607-011421-DA-006	Total Recoverable	Water	6010B	469493
240-143249-7	GW-12607-011421-DA-007	Dissolved	Water	6010B	469493
240-143249-7	GW-12607-011421-DA-007	Total Recoverable	Water	6010B	469493
240-143249-8	GW-12607-011421-DA-008	Total Recoverable	Water	6010B	469493
240-143249-9	GW-12607-011421-DA-009	Total Recoverable	Water	6010B	469493
MB 240-469493/1-A	Method Blank	Total Recoverable	Water	6010B	469493
LCS 240-469493/2-A	Lab Control Sample	Total Recoverable	Water	6010B	469493

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143249-1

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-469493/1-A
Matrix: Water
Analysis Batch: 469971

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 469493

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	100	U	100	23	ug/L		01/18/21 14:00	01/21/21 01:23	1
Nickel	20	U	20	2.2	ug/L		01/18/21 14:00	01/21/21 01:23	1

Lab Sample ID: MB 240-469493/1-A
Matrix: Water
Analysis Batch: 470021

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 469493

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0	0.63	ug/L		01/18/21 14:00	01/21/21 16:05	1

Lab Sample ID: LCS 240-469493/2-A
Matrix: Water
Analysis Batch: 469971

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 469493

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	983		ug/L		98	80 - 120
Nickel	1000	916		ug/L		92	80 - 120

Lab Sample ID: LCS 240-469493/2-A
Matrix: Water
Analysis Batch: 470021

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 469493

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1000	956		ug/L		96	80 - 120

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-143249-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-011321-DA-001
Lab Sample ID: 240-143249-1
Date Collected: 01/13/21 11:45
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	469971	01/21/21 02:32	WKD	TAL CAN
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470021	01/21/21 17:13	WKD	TAL CAN

Client Sample ID: GW-12607-011321-DA-004
Lab Sample ID: 240-143249-4
Date Collected: 01/13/21 13:55
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	469971	01/21/21 02:40	WKD	TAL CAN
Dissolved	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	470021	01/21/21 17:30	WKD	TAL CAN
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	469971	01/21/21 02:36	WKD	TAL CAN
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470021	01/21/21 17:25	WKD	TAL CAN

Client Sample ID: GW-12607-011321-DA-005
Lab Sample ID: 240-143249-5
Date Collected: 01/13/21 15:00
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	469971	01/21/21 02:58	WKD	TAL CAN
Dissolved	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	470021	01/21/21 17:38	WKD	TAL CAN
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	469971	01/21/21 02:53	WKD	TAL CAN
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470021	01/21/21 17:34	WKD	TAL CAN

Client Sample ID: GW-12607-011421-DA-006
Lab Sample ID: 240-143249-6
Date Collected: 01/14/21 10:05
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	469971	01/21/21 03:06	WKD	TAL CAN
Dissolved	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	470021	01/21/21 17:47	WKD	TAL CAN
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	469971	01/21/21 03:02	WKD	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-143249-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-011421-DA-006
Lab Sample ID: 240-143249-6
Date Collected: 01/14/21 10:05
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470021	01/21/21 17:43	WKD	TAL CAN

Client Sample ID: GW-12607-011421-DA-007
Lab Sample ID: 240-143249-7
Date Collected: 01/14/21 12:55
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	469971	01/21/21 03:15	WKD	TAL CAN
Dissolved	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	470021	01/21/21 17:56	WKD	TAL CAN
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	469971	01/21/21 03:11	WKD	TAL CAN
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470021	01/21/21 17:52	WKD	TAL CAN

Client Sample ID: GW-12607-011421-DA-008
Lab Sample ID: 240-143249-8
Date Collected: 01/14/21 13:00
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	469971	01/21/21 03:19	WKD	TAL CAN
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470021	01/21/21 18:00	WKD	TAL CAN

Client Sample ID: GW-12607-011421-DA-009
Lab Sample ID: 240-143249-9
Date Collected: 01/14/21 13:00
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	469971	01/21/21 03:24	WKD	TAL CAN
Total Recoverable	Prep	3005A			469493	01/18/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470021	01/21/21 18:05	WKD	TAL CAN

Laboratory References:
TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-143249-1
Project/Site: 12607-T06, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20 *
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21 *
West Virginia DEP	State	210	12-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

4.1/4.2

Chain of Custody Record

MICHIGAN 190

Eurofins | Environment Testing TestAmerica

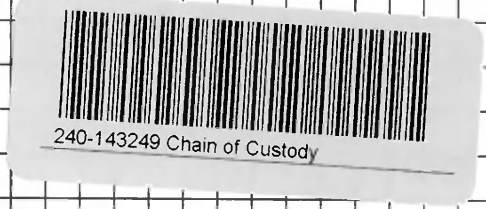
Address: _____

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: C. MEINCKE	Site Contact: C. MEINCKE	Date: 1/13/21	COC No:
Company Name: GHD SERVICES INC	Tel/Email: 248 893 3400	Lab Contact: D. HECKLER	Carrier: FEDEX	_____ of _____ COCs
Address: 26850 HAGGERTY RD	Analysis Turnaround Time			Sampler: D. ANTULIS
City/State/Zip: FARMINGTON HILLS, MI 48331	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 248 893 3400	TAT if different from Below _____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: ECKLES RD	☐ 1 week			
Site: LIVONIA, MI	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	PFAS	METALS	Sample Specific Notes:
GW-12607-011321-DA-001	1/13/21	1145	G	W	3			X	X	
EB-12607-011321-DA-002		1130			2			X	X	
FB-12607-011321-DA-003		1135			2			X	X	
GW-12607-011321-DA-004		1355			4			X	X	
GW-12607-011321-DA-005		1510			4			X	X	
GW-12607-011421-DA-006	1/14/21	1005	G	W	4			X	X	
-007		1255			4			X	X	
-008		1300			3			X	X	
-009		1310			3			X	X	



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

PROJ REF # 12607, RALER ECKLES RD

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: GHD	Date/Time: 1/14/21 1700	Received by:	Company: FEDEX	Date/Time: 1-15-21 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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1/25/2021

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 143249**
Canton Facility

Client GHD Site Name

Cooler Received on 1-15-21 Opened on 1-15-21

Cooler unpacked by: Matt S

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # NA Foam Box Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 4.1 °C Corrected Cooler Temp. 4.2 °C
   IR GUN #IR-12 (CF +0.2°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? (Yes) No NA pH Strip Lot# HC907861
14. Were VOAs on the COC? Yes (No)
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #____ Yes (No)
17. Was a LL Hg or Me Hg trip blank present? ____ Yes (No)

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

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

Concerning ____

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
GW-12607-011321-DA-001	240-143249-C-1	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011321-DA-004	240-143249-C-4	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011321-DA-004	240-143249-D-4	Plastic 250ml - w/nitric - dis	<2			
GW-12607-011321-DA-005	240-143249-C-5	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011321-DA-005	240-143249-D-5	Plastic 250ml - w/nitric - dis	<2			
GW-12607-011421-DA-006	240-143249-C-6	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011421-DA-006	240-143249-D-6	Plastic 250ml - w/nitric - dis	<2			
GW-12607-011421-DA-007	240-143249-C-7	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011421-DA-007	240-143249-D-7	Plastic 250ml - w/nitric - dis	<2			
GW-12607-011421-DA-008	240-143249-C-8	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011421-DA-009	240-143249-C-9	Plastic 250ml - with Nitric Acid	<2			

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-143249-2
Client Project/Site: 12607-T31, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
1/25/2021 11:53:52 AM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Job ID: 240-143249-2

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-143249-2

Comments
No additional comments.

Receipt
The samples were received on 1/15/2021 10:00 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.2º C.

LCMS
Method 537 (modified): The transition mass ratio for the indicated analytes were outside of the established ratio limits. The qualitative identification of the analytes have some degree of uncertainty. However, analyst judgment was used to positively identify the analytes: GW-12607-011321-DA-001 (240-143249-1), GW-12607-011321-DA-004 (240-143249-4), GW-12607-011321-DA-005 (240-143249-5), GW-12607-011421-DA-007 (240-143249-7), GW-12607-011421-DA-008 (240-143249-8) and GW-12607-011421-DA-009 (240-143249-9).

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-8:2 FTS in the following sample: GW-12607-011421-DA-009 (240-143249-9). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-6:2 FTS and M2-8:2 FTS in the following samples: GW-12607-011421-DA-008 (240-143249-8). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-6:2 FTS in the following sample: GW-12607-011321-DA-001 (240-143249-1). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-452550 and 320-452550.

Method 3535: The following samples were cloudy prior to extraction: GW-12607-011321-DA-001 (240-143249-1) and GW-12607-011321-DA-004 (240-143249-4)

Method 3535: The following samples were beige prior to extraction: GW-12607-011421-DA-006 (240-143249-6), GW-12607-011421-DA-008 (240-143249-8) and GW-12607-011421-DA-009 (240-143249-9)

Method 3535: The following sample contained sediments which clogged the cartridge during extraction: GW-12607-011321-DA-004 (240-143249-4)

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

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 240-143249-2
Project/Site: 12607-T31, RACER Eckles Rd

Qualifiers

LCMS

Qualifier	Qualifier Description
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Job ID: 240-143249-2
Project/Site: 12607-T31, RACER Eckles Rd

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-143249-1	GW-12607-011321-DA-001	Water	01/13/21 11:45	01/15/21 10:00	
240-143249-2	EB-12607-011321-DA-002	Water	01/13/21 11:30	01/15/21 10:00	
240-143249-3	FB-12607-011321-DA-003	Water	01/13/21 11:35	01/15/21 10:00	
240-143249-4	GW-12607-011321-DA-004	Water	01/13/21 13:55	01/15/21 10:00	
240-143249-5	GW-12607-011321-DA-005	Water	01/13/21 15:00	01/15/21 10:00	
240-143249-6	GW-12607-011421-DA-006	Water	01/14/21 10:05	01/15/21 10:00	
240-143249-7	GW-12607-011421-DA-007	Water	01/14/21 12:55	01/15/21 10:00	
240-143249-8	GW-12607-011421-DA-008	Water	01/14/21 13:00	01/15/21 10:00	
240-143249-9	GW-12607-011421-DA-009	Water	01/14/21 13:00	01/15/21 10:00	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143249-2

Client Sample ID: GW-12607-011321-DA-001 — Lab Sample ID: 240-143249-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.6		4.7	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	4.5		1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	4.3		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.0		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.9		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.74	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.8	J I	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.92	J I	1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-12607-011321-DA-002 — Lab Sample ID: 240-143249-2

No Detections.

Client Sample ID: FB-12607-011321-DA-003 — Lab Sample ID: 240-143249-3

No Detections.

Client Sample ID: GW-12607-011321-DA-004 — Lab Sample ID: 240-143249-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.8		4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.1		1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.76	J	1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.24	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.36	J I	1.8	0.28	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-011321-DA-005 — Lab Sample ID: 240-143249-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.9		4.8	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.2		1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.1		1.9	0.56	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.4		1.9	0.82	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.73	J	1.9	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.8	I	1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.2	J I	1.9	0.52	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-011421-DA-006 — Lab Sample ID: 240-143249-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.8	J	4.5	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.0	J	1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.0	J	1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.47	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.29	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143249-2

Client Sample ID: GW-12607-011421-DA-007 — Lab Sample ID: 240-143249-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.6		4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.7	J	1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.7		1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.8		1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	11		1.8	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.50	J	1.8	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.95	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.2	I	1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.89	J I	1.8	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	21	I	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-011421-DA-008 — Lab Sample ID: 240-143249-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.4		4.5	2.1	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.2		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.2		1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	11		1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.52	J	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	1.8	I	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.3	I	1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.5	J I	1.8	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	34	I	1.8	0.48	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-011421-DA-009 — Lab Sample ID: 240-143249-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.0		4.7	2.2	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.2		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.3		1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	11		1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.50	J	1.9	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	1.8	J I	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.3	I	1.9	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.5	J I	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	37	I	1.9	0.50	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143249-2

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011321-DA-001
Date Collected: 01/13/21 11:45
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.6**		4.7	2.3	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluoropentanoic acid (PFPeA)	**4.5**		1.9	0.46	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorohexanoic acid (PFHxA)	**4.3**		1.9	0.55	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluoroheptanoic acid (PFHpA)	**2.0**		1.9	0.24	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorooctanoic acid (PFOA)	**2.9**		1.9	0.80	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.69	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.9	0.19	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluoropentanesulfonic acid (PFPeS)	**0.74**	**J**	1.9	0.28	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorohexanesulfonic acid (PFHxS)	**1.8**	**J I**	1.9	0.54	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorooctanesulfonic acid (PFOS)	**0.92**	**J I**	1.9	0.51	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		01/17/21 17:49	01/19/21 23:53	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.92	ng/L		01/17/21 17:49	01/19/21 23:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		01/17/21 17:49	01/19/21 23:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		01/17/21 17:49	01/19/21 23:53	1
4:2 FTS	1.9	U	1.9	0.23	ng/L		01/17/21 17:49	01/19/21 23:53	1
6:2 FTS	4.7	U	4.7	2.4	ng/L		01/17/21 17:49	01/19/21 23:53	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		01/17/21 17:49	01/19/21 23:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.38	ng/L		01/17/21 17:49	01/19/21 23:53	1
HFPO-DA (GenX)	3.8	U	3.8	1.4	ng/L		01/17/21 17:49	01/19/21 23:53	1
F-53B Major	1.9	U	1.9	0.23	ng/L		01/17/21 17:49	01/19/21 23:53	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		01/17/21 17:49	01/19/21 23:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C5 PFPeA	*71*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C2 PFHxA	*103*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C4 PFHpA	*110*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C4 PFOA	*118*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C5 PFNA	*121*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C2 PFDA	*115*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C2 PFUnA	*116*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C2 PFDoA	*120*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C2 PFTeDA	*103*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C3 PFBS	*93*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
18O2 PFHxS	*107*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C4 PFOS	*107*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*
13C8 FOSA	*115*		*25 - 150*	*01/17/21 17:49*	*01/19/21 23:53*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011321-DA-001
Date Collected: 01/13/21 11:45
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-1
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	103		25 - 150	01/17/21 17:49	01/19/21 23:53	1
d5-NEtFOSAA	105		25 - 150	01/17/21 17:49	01/19/21 23:53	1
M2-6:2 FTS	153	*5+	25 - 150	01/17/21 17:49	01/19/21 23:53	1
M2-8:2 FTS	136		25 - 150	01/17/21 17:49	01/19/21 23:53	1
M2-4:2 FTS	140		25 - 150	01/17/21 17:49	01/19/21 23:53	1
13C3 HFPO-DA	94		25 - 150	01/17/21 17:49	01/19/21 23:53	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: EB-12607-011321-DA-002
Date Collected: 01/13/21 11:30
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	4.4	U	4.4	2.1	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	0.43	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	0.51	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	0.22	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.75	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.27	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.96	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.48	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.1	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.64	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.26	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	0.50	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.47	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.32	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		01/17/21 17:49	01/20/21 00:02	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.86	ng/L		01/17/21 17:49	01/20/21 00:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		01/17/21 17:49	01/20/21 00:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.1	ng/L		01/17/21 17:49	01/20/21 00:02	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		01/17/21 17:49	01/20/21 00:02	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		01/17/21 17:49	01/20/21 00:02	1
8:2 FTS	1.8	U	1.8	0.40	ng/L		01/17/21 17:49	01/20/21 00:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.35	ng/L		01/17/21 17:49	01/20/21 00:02	1
HFPO-DA (GenX)	3.5	U	3.5	1.3	ng/L		01/17/21 17:49	01/20/21 00:02	1
F-53B Major	1.8	U	1.8	0.21	ng/L		01/17/21 17:49	01/20/21 00:02	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		01/17/21 17:49	01/20/21 00:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*109*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C5 PFPeA	*109*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C2 PFHxA	*107*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C4 PFHpA	*112*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C4 PFOA	*125*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C5 PFNA	*121*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C2 PFDA	*118*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C2 PFUnA	*111*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C2 PFDoA	*140*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C2 PFTeDA	*112*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C3 PFBS	*108*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
18O2 PFHxS	*111*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C4 PFOS	*112*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
13C8 FOSA	*111*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
d3-NMeFOSAA	*124*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*
d5-NEtFOSAA	*115*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:02*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: EB-12607-011321-DA-002
Date Collected: 01/13/21 11:30
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-2
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	141		25 - 150	01/17/21 17:49	01/20/21 00:02	1
M2-8:2 FTS	134		25 - 150	01/17/21 17:49	01/20/21 00:02	1
M2-4:2 FTS	128		25 - 150	01/17/21 17:49	01/20/21 00:02	1
13C3 HFPO-DA	99		25 - 150	01/17/21 17:49	01/20/21 00:02	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: FB-12607-011321-DA-003
Date Collected: 01/13/21 11:35
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	4.6	U	4.6	2.2	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	0.45	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	0.53	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	0.23	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.78	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.67	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.27	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	0.52	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.49	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		01/17/21 17:49	01/20/21 00:11	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.90	ng/L		01/17/21 17:49	01/20/21 00:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		01/17/21 17:49	01/20/21 00:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		01/17/21 17:49	01/20/21 00:11	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		01/17/21 17:49	01/20/21 00:11	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		01/17/21 17:49	01/20/21 00:11	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		01/17/21 17:49	01/20/21 00:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.37	ng/L		01/17/21 17:49	01/20/21 00:11	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		01/17/21 17:49	01/20/21 00:11	1
F-53B Major	1.8	U	1.8	0.22	ng/L		01/17/21 17:49	01/20/21 00:11	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		01/17/21 17:49	01/20/21 00:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*97*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C5 PFPeA	*95*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C2 PFHxA	*94*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C4 PFHpA	*100*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C4 PFOA	*113*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C5 PFNA	*109*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C2 PFDA	*99*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C2 PFUnA	*111*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C2 PFDoA	*107*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C2 PFTeDA	*99*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C3 PFBS	*96*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
18O2 PFHxS	*96*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C4 PFOS	*100*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
13C8 FOSA	*99*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
d3-NMeFOSAA	*107*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*
d5-NEtFOSAA	*112*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:11*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: FB-12607-011321-DA-003
Date Collected: 01/13/21 11:35
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-3
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	121		25 - 150	01/17/21 17:49	01/20/21 00:11	1
M2-8:2 FTS	114		25 - 150	01/17/21 17:49	01/20/21 00:11	1
M2-4:2 FTS	109		25 - 150	01/17/21 17:49	01/20/21 00:11	1
13C3 HFPO-DA	88		25 - 150	01/17/21 17:49	01/20/21 00:11	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011321-DA-004
Date Collected: 01/13/21 13:55
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.8**		4.6	2.2	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluoropentanoic acid (PFPeA)	**3.1**		1.8	0.45	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorohexanoic acid (PFHxA)	**0.76**	**J**	1.8	0.53	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluoroheptanoic acid (PFHpA)	**0.24**	**J**	1.8	0.23	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.78	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.51	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.67	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluoropentanesulfonic acid (PFPeS)	**0.36**	**J I**	1.8	0.28	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	0.52	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.50	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		01/17/21 17:49	01/20/21 00:20	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.90	ng/L		01/17/21 17:49	01/20/21 00:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		01/17/21 17:49	01/20/21 00:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		01/17/21 17:49	01/20/21 00:20	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		01/17/21 17:49	01/20/21 00:20	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		01/17/21 17:49	01/20/21 00:20	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		01/17/21 17:49	01/20/21 00:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.37	ng/L		01/17/21 17:49	01/20/21 00:20	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		01/17/21 17:49	01/20/21 00:20	1
F-53B Major	1.8	U	1.8	0.22	ng/L		01/17/21 17:49	01/20/21 00:20	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		01/17/21 17:49	01/20/21 00:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*58*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C5 PFPeA	*63*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C2 PFHxA	*85*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C4 PFHpA	*92*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C4 PFOA	*110*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C5 PFNA	*101*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C2 PFDA	*87*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C2 PFUnA	*76*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C2 PFDoA	*84*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C2 PFTeDA	*80*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C3 PFBS	*86*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
18O2 PFHxS	*96*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C4 PFOS	*96*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
13C8 FOSA	*99*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
d3-NMeFOSAA	*84*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*
d5-NEtFOSAA	*80*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:20*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011321-DA-004
Date Collected: 01/13/21 13:55
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-4
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	135		25 - 150	01/17/21 17:49	01/20/21 00:20	1
M2-8:2 FTS	108		25 - 150	01/17/21 17:49	01/20/21 00:20	1
M2-4:2 FTS	119		25 - 150	01/17/21 17:49	01/20/21 00:20	1
13C3 HFPO-DA	79		25 - 150	01/17/21 17:49	01/20/21 00:20	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011321-DA-005
Date Collected: 01/13/21 15:00
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.9**		4.8	2.3	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluoropentanoic acid (PFPeA)	**2.2**		1.9	0.47	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorohexanoic acid (PFHxA)	**2.1**		1.9	0.56	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluoroheptanoic acid (PFHpA)	**1.5**	**J**	1.9	0.24	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorooctanoic acid (PFOA)	**4.4**		1.9	0.82	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.3	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.70	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorobutanesulfonic acid (PFBS)	**2.0**		1.9	0.19	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluoropentanesulfonic acid (PFPeS)	**0.73**	**J**	1.9	0.29	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorohexanesulfonic acid (PFHxS)	**2.8**	**I**	1.9	0.55	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorooctanesulfonic acid (PFOS)	**1.2**	**J I**	1.9	0.52	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.36	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		01/17/21 17:49	01/20/21 00:47	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.94	ng/L		01/17/21 17:49	01/20/21 00:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.8	U	4.8	1.2	ng/L		01/17/21 17:49	01/20/21 00:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.8	U	4.8	1.3	ng/L		01/17/21 17:49	01/20/21 00:47	1
4:2 FTS	1.9	U	1.9	0.23	ng/L		01/17/21 17:49	01/20/21 00:47	1
6:2 FTS	4.8	U	4.8	2.4	ng/L		01/17/21 17:49	01/20/21 00:47	1
8:2 FTS	1.9	U	1.9	0.44	ng/L		01/17/21 17:49	01/20/21 00:47	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.38	ng/L		01/17/21 17:49	01/20/21 00:47	1
HFPO-DA (GenX)	3.8	U	3.8	1.4	ng/L		01/17/21 17:49	01/20/21 00:47	1
F-53B Major	1.9	U	1.9	0.23	ng/L		01/17/21 17:49	01/20/21 00:47	1
F-53B Minor	1.9	U	1.9	0.31	ng/L		01/17/21 17:49	01/20/21 00:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*74*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C5 PFPeA	*72*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C2 PFHxA	*96*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C4 PFHpA	*102*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C4 PFOA	*110*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C5 PFNA	*113*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C2 PFDA	*102*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C2 PFUnA	*93*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C2 PFDoA	*118*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C2 PFTeDA	*105*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C3 PFBS	*93*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
18O2 PFHxS	*106*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C4 PFOS	*107*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*
13C8 FOSA	*115*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:47*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011321-DA-005
Date Collected: 01/13/21 15:00
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-5
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	106		25 - 150	01/17/21 17:49	01/20/21 00:47	1
d5-NEtFOSAA	107		25 - 150	01/17/21 17:49	01/20/21 00:47	1
M2-6:2 FTS	140		25 - 150	01/17/21 17:49	01/20/21 00:47	1
M2-8:2 FTS	131		25 - 150	01/17/21 17:49	01/20/21 00:47	1
M2-4:2 FTS	131		25 - 150	01/17/21 17:49	01/20/21 00:47	1
13C3 HFPO-DA	91		25 - 150	01/17/21 17:49	01/20/21 00:47	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011421-DA-006
Date Collected: 01/14/21 10:05
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.8**	**J**	4.5	2.2	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluoropentanoic acid (PFPeA)	**1.0**	**J**	1.8	0.44	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorohexanoic acid (PFHxA)	**1.0**	**J**	1.8	0.52	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	0.23	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.77	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.24	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.99	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.66	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorobutanesulfonic acid (PFBS)	**0.47**	**J**	1.8	0.18	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluoropentanesulfonic acid (PFPeS)	**0.29**	**J**	1.8	0.27	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	0.51	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.49	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		01/17/21 17:49	01/20/21 00:57	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.88	ng/L		01/17/21 17:49	01/20/21 00:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		01/17/21 17:49	01/20/21 00:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		01/17/21 17:49	01/20/21 00:57	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		01/17/21 17:49	01/20/21 00:57	1
6:2 FTS	4.5	U	4.5	2.3	ng/L		01/17/21 17:49	01/20/21 00:57	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		01/17/21 17:49	01/20/21 00:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		01/17/21 17:49	01/20/21 00:57	1
HFPO-DA (GenX)	3.6	U	3.6	1.4	ng/L		01/17/21 17:49	01/20/21 00:57	1
F-53B Major	1.8	U	1.8	0.22	ng/L		01/17/21 17:49	01/20/21 00:57	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		01/17/21 17:49	01/20/21 00:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*55*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C5 PFPeA	*68*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C2 PFHxA	*94*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C4 PFHpA	*106*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C4 PFOA	*116*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C5 PFNA	*114*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C2 PFDA	*106*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C2 PFUnA	*104*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C2 PFDoA	*98*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C2 PFTeDA	*87*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C3 PFBS	*93*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
18O2 PFHxS	*104*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C4 PFOS	*108*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
13C8 FOSA	*115*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
d3-NMeFOSAA	*103*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*
d5-NEtFOSAA	*101*		*25 - 150*	*01/17/21 17:49*	*01/20/21 00:57*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011421-DA-006
Date Collected: 01/14/21 10:05
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-6
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	141		25 - 150	01/17/21 17:49	01/20/21 00:57	1
M2-8:2 FTS	126		25 - 150	01/17/21 17:49	01/20/21 00:57	1
M2-4:2 FTS	117		25 - 150	01/17/21 17:49	01/20/21 00:57	1
13C3 HFPO-DA	89		25 - 150	01/17/21 17:49	01/20/21 00:57	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011421-DA-007
Date Collected: 01/14/21 12:55
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.6**		4.6	2.2	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluoropentanoic acid (PFPeA)	**1.7**	**J**	1.8	0.45	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorohexanoic acid (PFHxA)	**2.7**		1.8	0.53	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluoroheptanoic acid (PFHpA)	**2.8**		1.8	0.23	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorooctanoic acid (PFOA)	**11**		1.8	0.78	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorononanoic acid (PFNA)	**0.50**	**J**	1.8	0.25	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.67	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorobutanesulfonic acid (PFBS)	**2.0**		1.8	0.18	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluoropentanesulfonic acid (PFPeS)	**0.95**	**J**	1.8	0.27	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorohexanesulfonic acid (PFHxS)	**6.2**	**I**	1.8	0.52	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.89**	**J I**	1.8	0.17	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorooctanesulfonic acid (PFOS)	**21**	**I**	1.8	0.49	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		01/17/21 17:49	01/20/21 01:06	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.89	ng/L		01/17/21 17:49	01/20/21 01:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		01/17/21 17:49	01/20/21 01:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		01/17/21 17:49	01/20/21 01:06	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		01/17/21 17:49	01/20/21 01:06	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		01/17/21 17:49	01/20/21 01:06	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		01/17/21 17:49	01/20/21 01:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		01/17/21 17:49	01/20/21 01:06	1
HFPO-DA (GenX)	3.6	U	3.6	1.4	ng/L		01/17/21 17:49	01/20/21 01:06	1
F-53B Major	1.8	U	1.8	0.22	ng/L		01/17/21 17:49	01/20/21 01:06	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		01/17/21 17:49	01/20/21 01:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*69*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C5 PFPeA	*65*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C2 PFHxA	*95*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C4 PFHpA	*103*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C4 PFOA	*114*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C5 PFNA	*117*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C2 PFDA	*114*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C2 PFUnA	*112*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C2 PFDoA	*110*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C2 PFTeDA	*110*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C3 PFBS	*96*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
18O2 PFHxS	*109*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C4 PFOS	*112*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*
13C8 FOSA	*117*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:06*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011421-DA-007
Date Collected: 01/14/21 12:55
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-7
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	109		25 - 150	01/17/21 17:49	01/20/21 01:06	1
d5-NEtFOSAA	104		25 - 150	01/17/21 17:49	01/20/21 01:06	1
M2-6:2 FTS	143		25 - 150	01/17/21 17:49	01/20/21 01:06	1
M2-8:2 FTS	147		25 - 150	01/17/21 17:49	01/20/21 01:06	1
M2-4:2 FTS	138		25 - 150	01/17/21 17:49	01/20/21 01:06	1
13C3 HFPO-DA	87		25 - 150	01/17/21 17:49	01/20/21 01:06	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011421-DA-008
Date Collected: 01/14/21 13:00
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.4**		4.5	2.1	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	0.44	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorohexanoic acid (PFHxA)	**2.2**		1.8	0.52	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluoroheptanoic acid (PFHpA)	**2.2**		1.8	0.22	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorooctanoic acid (PFOA)	**11**		1.8	0.76	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorononanoic acid (PFNA)	**0.52**	**J**	1.8	0.24	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.98	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.65	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorobutanesulfonic acid (PFBS)	**1.4**	**J**	1.8	0.18	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluoropentanesulfonic acid (PFPeS)	**1.8**	**I**	1.8	0.27	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorohexanesulfonic acid (PFHxS)	**9.3**	**I**	1.8	0.51	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.5**	**J I**	1.8	0.17	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorooctanesulfonic acid (PFOS)	**34**	**I**	1.8	0.48	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		01/17/21 17:49	01/20/21 01:15	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.87	ng/L		01/17/21 17:49	01/20/21 01:15	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		01/17/21 17:49	01/20/21 01:15	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		01/17/21 17:49	01/20/21 01:15	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		01/17/21 17:49	01/20/21 01:15	1
6:2 FTS	4.5	U	4.5	2.2	ng/L		01/17/21 17:49	01/20/21 01:15	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		01/17/21 17:49	01/20/21 01:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		01/17/21 17:49	01/20/21 01:15	1
HFPO-DA (GenX)	3.6	U	3.6	1.3	ng/L		01/17/21 17:49	01/20/21 01:15	1
F-53B Major	1.8	U	1.8	0.21	ng/L		01/17/21 17:49	01/20/21 01:15	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		01/17/21 17:49	01/20/21 01:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*50*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C5 PFPeA	*45*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C2 PFHxA	*75*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C4 PFHpA	*101*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C4 PFOA	*105*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C5 PFNA	*126*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C2 PFDA	*126*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C2 PFUnA	*118*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C2 PFDoA	*105*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C2 PFTeDA	*104*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C3 PFBS	*91*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
18O2 PFHxS	*116*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C4 PFOS	*120*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*
13C8 FOSA	*122*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:15*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011421-DA-008
Date Collected: 01/14/21 13:00
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-8
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	105		25 - 150	01/17/21 17:49	01/20/21 01:15	1
d5-NEtFOSAA	109		25 - 150	01/17/21 17:49	01/20/21 01:15	1
M2-6:2 FTS	152	*5+	25 - 150	01/17/21 17:49	01/20/21 01:15	1
M2-8:2 FTS	164	*5+	25 - 150	01/17/21 17:49	01/20/21 01:15	1
M2-4:2 FTS	109		25 - 150	01/17/21 17:49	01/20/21 01:15	1
13C3 HFPO-DA	83		25 - 150	01/17/21 17:49	01/20/21 01:15	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011421-DA-009
Date Collected: 01/14/21 13:00
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.0**		4.7	2.2	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorohexanoic acid (PFHxA)	**2.2**		1.9	0.54	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluoroheptanoic acid (PFHpA)	**2.3**		1.9	0.23	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorooctanoic acid (PFOA)	**11**		1.9	0.79	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorononanoic acid (PFNA)	**0.50**	**J**	1.9	0.25	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.68	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorobutanesulfonic acid (PFBS)	**1.5**	**J**	1.9	0.19	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluoropentanesulfonic acid (PFPeS)	**1.8**	**J I**	1.9	0.28	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorohexanesulfonic acid (PFHxS)	**9.3**	**I**	1.9	0.53	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.5**	**J I**	1.9	0.18	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorooctanesulfonic acid (PFOS)	**37**	**I**	1.9	0.50	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		01/17/21 17:49	01/20/21 01:24	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.92	ng/L		01/17/21 17:49	01/20/21 01:24	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		01/17/21 17:49	01/20/21 01:24	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		01/17/21 17:49	01/20/21 01:24	1
4:2 FTS	1.9	U	1.9	0.22	ng/L		01/17/21 17:49	01/20/21 01:24	1
6:2 FTS	4.7	U	4.7	2.3	ng/L		01/17/21 17:49	01/20/21 01:24	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		01/17/21 17:49	01/20/21 01:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.37	ng/L		01/17/21 17:49	01/20/21 01:24	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		01/17/21 17:49	01/20/21 01:24	1
F-53B Major	1.9	U	1.9	0.22	ng/L		01/17/21 17:49	01/20/21 01:24	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		01/17/21 17:49	01/20/21 01:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*49*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C5 PFPeA	*46*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C2 PFHxA	*73*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C4 PFHpA	*97*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C4 PFOA	*110*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C5 PFNA	*121*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C2 PFDA	*110*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C2 PFUnA	*116*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C2 PFDoA	*96*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C2 PFTeDA	*101*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C3 PFBS	*88*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
18O2 PFHxS	*112*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C4 PFOS	*112*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*
13C8 FOSA	*115*		*25 - 150*	*01/17/21 17:49*	*01/20/21 01:24*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011421-DA-009
Date Collected: 01/14/21 13:00
Date Received: 01/15/21 10:00

Lab Sample ID: 240-143249-9
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	103		25 - 150	01/17/21 17:49	01/20/21 01:24	1
d5-NEtFOSAA	108		25 - 150	01/17/21 17:49	01/20/21 01:24	1
M2-6:2 FTS	140		25 - 150	01/17/21 17:49	01/20/21 01:24	1
M2-8:2 FTS	160	*5+	25 - 150	01/17/21 17:49	01/20/21 01:24	1
M2-4:2 FTS	103		25 - 150	01/17/21 17:49	01/20/21 01:24	1
13C3 HFPO-DA	84		25 - 150	01/17/21 17:49	01/20/21 01:24	1

LCMS

Prep Batch: 452550

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143249-1	GW-12607-011321-DA-001	Total/NA	Water	3535	
240-143249-2	EB-12607-011321-DA-002	Total/NA	Water	3535	
240-143249-3	FB-12607-011321-DA-003	Total/NA	Water	3535	
240-143249-4	GW-12607-011321-DA-004	Total/NA	Water	3535	
240-143249-5	GW-12607-011321-DA-005	Total/NA	Water	3535	
240-143249-6	GW-12607-011421-DA-006	Total/NA	Water	3535	
240-143249-7	GW-12607-011421-DA-007	Total/NA	Water	3535	
240-143249-8	GW-12607-011421-DA-008	Total/NA	Water	3535	
240-143249-9	GW-12607-011421-DA-009	Total/NA	Water	3535	
MB 320-452550/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-452550/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-452550/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 453195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143249-1	GW-12607-011321-DA-001	Total/NA	Water	537 (modified)	452550
240-143249-2	EB-12607-011321-DA-002	Total/NA	Water	537 (modified)	452550
240-143249-3	FB-12607-011321-DA-003	Total/NA	Water	537 (modified)	452550
240-143249-4	GW-12607-011321-DA-004	Total/NA	Water	537 (modified)	452550
240-143249-5	GW-12607-011321-DA-005	Total/NA	Water	537 (modified)	452550
240-143249-6	GW-12607-011421-DA-006	Total/NA	Water	537 (modified)	452550
240-143249-7	GW-12607-011421-DA-007	Total/NA	Water	537 (modified)	452550
240-143249-8	GW-12607-011421-DA-008	Total/NA	Water	537 (modified)	452550
240-143249-9	GW-12607-011421-DA-009	Total/NA	Water	537 (modified)	452550
MB 320-452550/1-A	Method Blank	Total/NA	Water	537 (modified)	452550
LCS 320-452550/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	452550
LCSD 320-452550/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	452550

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-452550/1-A
Matrix: Water
Analysis Batch: 453195

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 452550

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.0	U	5.0	2.4	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.73	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.0	0.57	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.37	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		01/17/21 17:49	01/19/21 22:58	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.98	ng/L		01/17/21 17:49	01/19/21 22:58	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.0	U	5.0	1.2	ng/L		01/17/21 17:49	01/19/21 22:58	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.0	U	5.0	1.3	ng/L		01/17/21 17:49	01/19/21 22:58	1
4:2 FTS	2.0	U	2.0	0.24	ng/L		01/17/21 17:49	01/19/21 22:58	1
6:2 FTS	5.0	U	5.0	2.5	ng/L		01/17/21 17:49	01/19/21 22:58	1
8:2 FTS	2.0	U	2.0	0.46	ng/L		01/17/21 17:49	01/19/21 22:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.0	U	2.0	0.40	ng/L		01/17/21 17:49	01/19/21 22:58	1
HFPO-DA (GenX)	4.0	U	4.0	1.5	ng/L		01/17/21 17:49	01/19/21 22:58	1
F-53B Major	2.0	U	2.0	0.24	ng/L		01/17/21 17:49	01/19/21 22:58	1
F-53B Minor	2.0	U	2.0	0.32	ng/L		01/17/21 17:49	01/19/21 22:58	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*99*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C5 PFPeA	*97*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C2 PFHxA	*94*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C4 PFHpA	*103*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C4 PFOA	*110*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C5 PFNA	*104*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C2 PFDA	*116*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C2 PFUnA	*91*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C2 PFDoA	*130*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C2 PFTeDA	*109*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C3 PFBS	*98*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
18O2 PFHxS	*98*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C4 PFOS	*99*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
13C8 FOSA	*101*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*
d3-NMeFOSAA	*113*		*25 - 150*	*01/17/21 17:49*	*01/19/21 22:58*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-452550/1-A
Matrix: Water
Analysis Batch: 453195

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 452550

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	111		25 - 150	01/17/21 17:49	01/19/21 22:58	1
M2-6:2 FTS	123		25 - 150	01/17/21 17:49	01/19/21 22:58	1
M2-8:2 FTS	120		25 - 150	01/17/21 17:49	01/19/21 22:58	1
M2-4:2 FTS	113		25 - 150	01/17/21 17:49	01/19/21 22:58	1
13C3 HFPO-DA	88		25 - 150	01/17/21 17:49	01/19/21 22:58	1

Lab Sample ID: LCS 320-452550/2-A
Matrix: Water
Analysis Batch: 453195

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452550

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	45.1		ng/L		113	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	41.9		ng/L		105	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	42.6		ng/L		107	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	45.5		ng/L		114	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	40.4		ng/L		101	70 - 130
Perfluorononanoic acid (PFNA)	40.0	42.1		ng/L		105	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	41.3		ng/L		103	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	46.3		ng/L		116	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	30.9		ng/L		77	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	37.7		ng/L		94	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	40.1		ng/L		100	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	39.2		ng/L		111	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	42.2		ng/L		112	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.8		ng/L		104	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	41.1		ng/L		108	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	39.5		ng/L		107	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	41.0		ng/L		107	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	42.7		ng/L		111	71 - 131
Perfluorooctanesulfonamide (FOSA)	40.0	45.6		ng/L		114	73 - 133
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.3		ng/L		98	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	45.0		ng/L		113	76 - 136
4:2 FTS	37.4	42.5		ng/L		114	79 - 139
6:2 FTS	37.9	40.0		ng/L		106	59 - 175
8:2 FTS	38.3	45.4		ng/L		118	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	42.0		ng/L		111	79 - 139
HFPO-DA (GenX)	40.0	44.5		ng/L		111	51 - 173
F-53B Major	37.3	40.3		ng/L		108	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-452550/2-A
Matrix: Water
Analysis Batch: 453195

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452550

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			37.7	40.5		ng/L		108	54 - 114		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*100*		*25 - 150*
13C5 PFPeA	*98*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C4 PFHpA	*100*		*25 - 150*
13C4 PFOA	*113*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*111*		*25 - 150*
13C2 PFUnA	*106*		*25 - 150*
13C2 PFDoA	*120*		*25 - 150*
13C2 PFTeDA	*118*		*25 - 150*
13C3 PFBS	*97*		*25 - 150*
18O2 PFHxS	*99*		*25 - 150*
13C4 PFOS	*101*		*25 - 150*
13C8 FOSA	*97*		*25 - 150*
d3-NMeFOSAA	*119*		*25 - 150*
d5-NEtFOSAA	*108*		*25 - 150*
M2-6:2 FTS	*123*		*25 - 150*
M2-8:2 FTS	*107*		*25 - 150*
M2-4:2 FTS	*109*		*25 - 150*
13C3 HFPO-DA	*93*		*25 - 150*

Lab Sample ID: LCSD 320-452550/3-A
Matrix: Water
Analysis Batch: 453195

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 452550

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	44.7		ng/L		112	76 - 136	1	30
Perfluoropentanoic acid (PFPeA)			40.0	40.4		ng/L		101	71 - 131	3	30
Perfluorohexanoic acid (PFHxA)			40.0	43.7		ng/L		109	73 - 133	2	30
Perfluoroheptanoic acid (PFHpA)			40.0	42.0		ng/L		105	72 - 132	8	30
Perfluorooctanoic acid (PFOA)			40.0	40.4		ng/L		101	70 - 130	0	30
Perfluorononanoic acid (PFNA)			40.0	44.7		ng/L		112	75 - 135	6	30
Perfluorodecanoic acid (PFDA)			40.0	42.2		ng/L		105	76 - 136	2	30
Perfluoroundecanoic acid (PFUnA)			40.0	41.4		ng/L		104	68 - 128	11	30
Perfluorododecanoic acid (PFDoA)			40.0	35.0		ng/L		87	71 - 131	13	30
Perfluorotridecanoic acid (PFTriA)			40.0	45.9		ng/L		115	71 - 131	20	30
Perfluorotetradecanoic acid (PFTeA)			40.0	45.6		ng/L		114	70 - 130	13	30
Perfluorobutanesulfonic acid (PFBS)			35.4	39.3		ng/L		111	67 - 127	0	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	41.9		ng/L		112	66 - 126	1	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	36.7		ng/L		101	59 - 119	3	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-452550/3-A
Matrix: Water
Analysis Batch: 453195

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 452550

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	40.5		ng/L		106	76 - 136	1	30
Perfluorooctanesulfonic acid (PFOS)			37.1	39.0		ng/L		105	70 - 130	1	30
Perfluorononanesulfonic acid (PFNS)			38.4	40.5		ng/L		105	75 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)			38.6	39.0		ng/L		101	71 - 131	9	30
Perfluorooctanesulfonamide (FOSA)			40.0	44.9		ng/L		112	73 - 133	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	38.8		ng/L		97	76 - 136	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	46.3		ng/L		116	76 - 136	3	30
4:2 FTS			37.4	40.9		ng/L		110	79 - 139	4	30
6:2 FTS			37.9	39.6		ng/L		104	59 - 175	1	30
8:2 FTS			38.3	44.8		ng/L		117	75 - 135	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	40.1		ng/L		106	79 - 139	5	30
HFPO-DA (GenX)			40.0	41.8		ng/L		105	51 - 173	6	30
F-53B Major			37.3	40.1		ng/L		108	75 - 135	1	30
F-53B Minor			37.7	40.3		ng/L		107	54 - 114	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*94*		*25 - 150*
13C2 PFHxA	*92*		*25 - 150*
13C4 PFHpA	*100*		*25 - 150*
13C4 PFOA	*108*		*25 - 150*
13C5 PFNA	*107*		*25 - 150*
13C2 PFDA	*105*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*116*		*25 - 150*
13C2 PFTeDA	*97*		*25 - 150*
13C3 PFBS	*94*		*25 - 150*
18O2 PFHxS	*96*		*25 - 150*
13C4 PFOS	*100*		*25 - 150*
13C8 FOSA	*95*		*25 - 150*
d3-NMeFOSAA	*108*		*25 - 150*
d5-NEtFOSAA	*102*		*25 - 150*
M2-6:2 FTS	*117*		*25 - 150*
M2-8:2 FTS	*107*		*25 - 150*
M2-4:2 FTS	*104*		*25 - 150*
13C3 HFPO-DA	*91*		*25 - 150*

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143249-2

Client Sample ID: GW-12607-011321-DA-001
Lab Sample ID: 240-143249-1
Date Collected: 01/13/21 11:45
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			452550	01/17/21 17:49	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	453195	01/19/21 23:53	JY1	TAL SAC

Client Sample ID: EB-12607-011321-DA-002
Lab Sample ID: 240-143249-2
Date Collected: 01/13/21 11:30
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			452550	01/17/21 17:49	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	453195	01/20/21 00:02	JY1	TAL SAC

Client Sample ID: FB-12607-011321-DA-003
Lab Sample ID: 240-143249-3
Date Collected: 01/13/21 11:35
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			452550	01/17/21 17:49	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	453195	01/20/21 00:11	JY1	TAL SAC

Client Sample ID: GW-12607-011321-DA-004
Lab Sample ID: 240-143249-4
Date Collected: 01/13/21 13:55
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			452550	01/17/21 17:49	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	453195	01/20/21 00:20	JY1	TAL SAC

Client Sample ID: GW-12607-011321-DA-005
Lab Sample ID: 240-143249-5
Date Collected: 01/13/21 15:00
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			452550	01/17/21 17:49	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	453195	01/20/21 00:47	JY1	TAL SAC

Client Sample ID: GW-12607-011421-DA-006
Lab Sample ID: 240-143249-6
Date Collected: 01/14/21 10:05
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			452550	01/17/21 17:49	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	453195	01/20/21 00:57	JY1	TAL SAC

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-143249-2
Project/Site: 12607-T31, RACER Eckles Rd

Client Sample ID: GW-12607-011421-DA-007
Lab Sample ID: 240-143249-7

Date Collected: 01/14/21 12:55
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			452550	01/17/21 17:49	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	453195	01/20/21 01:06	JY1	TAL SAC

Client Sample ID: GW-12607-011421-DA-008
Lab Sample ID: 240-143249-8

Date Collected: 01/14/21 13:00
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			452550	01/17/21 17:49	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	453195	01/20/21 01:15	JY1	TAL SAC

Client Sample ID: GW-12607-011421-DA-009
Lab Sample ID: 240-143249-9

Date Collected: 01/14/21 13:00
Matrix: Water
Date Received: 01/15/21 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			452550	01/17/21 17:49	VP	TAL SAC
Total/NA	Analysis	537 (modified)		1	453195	01/20/21 01:24	JY1	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-143249-2
Project/Site: 12607-T31, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-24
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	01-20-21
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	02-01-21
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	01-29-21
Nevada	State	CA000442021-2	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-21
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

4.1/4.2

Chain of Custody Record

MICHIGAN 190

Eurofins | Environment Testing TestAmerica

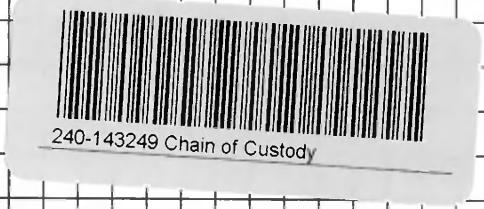
Address: _____

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: C. MEINCKE	Site Contact: C. MEINCKE	Date: 1/13/21	COC No:
Company Name: GHD SERVICES INC	Tel/Email: 248 893 3400	Lab Contact: D. HECKLER	Carrier: FEDEX	_____ of _____ COCs
Address: 26850 HAGGERTY RD	Analysis Turnaround Time			Sampler: D. ANTULIS
City/State/Zip: FARMINGTON HILLS, MI 48331	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 248 893 3400	TAT if different from Below _____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: ECKLES RD	☐ 1 week			
Site: LIVONIA, MI	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	PFAS	METALS	Sample Specific Notes:
GW-12607-011321-DA-001	1/13/21	1145	G	W	3			X	X	
EB-12607-011321-DA-002		1130			2			X	X	
FB-12607-011321-DA-003		1135			2			X	X	
GW-12607-011321-DA-004		1355			4	X		X	X	
GW-12607-011321-DA-005		1510			4	X		X	X	
GW-12607-011421-DA-006	1/14/21	1005	G	W	4	X		X	X	
-007		1255			4	X		X	X	
-008		1300			3			X	X	
-009		1310			3			X	X	



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

PROJ REF # 12607, RALER ECKLES RD

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: GHD	Date/Time: 1/14/21 1700	Received by:	Company: FEDEX	Date/Time: 1-15-21 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

1/25/2021

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 143249**
Canton Facility

Client GHD Site Name

Cooler Received on 1-15-21 Opened on 1-15-21

Cooler unpacked by: Matt S

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # NA Foam Box Client Cooler Box Other

Packing material used: ~~Bubble Wrap~~ Foam Plastic Bag None Other

COOLANT: ~~Wet Ice~~ Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 4.1 °C Corrected Cooler Temp. 4.2 °C
   IR GUN #IR-12 (CF +0.2°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 (Yes) No
   -Were the seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes (No)
   -Were tamper/custody seals intact and uncompromised? (Yes) No NA
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Was/were the person(s) who collected the samples clearly identified on the COC? (Yes) No
7. Did all bottles arrive in good condition (Unbroken)? (Yes) No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? (Yes) No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? (Yes) No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes (No)
    If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? (Yes) No NA pH Strip Lot# HC907861
14. Were VOAs on the COC? Yes (No)
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No (NA)
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #____ Yes (No)
17. Was a LL Hg or Me Hg trip blank present? ____ Yes (No)

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

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

Concerning ____

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
GW-12607-011321-DA-001	240-143249-C-1	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011321-DA-004	240-143249-C-4	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011321-DA-004	240-143249-D-4	Plastic 250ml - w/nitric - dis	<2			
GW-12607-011321-DA-005	240-143249-C-5	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011321-DA-005	240-143249-D-5	Plastic 250ml - w/nitric - dis	<2			
GW-12607-011421-DA-006	240-143249-C-6	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011421-DA-006	240-143249-D-6	Plastic 250ml - w/nitric - dis	<2			
GW-12607-011421-DA-007	240-143249-C-7	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011421-DA-007	240-143249-D-7	Plastic 250ml - w/nitric - dis	<2			
GW-12607-011421-DA-008	240-143249-C-8	Plastic 250ml - with Nitric Acid	<2			
GW-12607-011421-DA-009	240-143249-C-9	Plastic 250ml - with Nitric Acid	<2			

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-130851.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Denise.Heckler@Eurofinset.com	State of Origin: Michigan	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-143249-2
Address: 880 Riverside Parkway, ,	Due Date Requested: 1/28/2021			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: 12607-T31, RACER Eckles Rd	Project #: 24005880			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_PFC (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GW-12607-011321-DA-001 (240-143249-1)	1/13/21	11:45 Eastern		Water			X	2	
EB-12607-011321-DA-002 (240-143249-2)	1/13/21	11:30 Eastern		Water			X	2	
FB-12607-011321-DA-003 (240-143249-3)	1/13/21	11:35 Eastern		Water			X	2	
GW-12607-011321-DA-004 (240-143249-4)	1/13/21	13:55 Eastern		Water			X	2	
GW-12607-011321-DA-005 (240-143249-5)	1/13/21	15:00 Eastern		Water			X	2	
GW-12607-011421-DA-006 (240-143249-6)	1/14/21	10:05 Eastern		Water			X	2	
GW-12607-011421-DA-007 (240-143249-7)	1/14/21	12:55 Eastern		Water			X	2	
GW-12607-011421-DA-008 (240-143249-8)	1/14/21	13:00 Eastern		Water			X	2	
GW-12607-011421-DA-009 (240-143249-9)	1/14/21	13:00 Eastern		Water			X	2	

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

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

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	1-15-21 1727	240	[signature]	1/16/21 400	EASA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.6

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-143249-2

Login Number: 143249
List Number: 2
Creator: Her, David A

List Source: Eurofins TestAmerica, Sacramento
List Creation: 01/16/21 11:37 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143249-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-143249-1	GW-12607-011321-DA-001	79	71	103	110	118	121	115	116
240-143249-2	EB-12607-011321-DA-002	109	109	107	112	125	121	118	111
240-143249-3	FB-12607-011321-DA-003	97	95	94	100	113	109	99	111
240-143249-4	GW-12607-011321-DA-004	58	63	85	92	110	101	87	76
240-143249-5	GW-12607-011321-DA-005	74	72	96	102	110	113	102	93
240-143249-6	GW-12607-011421-DA-006	55	68	94	106	116	114	106	104
240-143249-7	GW-12607-011421-DA-007	69	65	95	103	114	117	114	112
240-143249-8	GW-12607-011421-DA-008	50	45	75	101	105	126	126	118
240-143249-9	GW-12607-011421-DA-009	49	46	73	97	110	121	110	116
LCS 320-452550/2-A	Lab Control Sample	100	98	100	100	113	112	111	106
LCSD 320-452550/3-A	Lab Control Sample Dup	96	94	92	100	108	107	105	94
MB 320-452550/1-A	Method Blank	99	97	94	103	110	104	116	91

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
240-143249-1	GW-12607-011321-DA-001	120	103	93	107	107	115	103	105
240-143249-2	EB-12607-011321-DA-002	140	112	108	111	112	111	124	115
240-143249-3	FB-12607-011321-DA-003	107	99	96	96	100	99	107	112
240-143249-4	GW-12607-011321-DA-004	84	80	86	96	96	99	84	80
240-143249-5	GW-12607-011321-DA-005	118	105	93	106	107	115	106	107
240-143249-6	GW-12607-011421-DA-006	98	87	93	104	108	115	103	101
240-143249-7	GW-12607-011421-DA-007	110	110	96	109	112	117	109	104
240-143249-8	GW-12607-011421-DA-008	105	104	91	116	120	122	105	109
240-143249-9	GW-12607-011421-DA-009	96	101	88	112	112	115	103	108
LCS 320-452550/2-A	Lab Control Sample	120	118	97	99	101	97	119	108
LCSD 320-452550/3-A	Lab Control Sample Dup	116	97	94	96	100	95	108	102
MB 320-452550/1-A	Method Blank	130	109	98	98	99	101	113	111

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)				
240-143249-1	GW-12607-011321-DA-001	153 *5+	136	140	94				
240-143249-2	EB-12607-011321-DA-002	141	134	128	99				
240-143249-3	FB-12607-011321-DA-003	121	114	109	88				
240-143249-4	GW-12607-011321-DA-004	135	108	119	79				
240-143249-5	GW-12607-011321-DA-005	140	131	131	91				
240-143249-6	GW-12607-011421-DA-006	141	126	117	89				
240-143249-7	GW-12607-011421-DA-007	143	147	138	87				
240-143249-8	GW-12607-011421-DA-008	152 *5+	164 *5+	109	83				
240-143249-9	GW-12607-011421-DA-009	140	160 *5+	103	84				
LCS 320-452550/2-A	Lab Control Sample	123	107	109	93				
LCSD 320-452550/3-A	Lab Control Sample Dup	117	107	104	91				
MB 320-452550/1-A	Method Blank	123	120	113	88				

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 240-143249-2
Project/Site: 12607-T31, RACER Eckles Rd

PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

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Sacramento Sample Receiving Notes

240-143249 Field Sheet

Tracking # : 9148 7502 8839

Job: _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Therm. ID: 602 Corr. Factor: (+ / -) ✓ °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: —

Cooler ID: —

Temp Observed: 0.6 °C Corrected: 0.6 °C

From: Temp Blank ☐ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☐	☐
Cooler Temperature is acceptable?	☐	☐	☐
Frozen samples show signs of thaw?	☐	☐	☐

Initials: SI Date: 1/16/21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☐	☐	☐
Samples compromised/tampered with?	☐	☐	☐
Sample containers have legible labels?	☐	☐	☐
Sample custody seal?	☐	☐	☐
Containers are not broken or leaking?	☐	☐	☐
Sample date/times are provided?	☐	☐	☐
Appropriate containers are used?	☐	☐	☐
Sample bottles are completely filled?	☐	☐	☐
Sample preservatives verified?	☐	☐	☐
Samples w/o discrepancies?	☐	☐	☐
Zero headspace?*	☐	☐	☐
Alkalinity has no headspace?	☐	☐	☐
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☐
Multiphasic samples are not present?	☐	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: DH Date: 1/16/21

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☐	☐	☐
Samples received within hold time?	☐	☐	☐
NCM Filed?	☐	☐	☐
Log Release checked in TALS?	☐	☐	☐

Initials: DH Date: 1/16/21

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-143339-1
Client Project/Site: 12607-T06, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
1/28/2021 9:46:00 AM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Job ID: 240-143339-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-143339-1

Comments
Trivalent chromium was requested by GHD on January 21, 2021.

Receipt
The samples were received on 1/20/2021 10:23 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.9º C.

Metals
Method 6010B: Some requested practical quantitation limits (PQLs) fall below the laboratory's verified standard quantitation limit. The continuing calibration blanks and method blanks may not support the lower PQL.

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

General Chemistry
Method 7196A: The following samples were received outside of holding time: GW-12607-011821-DA-010 (240-143339-1) and GW-12607-011821-DA-011 (240-143339-2).

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Qualifiers

Metals

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

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-143339-1	GW-12607-011821-DA-010	Water	01/18/21 12:50	01/20/21 10:23	
240-143339-2	GW-12607-011821-DA-011	Water	01/18/21 15:00	01/20/21 10:23	
240-143339-3	GW-12607-011921-DA-012	Water	01/19/21 12:05	01/20/21 10:23	
240-143339-4	GW-12607-011921-DA-013	Water	01/19/21 12:25	01/20/21 10:23	
240-143339-5	GW-12607-011921-DA-014	Water	01/19/21 14:50	01/20/21 10:23	
240-143339-6	GW-12607-011921-DA-015	Water	01/19/21 13:20	01/20/21 10:23	
240-143339-7	GW-12607-011921-DA-016	Water	01/19/21 13:40	01/20/21 10:23	
240-143339-9	GW-12607-011921-DA-018	Water	01/19/21 14:55	01/20/21 10:23	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Client Sample ID: GW-12607-011821-DA-010 — Lab Sample ID: 240-143339-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	410		100	23	ug/L	1		6010B	Total Recoverable
Chromium	2.0	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	3.8	J	20	2.2	ug/L	1		6010B	Total Recoverable
Cr (III)	0.0020	J	0.010	0.0020	mg/L	1		7196A	Total/NA

Client Sample ID: GW-12607-011821-DA-011 — Lab Sample ID: 240-143339-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	3200		100	23	ug/L	1		6010B	Dissolved
Chromium	2.8	J	5.0	0.63	ug/L	1		6010B	Dissolved
Nickel	13	J	40	2.2	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12607-011921-DA-012 — Lab Sample ID: 240-143339-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	3200		100	23	ug/L	1		6010B	Total Recoverable
Chromium	1.6	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	14	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-011921-DA-013 — Lab Sample ID: 240-143339-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	9700		100	23	ug/L	1		6010B	Total Recoverable
Chromium	31		5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	31		20	2.2	ug/L	1		6010B	Total Recoverable
Cr (III)	0.031		0.010	0.0020	mg/L	1		7196A	Total/NA

Client Sample ID: GW-12607-011921-DA-014 — Lab Sample ID: 240-143339-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	5100		100	23	ug/L	1		6010B	Total Recoverable
Chromium	1.2	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	1100		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-011921-DA-015 — Lab Sample ID: 240-143339-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	510		100	23	ug/L	1		6010B	Total Recoverable
Chromium	1.1	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	350		20	2.2	ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Client Sample ID: GW-12607-011921-DA-016 — Lab Sample ID: 240-143339-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	1900		100	23	ug/L	1		6010B	Total Recoverable
Chromium	0.95	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	1400		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-011921-DA-018 — Lab Sample ID: 240-143339-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	5700		100	23	ug/L	1		6010B	Total Recoverable
Chromium	1.2	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	1300		20	2.2	ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN
7196A	Chromium, Hexavalent	SW846	TAL CAN
7196A	Chromium, Trivalent (Colorimetric)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011821-DA-010
Date Collected: 01/18/21 12:50
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	410		100	23	ug/L		01/21/21 14:00	01/22/21 17:33	1
Chromium	2.0	J	5.0	0.63	ug/L		01/21/21 14:00	01/22/21 17:33	1
Nickel	3.8	J	20	2.2	ug/L		01/21/21 14:00	01/22/21 17:33	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011921-DA-012
Date Collected: 01/19/21 12:05
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	3200		100	23	ug/L		01/21/21 14:00	01/22/21 17:42	1
Chromium	1.6	J	5.0	0.63	ug/L		01/21/21 14:00	01/22/21 17:42	1
Nickel	14	J	20	2.2	ug/L		01/21/21 14:00	01/22/21 17:42	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011921-DA-013
Date Collected: 01/19/21 12:25
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	9700		100	23	ug/L		01/21/21 14:00	01/22/21 17:46	1
Chromium	31		5.0	0.63	ug/L		01/21/21 14:00	01/22/21 17:46	1
Nickel	31		20	2.2	ug/L		01/21/21 14:00	01/22/21 17:46	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011921-DA-014
Date Collected: 01/19/21 14:50
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	5100		100	23	ug/L		01/21/21 14:00	01/22/21 17:59	1
Chromium	1.2	J	5.0	0.63	ug/L		01/21/21 14:00	01/22/21 17:59	1
Nickel	1100		20	2.2	ug/L		01/21/21 14:00	01/22/21 17:59	1

Client: GHD Services Inc.
Job ID: 240-143339-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011921-DA-015
Lab Sample ID: 240-143339-6
Date Collected: 01/19/21 13:20
Matrix: Water
Date Received: 01/20/21 10:23

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	510		100	23	ug/L		01/21/21 09:54	01/22/21 18:03	1
Chromium	1.1	J	5.0	0.63	ug/L		01/21/21 09:54	01/22/21 18:03	1
Nickel	350		20	2.2	ug/L		01/21/21 09:54	01/22/21 18:03	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011921-DA-016
Date Collected: 01/19/21 13:40
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1900		100	23	ug/L		01/21/21 09:54	01/22/21 18:07	1
Chromium	0.95	J	5.0	0.63	ug/L		01/21/21 09:54	01/22/21 18:07	1
Nickel	1400		20	2.2	ug/L		01/21/21 09:54	01/22/21 18:07	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-011921-DA-018
Date Collected: 01/19/21 14:55
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	5700		100	23	ug/L		01/21/21 09:54	01/22/21 18:12	1
Chromium	1.2	J	5.0	0.63	ug/L		01/21/21 09:54	01/22/21 18:12	1
Nickel	1300		20	2.2	ug/L		01/21/21 09:54	01/22/21 18:12	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12607-011821-DA-011
Date Collected: 01/18/21 15:00
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	3200		100	23	ug/L		01/21/21 14:00	01/22/21 17:37	1
Chromium	2.8	J	5.0	0.63	ug/L		01/21/21 14:00	01/22/21 17:37	1
Nickel	13	J	40	2.2	ug/L		01/21/21 14:00	01/22/21 17:37	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

General Chemistry

Client Sample ID: GW-12607-011821-DA-010
Date Collected: 01/18/21 12:50
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U H H3	0.010		mg/L			01/20/21 11:19	1
Cr (III)	**0.0020**	**J**	0.010	0.0020	mg/L			01/26/21 13:12	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

General Chemistry

Client Sample ID: GW-12607-011821-DA-011
Date Collected: 01/18/21 15:00
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U H H3	0.010		mg/L			01/20/21 11:19	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

General Chemistry

Client Sample ID: GW-12607-011921-DA-012
Date Collected: 01/19/21 12:05
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			01/20/21 11:19	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			01/26/21 13:12	1

Client: GHD Services Inc.
Job ID: 240-143339-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-011921-DA-013
Lab Sample ID: 240-143339-4
Date Collected: 01/19/21 12:25
Matrix: Water
Date Received: 01/20/21 10:23

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			01/20/21 11:19	1
Cr (III)	**0.031**		0.010	0.0020	mg/L			01/26/21 13:12	1

Client: GHD Services Inc.
Job ID: 240-143339-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-011921-DA-014
Lab Sample ID: 240-143339-5
Date Collected: 01/19/21 14:50
Matrix: Water
Date Received: 01/20/21 10:23

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			01/20/21 11:19	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			01/26/21 13:12	1

Client: GHD Services Inc.
Job ID: 240-143339-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-011921-DA-015
Lab Sample ID: 240-143339-6
Date Collected: 01/19/21 13:20
Matrix: Water
Date Received: 01/20/21 10:23

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			01/20/21 11:19	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			01/26/21 13:12	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

General Chemistry

Client Sample ID: GW-12607-011921-DA-016
Date Collected: 01/19/21 13:40
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			01/20/21 11:19	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			01/26/21 13:12	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

General Chemistry

Client Sample ID: GW-12607-011921-DA-018
Date Collected: 01/19/21 14:55
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			01/20/21 11:19	1
Cr (III)	0.010	U	0.010	0.0020	mg/L			01/26/21 13:12	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Metals

Prep Batch: 470007

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143339-1	GW-12607-011821-DA-010	Total Recoverable	Water	3005A	
240-143339-2	GW-12607-011821-DA-011	Dissolved	Water	3005A	
240-143339-3	GW-12607-011921-DA-012	Total Recoverable	Water	3005A	
240-143339-4	GW-12607-011921-DA-013	Total Recoverable	Water	3005A	
240-143339-5	GW-12607-011921-DA-014	Total Recoverable	Water	3005A	
240-143339-6	GW-12607-011921-DA-015	Total Recoverable	Water	3005A	
240-143339-7	GW-12607-011921-DA-016	Total Recoverable	Water	3005A	
240-143339-9	GW-12607-011921-DA-018	Total Recoverable	Water	3005A	
MB 240-470007/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-470007/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 470311

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143339-1	GW-12607-011821-DA-010	Total Recoverable	Water	6010B	470007
240-143339-2	GW-12607-011821-DA-011	Dissolved	Water	6010B	470007
240-143339-3	GW-12607-011921-DA-012	Total Recoverable	Water	6010B	470007
240-143339-4	GW-12607-011921-DA-013	Total Recoverable	Water	6010B	470007
240-143339-5	GW-12607-011921-DA-014	Total Recoverable	Water	6010B	470007
240-143339-6	GW-12607-011921-DA-015	Total Recoverable	Water	6010B	470007
240-143339-7	GW-12607-011921-DA-016	Total Recoverable	Water	6010B	470007
240-143339-9	GW-12607-011921-DA-018	Total Recoverable	Water	6010B	470007
MB 240-470007/1-A	Method Blank	Total Recoverable	Water	6010B	470007
LCS 240-470007/2-A	Lab Control Sample	Total Recoverable	Water	6010B	470007

General Chemistry

Analysis Batch: 469875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143339-1	GW-12607-011821-DA-010	Total/NA	Water	7196A	
240-143339-2	GW-12607-011821-DA-011	Total/NA	Water	7196A	
240-143339-3	GW-12607-011921-DA-012	Total/NA	Water	7196A	
240-143339-4	GW-12607-011921-DA-013	Total/NA	Water	7196A	
240-143339-5	GW-12607-011921-DA-014	Total/NA	Water	7196A	
240-143339-6	GW-12607-011921-DA-015	Total/NA	Water	7196A	
240-143339-7	GW-12607-011921-DA-016	Total/NA	Water	7196A	
240-143339-9	GW-12607-011921-DA-018	Total/NA	Water	7196A	
MB 240-469875/3	Method Blank	Total/NA	Water	7196A	
LCS 240-469875/4	Lab Control Sample	Total/NA	Water	7196A	
240-143339-1 MS	GW-12607-011821-DA-010	Total/NA	Water	7196A	
240-143339-1 MSD	GW-12607-011821-DA-010	Total/NA	Water	7196A	

Analysis Batch: 470593

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143339-1	GW-12607-011821-DA-010	Total/NA	Water	7196A	
240-143339-3	GW-12607-011921-DA-012	Total/NA	Water	7196A	
240-143339-4	GW-12607-011921-DA-013	Total/NA	Water	7196A	
240-143339-5	GW-12607-011921-DA-014	Total/NA	Water	7196A	
240-143339-6	GW-12607-011921-DA-015	Total/NA	Water	7196A	
240-143339-7	GW-12607-011921-DA-016	Total/NA	Water	7196A	
240-143339-9	GW-12607-011921-DA-018	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-470007/1-A
Matrix: Water
Analysis Batch: 470311

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 470007

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	100	U	100	23	ug/L		01/21/21 14:00	01/22/21 16:33	1
Chromium	5.0	U	5.0	0.63	ug/L		01/21/21 14:00	01/22/21 16:33	1
Nickel	20	U	20	2.2	ug/L		01/21/21 14:00	01/22/21 16:33	1

Lab Sample ID: LCS 240-470007/2-A
Matrix: Water
Analysis Batch: 470311

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 470007

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	990		ug/L		99	80 - 120
Chromium	1000	939		ug/L		94	80 - 120
Nickel	1000	935		ug/L		94	80 - 120

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-469875/3
Matrix: Water
Analysis Batch: 469875

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010		mg/L			01/20/21 11:19	1

Lab Sample ID: LCS 240-469875/4
Matrix: Water
Analysis Batch: 469875

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.230		mg/L		92	80 - 123

Lab Sample ID: 240-143339-1 MS
Matrix: Water
Analysis Batch: 469875

Client Sample ID: GW-12607-011821-DA-010
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.010	U H H3	0.250	0.231		mg/L		93	31 - 151

Lab Sample ID: 240-143339-1 MSD
Matrix: Water
Analysis Batch: 469875

Client Sample ID: GW-12607-011821-DA-010
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	0.010	U H H3	0.250	0.229		mg/L		91	31 - 151	1	20

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-143339-1

Client Sample ID: GW-12607-011821-DA-010
Lab Sample ID: 240-143339-1
Date Collected: 01/18/21 12:50
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			470007	01/21/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470311	01/22/21 17:33	WKD	TAL CAN
Total/NA	Analysis	7196A		1	470593	01/26/21 13:12	KLC	TAL CAN
Total/NA	Analysis	7196A		1	469875	01/20/21 11:19	JMR	TAL CAN

Client Sample ID: GW-12607-011821-DA-011
Lab Sample ID: 240-143339-2
Date Collected: 01/18/21 15:00
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			470007	01/21/21 14:00	MRL	TAL CAN
Dissolved	Analysis	6010B		1	470311	01/22/21 17:37	WKD	TAL CAN
Total/NA	Analysis	7196A		1	469875	01/20/21 11:19	JMR	TAL CAN

Client Sample ID: GW-12607-011921-DA-012
Lab Sample ID: 240-143339-3
Date Collected: 01/19/21 12:05
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			470007	01/21/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470311	01/22/21 17:42	WKD	TAL CAN
Total/NA	Analysis	7196A		1	470593	01/26/21 13:12	KLC	TAL CAN
Total/NA	Analysis	7196A		1	469875	01/20/21 11:19	JMR	TAL CAN

Client Sample ID: GW-12607-011921-DA-013
Lab Sample ID: 240-143339-4
Date Collected: 01/19/21 12:25
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			470007	01/21/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470311	01/22/21 17:46	WKD	TAL CAN
Total/NA	Analysis	7196A		1	470593	01/26/21 13:12	KLC	TAL CAN
Total/NA	Analysis	7196A		1	469875	01/20/21 11:19	JMR	TAL CAN

Client Sample ID: GW-12607-011921-DA-014
Lab Sample ID: 240-143339-5
Date Collected: 01/19/21 14:50
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			470007	01/21/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470311	01/22/21 17:59	WKD	TAL CAN
Total/NA	Analysis	7196A		1	470593	01/26/21 13:12	KLC	TAL CAN
Total/NA	Analysis	7196A		1	469875	01/20/21 11:19	JMR	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-143339-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-011921-DA-015
Lab Sample ID: 240-143339-6
Date Collected: 01/19/21 13:20
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			470007	01/21/21 09:54	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470311	01/22/21 18:03	WKD	TAL CAN
Total/NA	Analysis	7196A		1	470593	01/26/21 13:12	KLC	TAL CAN
Total/NA	Analysis	7196A		1	469875	01/20/21 11:19	JMR	TAL CAN

Client Sample ID: GW-12607-011921-DA-016
Lab Sample ID: 240-143339-7
Date Collected: 01/19/21 13:40
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			470007	01/21/21 09:54	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470311	01/22/21 18:07	WKD	TAL CAN
Total/NA	Analysis	7196A		1	470593	01/26/21 13:12	KLC	TAL CAN
Total/NA	Analysis	7196A		1	469875	01/20/21 11:19	JMR	TAL CAN

Client Sample ID: GW-12607-011921-DA-018
Lab Sample ID: 240-143339-9
Date Collected: 01/19/21 14:55
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			470007	01/21/21 09:54	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	470311	01/22/21 18:12	WKD	TAL CAN
Total/NA	Analysis	7196A		1	470593	01/26/21 13:12	KLC	TAL CAN
Total/NA	Analysis	7196A		1	469875	01/20/21 11:19	JMR	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-143339-1
Project/Site: 12607-T06, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-20 *
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-21 *
West Virginia DEP	State	210	12-31-21

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN 190

2.8129

Chain of Custody Record 361467

eurofins | Environment Testing TestAmerica

Address:

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-6210

Client Contact	Project Manager: G. MEINUCE	Site Contact: G. MEINUCE	Date: 1/18/21	COC No: 12607
Company Name: GHD SERVICES INC.	Tel/Email: 248 893 3400	Lab Contact: J. HECKLER	Carrier: FED EX	1 of 2 COCs
Address: 26050 HAGGERTY RD	Analysis Turnaround Time			Sampler: D. ANTULIC
City/State/Zip: FARM. HILLS, MI 48331	☐ CALENDAR DAYS ☑ WORKING DAYS			For Lab Use Only:
Phone: 248 893 3400	TAT if different from Below			Walk-in Client:
Fax:	☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: ECKLEY RD				Job / SDG No.:
Site: LIVONIA, MI				
P O #				Sample Specific Notes:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)	METALS	Hex Chrome
GW-12607-01184-DA-010	1/18/21	1250	G	W	3			X	X
-011		1500	G	W	4	X		X	X
GW-12607-01192-DA-012	1/19/21	1205	G	W	4			X	X
-013		1225			4			X	X
-014		1450			4			X	X
-015		1320			4			X	X
-016		1340			4			X	X
FB-12607-01192-DA -017		1200			2			X	
GW-12607-01192-DA -018		1455			4			X	X

240-143339 Chain of Custody

Preservation Used: 1= Ice, 2= HCl, 3= H_2SO_4, 4=HNO_3, 5=NaOH, 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

12607A - ~~FB 1/21~~ TO 1/21 NO -017 FOR METALS OR HEX CHROME

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	GHD	1/19/21 1630		ETA	1-20-21 950
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 240-143339**
Canton Facility

Client GHD Site Name

Cooler Received on 1-20-21 Opened on 1-20-21

Cooler unpacked by: Matt Snyder

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # 20 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.9 °C
   IR GUN #IR-12 (CF +0.2°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity)	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC907861
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	No
17. Was a LL Hg or Me Hg trip blank present?	Yes	No

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

Contacted PM Date by via Verbal Voice Mail Other

Concerning

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

Samples processed by: MJS ETA CANTON

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen:

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-143339-2
Client Project/Site: 12607-T31, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
1/31/2021 8:15:17 AM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143339-2

Job ID: 240-143339-2

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-143339-2

Comments
No additional comments.

Receipt
The samples were received on 1/20/2021 10:23 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.9º C.

LCMS
Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-4:2 FTS and M2-6:2 FTS of the following sample: GW-12607-011921-DA-012 (240-143339-3). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgment was used to positively identify the analyte.

Method 537 (modified): The following sample exhibited elevated noise or matrix interferences for PFPeA causing elevation of the reporting limit (RL): GW-12607-011921-DA-013 (240-143339-4) . The reporting limit (RL) for the affected analyte has been raised to be equal to the matrix, and a "G" qualifier applied..

Method 537 (modified): The following field blank sample was re-extracted to confirm detections: FB-12607-011921-DA-017 (240-143339-8). The re-extraction was analyzed with concurring results; therefore, the original data have been reported.

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-454273.

Method 3535: The following samples were yellow prior to extraction: GW-12607-011821-DA-011 (240-143339-2), GW-12607-011921-DA-013 (240-143339-4), GW-12607-011921-DA-014 (240-143339-5) and GW-12607-011921-DA-018 (240-143339-9).

Method 3535: The following sample contained a thin layer of sediment at the bottom of the bottle prior to extraction: GW-12607-011821-DA-011 (240-143339-2).

Method 3535: The following samples contained floating particulates in the sample bottle prior to extraction: GW-12607-011921-DA-018 (240-143339-9).

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143339-2

Qualifiers

LCMS

Qualifier	Qualifier Description
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143339-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-143339-1	GW-12607-011821-DA-010	Water	01/18/21 12:50	01/20/21 10:23	
240-143339-2	GW-12607-011821-DA-011	Water	01/18/21 15:00	01/20/21 10:23	
240-143339-3	GW-12607-011921-DA-012	Water	01/19/21 12:05	01/20/21 10:23	
240-143339-4	GW-12607-011921-DA-013	Water	01/19/21 12:25	01/20/21 10:23	
240-143339-5	GW-12607-011921-DA-014	Water	01/19/21 14:50	01/20/21 10:23	
240-143339-6	GW-12607-011921-DA-015	Water	01/19/21 13:20	01/20/21 10:23	
240-143339-7	GW-12607-011921-DA-016	Water	01/19/21 13:40	01/20/21 10:23	
240-143339-8	FB-12607-011921-DA-017	Water	01/19/21 12:00	01/20/21 10:23	
240-143339-9	GW-12607-011921-DA-018	Water	01/19/21 14:55	01/20/21 10:23	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143339-2

Client Sample ID: GW-12607-011821-DA-010 — Lab Sample ID: 240-143339-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	13		4.7	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.7		1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.8		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.3		1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.3		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.4		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.86	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.8	I	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.4	J I	1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-011821-DA-011 — Lab Sample ID: 240-143339-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.8		4.7	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.6		1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.5		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.1		1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	18		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.40	J	1.9	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.6		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	1.6	J I	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11	I	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.3	J I	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	32	I	1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-011921-DA-012 — Lab Sample ID: 240-143339-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.3		4.4	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.8		1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.2		1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.3	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	5.4		1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.26	J	1.8	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.2		1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	1.1	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.9	I	1.8	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	2.2	I	1.8	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	56	I	1.8	0.48	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-011921-DA-013 — Lab Sample ID: 240-143339-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	13		4.5	2.2	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.0		1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.4		1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	10		1.8	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.73	J	1.8	0.25	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample ID: GW-12607-011921-DA-013 (Continued) — Lab Sample ID: 240-143339-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanesulfonic acid (PFPeS)	2.3	I	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	15	I	1.8	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	2.9	I	1.8	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	120	I	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-011921-DA-014 — Lab Sample ID: 240-143339-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	9.2		4.8	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.4		1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.1		1.9	0.56	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.7	J I	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	6.2		1.9	0.82	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.91	J	1.9	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.2	I	1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12	I	1.9	0.52	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-011921-DA-015 — Lab Sample ID: 240-143339-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.6		4.7	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.1		1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.7		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.3	J	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.3		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.0		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.0	I	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.0	I	1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-011921-DA-016 — Lab Sample ID: 240-143339-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.6		4.8	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.90	J	1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.74	J	1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.35	J	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.3		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.1		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.33	J	1.9	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.1	I	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.5	I	1.9	0.52	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FB-12607-011921-DA-017 — Lab Sample ID: 240-143339-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	2.6		1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	6.3		1.8	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.30	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143339-2

Client Sample ID: GW-12607-011921-DA-018 — Lab Sample ID: 240-143339-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.2		4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.5		1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.5		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.7	J	1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	6.2		1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.9		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.85	J I	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.1	I	1.9	0.53	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12	I	1.9	0.50	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143339-2

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011821-DA-010
Date Collected: 01/18/21 12:50
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**13**		4.7	2.3	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluoropentanoic acid (PFPeA)	**3.7**		1.9	0.46	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorohexanoic acid (PFHxA)	**3.8**		1.9	0.54	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluoroheptanoic acid (PFHpA)	**2.3**		1.9	0.23	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorooctanoic acid (PFOA)	**4.3**		1.9	0.80	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.69	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorobutanesulfonic acid (PFBS)	**3.4**		1.9	0.19	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluoropentanesulfonic acid (PFPeS)	**0.86**	**J**	1.9	0.28	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorohexanesulfonic acid (PFHxS)	**3.8**	**I**	1.9	0.54	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorooctanesulfonic acid (PFOS)	**1.4**	**J I**	1.9	0.51	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		01/22/21 04:42	01/22/21 19:42	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.92	ng/L		01/22/21 04:42	01/22/21 19:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		01/22/21 04:42	01/22/21 19:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		01/22/21 04:42	01/22/21 19:42	1
4:2 FTS	1.9	U	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 19:42	1
6:2 FTS	4.7	U	4.7	2.3	ng/L		01/22/21 04:42	01/22/21 19:42	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		01/22/21 04:42	01/22/21 19:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.38	ng/L		01/22/21 04:42	01/22/21 19:42	1
HFPO-DA (GenX)	3.8	U	3.8	1.4	ng/L		01/22/21 04:42	01/22/21 19:42	1
F-53B Major	1.9	U	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 19:42	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		01/22/21 04:42	01/22/21 19:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*73*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C5 PFPeA	*80*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C2 PFHxA	*102*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C4 PFHpA	*105*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C4 PFOA	*102*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C5 PFNA	*103*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C2 PFDA	*105*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C2 PFUnA	*96*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C2 PFDoA	*102*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C2 PFTeDA	*102*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C3 PFBS	*90*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
18O2 PFHxS	*104*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C4 PFOS	*101*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*
13C8 FOSA	*105*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:42*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011821-DA-010
Date Collected: 01/18/21 12:50
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-1
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	113		25 - 150	01/22/21 04:42	01/22/21 19:42	1
d5-NEtFOSAA	107		25 - 150	01/22/21 04:42	01/22/21 19:42	1
M2-6:2 FTS	120		25 - 150	01/22/21 04:42	01/22/21 19:42	1
M2-8:2 FTS	107		25 - 150	01/22/21 04:42	01/22/21 19:42	1
M2-4:2 FTS	112		25 - 150	01/22/21 04:42	01/22/21 19:42	1
13C3 HFPO-DA	100		25 - 150	01/22/21 04:42	01/22/21 19:42	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011821-DA-011
Date Collected: 01/18/21 15:00
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.8**		4.7	2.3	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluoropentanoic acid (PFPeA)	**2.6**		1.9	0.46	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorohexanoic acid (PFHxA)	**3.5**		1.9	0.54	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluoroheptanoic acid (PFHpA)	**3.1**		1.9	0.23	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorooctanoic acid (PFOA)	**18**		1.9	0.80	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorononanoic acid (PFNA)	**0.40**	**J**	1.9	0.25	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.69	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorobutanesulfonic acid (PFBS)	**2.6**		1.9	0.19	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluoropentanesulfonic acid (PFPeS)	**1.6**	**J I**	1.9	0.28	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorohexanesulfonic acid (PFHxS)	**11**	**I**	1.9	0.54	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.3**	**J I**	1.9	0.18	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorooctanesulfonic acid (PFOS)	**32**	**I**	1.9	0.51	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		01/22/21 04:42	01/22/21 19:51	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.92	ng/L		01/22/21 04:42	01/22/21 19:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		01/22/21 04:42	01/22/21 19:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		01/22/21 04:42	01/22/21 19:51	1
4:2 FTS	1.9	U	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 19:51	1
6:2 FTS	4.7	U	4.7	2.3	ng/L		01/22/21 04:42	01/22/21 19:51	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		01/22/21 04:42	01/22/21 19:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.38	ng/L		01/22/21 04:42	01/22/21 19:51	1
HFPO-DA (GenX)	3.8	U	3.8	1.4	ng/L		01/22/21 04:42	01/22/21 19:51	1
F-53B Major	1.9	U	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 19:51	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		01/22/21 04:42	01/22/21 19:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*65*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C5 PFPeA	*70*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C2 PFHxA	*102*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C4 PFHpA	*116*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C4 PFOA	*105*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C5 PFNA	*110*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C2 PFDA	*126*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C2 PFUnA	*120*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C2 PFDoA	*106*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C2 PFTeDA	*118*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C3 PFBS	*95*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
18O2 PFHxS	*118*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C4 PFOS	*121*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*
13C8 FOSA	*111*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:51*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011821-DA-011
Date Collected: 01/18/21 15:00
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-2
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	107		25 - 150	01/22/21 04:42	01/22/21 19:51	1
d5-NEtFOSAA	109		25 - 150	01/22/21 04:42	01/22/21 19:51	1
M2-6:2 FTS	137		25 - 150	01/22/21 04:42	01/22/21 19:51	1
M2-8:2 FTS	115		25 - 150	01/22/21 04:42	01/22/21 19:51	1
M2-4:2 FTS	130		25 - 150	01/22/21 04:42	01/22/21 19:51	1
13C3 HFPO-DA	117		25 - 150	01/22/21 04:42	01/22/21 19:51	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011921-DA-012
Date Collected: 01/19/21 12:05
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.3**		4.4	2.1	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluoropentanoic acid (PFPeA)	**1.8**		1.8	0.44	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorohexanoic acid (PFHxA)	**2.2**		1.8	0.52	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluoroheptanoic acid (PFHpA)	**1.3**	**J**	1.8	0.22	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorooctanoic acid (PFOA)	**5.4**		1.8	0.76	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorononanoic acid (PFNA)	**0.26**	**J**	1.8	0.24	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	0.98	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.49	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.65	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorobutanesulfonic acid (PFBS)	**2.2**		1.8	0.18	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluoropentanesulfonic acid (PFPeS)	**1.1**	**J**	1.8	0.27	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorohexanesulfonic acid (PFHxS)	**5.9**	**I**	1.8	0.51	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluoroheptanesulfonic Acid (PFHpS)	**2.2**	**I**	1.8	0.17	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorooctanesulfonic acid (PFOS)	**56**	**I**	1.8	0.48	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.33	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.28	ng/L		01/22/21 04:42	01/22/21 20:00	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.87	ng/L		01/22/21 04:42	01/22/21 20:00	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.4	U	4.4	1.1	ng/L		01/22/21 04:42	01/22/21 20:00	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.4	U	4.4	1.2	ng/L		01/22/21 04:42	01/22/21 20:00	1
4:2 FTS	1.8	U	1.8	0.21	ng/L		01/22/21 04:42	01/22/21 20:00	1
6:2 FTS	4.4	U	4.4	2.2	ng/L		01/22/21 04:42	01/22/21 20:00	1
8:2 FTS	1.8	U	1.8	0.41	ng/L		01/22/21 04:42	01/22/21 20:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		01/22/21 04:42	01/22/21 20:00	1
HFPO-DA (GenX)	3.6	U	3.6	1.3	ng/L		01/22/21 04:42	01/22/21 20:00	1
F-53B Major	1.8	U	1.8	0.21	ng/L		01/22/21 04:42	01/22/21 20:00	1
F-53B Minor	1.8	U	1.8	0.28	ng/L		01/22/21 04:42	01/22/21 20:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*77*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C5 PFPeA	*78*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C2 PFHxA	*103*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C4 PFHpA	*110*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C4 PFOA	*102*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C5 PFNA	*115*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C2 PFDA	*117*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C2 PFUnA	*117*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C2 PFDoA	*109*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C2 PFTeDA	*114*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C3 PFBS	*99*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
18O2 PFHxS	*109*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C4 PFOS	*111*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*
13C8 FOSA	*113*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:00*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011921-DA-012
Date Collected: 01/19/21 12:05
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-3
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	117		25 - 150	01/22/21 04:42	01/22/21 20:00	1
d5-NEtFOSAA	117		25 - 150	01/22/21 04:42	01/22/21 20:00	1
M2-6:2 FTS	155	*5+	25 - 150	01/22/21 04:42	01/22/21 20:00	1
M2-8:2 FTS	112		25 - 150	01/22/21 04:42	01/22/21 20:00	1
M2-4:2 FTS	155	*5+	25 - 150	01/22/21 04:42	01/22/21 20:00	1
13C3 HFPO-DA	114		25 - 150	01/22/21 04:42	01/22/21 20:00	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011921-DA-013
Date Collected: 01/19/21 12:25
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**13**		4.5	2.2	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluoropentanoic acid (PFPeA)	2.8	U G	2.8	2.8	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorohexanoic acid (PFHxA)	**2.0**		1.8	0.53	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluoroheptanoic acid (PFHpA)	**2.4**		1.8	0.23	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorooctanoic acid (PFOA)	**10**		1.8	0.77	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorononanoic acid (PFNA)	**0.73**	**J**	1.8	0.25	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.66	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluoropentanesulfonic acid (PFPeS)	**2.3**	**I**	1.8	0.27	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorohexanesulfonic acid (PFHxS)	**15**	**I**	1.8	0.52	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluoroheptanesulfonic Acid (PFHpS)	**2.9**	**I**	1.8	0.17	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorooctanesulfonic acid (PFOS)	**120**	**I**	1.8	0.49	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		01/22/21 04:42	01/22/21 20:09	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.89	ng/L		01/22/21 04:42	01/22/21 20:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.5	U	4.5	1.1	ng/L		01/22/21 04:42	01/22/21 20:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.5	U	4.5	1.2	ng/L		01/22/21 04:42	01/22/21 20:09	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		01/22/21 04:42	01/22/21 20:09	1
6:2 FTS	4.5	U	4.5	2.3	ng/L		01/22/21 04:42	01/22/21 20:09	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		01/22/21 04:42	01/22/21 20:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.36	ng/L		01/22/21 04:42	01/22/21 20:09	1
HFPO-DA (GenX)	3.6	U	3.6	1.4	ng/L		01/22/21 04:42	01/22/21 20:09	1
F-53B Major	1.8	U	1.8	0.22	ng/L		01/22/21 04:42	01/22/21 20:09	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		01/22/21 04:42	01/22/21 20:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*63*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C5 PFPeA	*69*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C2 PFHxA	*87*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C4 PFHpA	*113*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C4 PFOA	*102*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C5 PFNA	*119*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C2 PFDA	*130*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C2 PFUnA	*125*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C2 PFDoA	*122*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C2 PFTeDA	*121*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C3 PFBS	*111*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
18O2 PFHxS	*128*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C4 PFOS	*127*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
13C8 FOSA	*120*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*
d3-NMeFOSAA	*111*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:09*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011921-DA-013
Date Collected: 01/19/21 12:25
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-4
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	116		25 - 150	01/22/21 04:42	01/22/21 20:09	1
M2-6:2 FTS	134		25 - 150	01/22/21 04:42	01/22/21 20:09	1
M2-8:2 FTS	137		25 - 150	01/22/21 04:42	01/22/21 20:09	1
M2-4:2 FTS	91		25 - 150	01/22/21 04:42	01/22/21 20:09	1
13C3 HFPO-DA	123		25 - 150	01/22/21 04:42	01/22/21 20:09	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011921-DA-014
Date Collected: 01/19/21 14:50
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.2**		4.8	2.3	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluoropentanoic acid (PFPeA)	**2.4**		1.9	0.47	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorohexanoic acid (PFHxA)	**2.1**		1.9	0.56	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluoroheptanoic acid (PFHpA)	**1.7**	**J I**	1.9	0.24	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorooctanoic acid (PFOA)	**6.2**		1.9	0.82	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.3	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.70	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.9	0.19	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluoropentanesulfonic acid (PFPeS)	**0.91**	**J**	1.9	0.29	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorohexanesulfonic acid (PFHxS)	**4.2**	**I**	1.9	0.55	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorooctanesulfonic acid (PFOS)	**12**	**I**	1.9	0.52	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.36	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		01/22/21 04:42	01/22/21 20:18	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.94	ng/L		01/22/21 04:42	01/22/21 20:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.8	U	4.8	1.2	ng/L		01/22/21 04:42	01/22/21 20:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.8	U	4.8	1.3	ng/L		01/22/21 04:42	01/22/21 20:18	1
4:2 FTS	1.9	U	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 20:18	1
6:2 FTS	4.8	U	4.8	2.4	ng/L		01/22/21 04:42	01/22/21 20:18	1
8:2 FTS	1.9	U	1.9	0.44	ng/L		01/22/21 04:42	01/22/21 20:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.39	ng/L		01/22/21 04:42	01/22/21 20:18	1
HFPO-DA (GenX)	3.9	U	3.9	1.4	ng/L		01/22/21 04:42	01/22/21 20:18	1
F-53B Major	1.9	U	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 20:18	1
F-53B Minor	1.9	U	1.9	0.31	ng/L		01/22/21 04:42	01/22/21 20:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*81*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C5 PFPeA	*86*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C2 PFHxA	*84*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C4 PFHpA	*106*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C4 PFOA	*104*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C5 PFNA	*110*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C2 PFDA	*107*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C2 PFUnA	*96*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C2 PFDoA	*99*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C2 PFTeDA	*106*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C3 PFBS	*110*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
18O2 PFHxS	*110*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C4 PFOS	*103*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*
13C8 FOSA	*110*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:18*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011921-DA-014
Date Collected: 01/19/21 14:50
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-5
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	109		25 - 150	01/22/21 04:42	01/22/21 20:18	1
d5-NEtFOSAA	106		25 - 150	01/22/21 04:42	01/22/21 20:18	1
M2-6:2 FTS	125		25 - 150	01/22/21 04:42	01/22/21 20:18	1
M2-8:2 FTS	107		25 - 150	01/22/21 04:42	01/22/21 20:18	1
M2-4:2 FTS	83		25 - 150	01/22/21 04:42	01/22/21 20:18	1
13C3 HFPO-DA	103		25 - 150	01/22/21 04:42	01/22/21 20:18	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011921-DA-015
Date Collected: 01/19/21 13:20
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.6**		4.7	2.3	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluoropentanoic acid (PFPeA)	**2.1**		1.9	0.47	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorohexanoic acid (PFHxA)	**2.7**		1.9	0.55	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluoroheptanoic acid (PFHpA)	**1.3**	**J**	1.9	0.24	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorooctanoic acid (PFOA)	**2.3**		1.9	0.81	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.69	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorobutanesulfonic acid (PFBS)	**2.0**		1.9	0.19	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorohexanesulfonic acid (PFHxS)	**2.0**	**I**	1.9	0.54	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorooctanesulfonic acid (PFOS)	**2.0**	**I**	1.9	0.51	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		01/22/21 04:42	01/22/21 20:27	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.93	ng/L		01/22/21 04:42	01/22/21 20:27	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		01/22/21 04:42	01/22/21 20:27	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		01/22/21 04:42	01/22/21 20:27	1
4:2 FTS	1.9	U	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 20:27	1
6:2 FTS	4.7	U	4.7	2.4	ng/L		01/22/21 04:42	01/22/21 20:27	1
8:2 FTS	1.9	U	1.9	0.44	ng/L		01/22/21 04:42	01/22/21 20:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.38	ng/L		01/22/21 04:42	01/22/21 20:27	1
HFPO-DA (GenX)	3.8	U	3.8	1.4	ng/L		01/22/21 04:42	01/22/21 20:27	1
F-53B Major	1.9	U	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 20:27	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		01/22/21 04:42	01/22/21 20:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*90*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C5 PFPeA	*92*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C2 PFHxA	*101*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C4 PFHpA	*101*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C4 PFOA	*104*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C5 PFNA	*105*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C2 PFDA	*104*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C2 PFUnA	*103*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C2 PFDoA	*93*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C2 PFTeDA	*105*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C3 PFBS	*103*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
18O2 PFHxS	*105*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C4 PFOS	*105*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*
13C8 FOSA	*106*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:27*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011921-DA-015
Date Collected: 01/19/21 13:20
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-6
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	108		25 - 150	01/22/21 04:42	01/22/21 20:27	1
d5-NEtFOSAA	102		25 - 150	01/22/21 04:42	01/22/21 20:27	1
M2-6:2 FTS	117		25 - 150	01/22/21 04:42	01/22/21 20:27	1
M2-8:2 FTS	103		25 - 150	01/22/21 04:42	01/22/21 20:27	1
M2-4:2 FTS	120		25 - 150	01/22/21 04:42	01/22/21 20:27	1
13C3 HFPO-DA	101		25 - 150	01/22/21 04:42	01/22/21 20:27	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011921-DA-016
Date Collected: 01/19/21 13:40
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.6**		4.8	2.3	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluoropentanoic acid (PFPeA)	**0.90**	**J**	1.9	0.47	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorohexanoic acid (PFHxA)	**0.74**	**J**	1.9	0.55	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluoroheptanoic acid (PFHpA)	**0.35**	**J**	1.9	0.24	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorooctanoic acid (PFOA)	**2.3**		1.9	0.81	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.70	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorobutanesulfonic acid (PFBS)	**2.1**		1.9	0.19	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluoropentanesulfonic acid (PFPeS)	**0.33**	**J**	1.9	0.29	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorohexanesulfonic acid (PFHxS)	**2.1**	**I**	1.9	0.54	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorooctanesulfonic acid (PFOS)	**2.5**	**I**	1.9	0.52	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		01/22/21 04:42	01/22/21 20:36	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.94	ng/L		01/22/21 04:42	01/22/21 20:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.8	U	4.8	1.1	ng/L		01/22/21 04:42	01/22/21 20:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.8	U	4.8	1.2	ng/L		01/22/21 04:42	01/22/21 20:36	1
4:2 FTS	1.9	U	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 20:36	1
6:2 FTS	4.8	U	4.8	2.4	ng/L		01/22/21 04:42	01/22/21 20:36	1
8:2 FTS	1.9	U	1.9	0.44	ng/L		01/22/21 04:42	01/22/21 20:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.38	ng/L		01/22/21 04:42	01/22/21 20:36	1
HFPO-DA (GenX)	3.8	U	3.8	1.4	ng/L		01/22/21 04:42	01/22/21 20:36	1
F-53B Major	1.9	U	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 20:36	1
F-53B Minor	1.9	U	1.9	0.31	ng/L		01/22/21 04:42	01/22/21 20:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*83*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C5 PFPeA	*88*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C2 PFHxA	*91*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C4 PFHpA	*98*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C4 PFOA	*102*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C5 PFNA	*98*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C2 PFDA	*96*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C2 PFUnA	*90*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C2 PFDoA	*97*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C2 PFTeDA	*97*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C3 PFBS	*99*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
18O2 PFHxS	*95*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C4 PFOS	*100*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*
13C8 FOSA	*97*		*25 - 150*	*01/22/21 04:42*	*01/22/21 20:36*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011921-DA-016
Date Collected: 01/19/21 13:40
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-7
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	102		25 - 150	01/22/21 04:42	01/22/21 20:36	1
d5-NEtFOSAA	102		25 - 150	01/22/21 04:42	01/22/21 20:36	1
M2-6:2 FTS	114		25 - 150	01/22/21 04:42	01/22/21 20:36	1
M2-8:2 FTS	99		25 - 150	01/22/21 04:42	01/22/21 20:36	1
M2-4:2 FTS	96		25 - 150	01/22/21 04:42	01/22/21 20:36	1
13C3 HFPO-DA	99		25 - 150	01/22/21 04:42	01/22/21 20:36	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: FB-12607-011921-DA-017
Date Collected: 01/19/21 12:00
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	4.6	U	4.6	2.2	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluoropentanoic acid (PFPeA)	**2.6**		1.8	0.45	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorohexanoic acid (PFHxA)	**6.3**		1.8	0.53	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluoroheptanoic acid (PFHpA)	**0.30**	**J**	1.8	0.23	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.78	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.67	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.27	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	U	1.8	0.52	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.49	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		01/22/21 04:42	01/22/21 21:04	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.90	ng/L		01/22/21 04:42	01/22/21 21:04	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		01/22/21 04:42	01/22/21 21:04	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		01/22/21 04:42	01/22/21 21:04	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		01/22/21 04:42	01/22/21 21:04	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		01/22/21 04:42	01/22/21 21:04	1
8:2 FTS	1.8	U	1.8	0.42	ng/L		01/22/21 04:42	01/22/21 21:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.37	ng/L		01/22/21 04:42	01/22/21 21:04	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		01/22/21 04:42	01/22/21 21:04	1
F-53B Major	1.8	U	1.8	0.22	ng/L		01/22/21 04:42	01/22/21 21:04	1
F-53B Minor	1.8	U	1.8	0.29	ng/L		01/22/21 04:42	01/22/21 21:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*89*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C5 PFPeA	*94*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C2 PFHxA	*93*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C4 PFHpA	*95*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C4 PFOA	*102*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C5 PFNA	*95*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C2 PFDA	*95*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C2 PFUnA	*92*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C2 PFDoA	*82*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C3 PFBS	*92*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
18O2 PFHxS	*96*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C4 PFOS	*87*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
13C8 FOSA	*92*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
d3-NMeFOSAA	*97*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:04*	*1*

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143339-2

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: FB-12607-011921-DA-017
Date Collected: 01/19/21 12:00
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-8
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	98		25 - 150	01/22/21 04:42	01/22/21 21:04	1
M2-8:2 FTS	90		25 - 150	01/22/21 04:42	01/22/21 21:04	1
M2-4:2 FTS	83		25 - 150	01/22/21 04:42	01/22/21 21:04	1
13C3 HFPO-DA	93		25 - 150	01/22/21 04:42	01/22/21 21:04	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-011921-DA-018
Date Collected: 01/19/21 14:55
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.2**		4.6	2.2	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluoropentanoic acid (PFPeA)	**2.5**		1.9	0.46	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorohexanoic acid (PFHxA)	**2.5**		1.9	0.54	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluoroheptanoic acid (PFHpA)	**1.7**	**J**	1.9	0.23	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorooctanoic acid (PFOA)	**6.2**		1.9	0.79	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.68	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorobutanesulfonic acid (PFBS)	**1.9**		1.9	0.19	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluoropentanesulfonic acid (PFPeS)	**0.85**	**J I**	1.9	0.28	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorohexanesulfonic acid (PFHxS)	**4.1**	**I**	1.9	0.53	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorooctanesulfonic acid (PFOS)	**12**	**I**	1.9	0.50	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.34	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		01/22/21 04:42	01/22/21 21:13	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.91	ng/L		01/22/21 04:42	01/22/21 21:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		01/22/21 04:42	01/22/21 21:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		01/22/21 04:42	01/22/21 21:13	1
4:2 FTS	1.9	U	1.9	0.22	ng/L		01/22/21 04:42	01/22/21 21:13	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		01/22/21 04:42	01/22/21 21:13	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		01/22/21 04:42	01/22/21 21:13	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.37	ng/L		01/22/21 04:42	01/22/21 21:13	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		01/22/21 04:42	01/22/21 21:13	1
F-53B Major	1.9	U	1.9	0.22	ng/L		01/22/21 04:42	01/22/21 21:13	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		01/22/21 04:42	01/22/21 21:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C5 PFPeA	*87*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C2 PFHxA	*82*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C4 PFHpA	*99*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C4 PFOA	*104*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C5 PFNA	*106*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C2 PFDA	*99*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C2 PFUnA	*99*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C2 PFDoA	*92*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C2 PFTeDA	*93*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C3 PFBS	*104*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
18O2 PFHxS	*107*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C4 PFOS	*100*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*
13C8 FOSA	*104*		*25 - 150*	*01/22/21 04:42*	*01/22/21 21:13*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-011921-DA-018
Date Collected: 01/19/21 14:55
Date Received: 01/20/21 10:23

Lab Sample ID: 240-143339-9
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	103		25 - 150	01/22/21 04:42	01/22/21 21:13	1
d5-NEtFOSAA	101		25 - 150	01/22/21 04:42	01/22/21 21:13	1
M2-6:2 FTS	123		25 - 150	01/22/21 04:42	01/22/21 21:13	1
M2-8:2 FTS	101		25 - 150	01/22/21 04:42	01/22/21 21:13	1
M2-4:2 FTS	81		25 - 150	01/22/21 04:42	01/22/21 21:13	1
13C3 HFPO-DA	103		25 - 150	01/22/21 04:42	01/22/21 21:13	1

QC Association Summary

Client: GHD Services Inc.
Job ID: 240-143339-2
Project/Site: 12607-T31, RACER Eckles Rd

LCMS

Prep Batch: 454273

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143339-1	GW-12607-011821-DA-010	Total/NA	Water	3535	
240-143339-2	GW-12607-011821-DA-011	Total/NA	Water	3535	
240-143339-3	GW-12607-011921-DA-012	Total/NA	Water	3535	
240-143339-4	GW-12607-011921-DA-013	Total/NA	Water	3535	
240-143339-5	GW-12607-011921-DA-014	Total/NA	Water	3535	
240-143339-6	GW-12607-011921-DA-015	Total/NA	Water	3535	
240-143339-7	GW-12607-011921-DA-016	Total/NA	Water	3535	
240-143339-8	FB-12607-011921-DA-017	Total/NA	Water	3535	
240-143339-9	GW-12607-011921-DA-018	Total/NA	Water	3535	
MB 320-454273/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-454273/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-454273/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 454726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-143339-1	GW-12607-011821-DA-010	Total/NA	Water	537 (modified)	454273
240-143339-2	GW-12607-011821-DA-011	Total/NA	Water	537 (modified)	454273
240-143339-3	GW-12607-011921-DA-012	Total/NA	Water	537 (modified)	454273
240-143339-4	GW-12607-011921-DA-013	Total/NA	Water	537 (modified)	454273
240-143339-5	GW-12607-011921-DA-014	Total/NA	Water	537 (modified)	454273
240-143339-6	GW-12607-011921-DA-015	Total/NA	Water	537 (modified)	454273
240-143339-7	GW-12607-011921-DA-016	Total/NA	Water	537 (modified)	454273
240-143339-8	FB-12607-011921-DA-017	Total/NA	Water	537 (modified)	454273
240-143339-9	GW-12607-011921-DA-018	Total/NA	Water	537 (modified)	454273
MB 320-454273/1-A	Method Blank	Total/NA	Water	537 (modified)	454273
LCS 320-454273/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	454273
LCSD 320-454273/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	454273

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-454273/1-A
Matrix: Water
Analysis Batch: 454726

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 454273

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.0	U	5.0	2.4	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.73	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.0	0.57	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.37	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		01/22/21 04:42	01/22/21 19:14	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.98	ng/L		01/22/21 04:42	01/22/21 19:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.0	U	5.0	1.2	ng/L		01/22/21 04:42	01/22/21 19:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.0	U	5.0	1.3	ng/L		01/22/21 04:42	01/22/21 19:14	1
4:2 FTS	2.0	U	2.0	0.24	ng/L		01/22/21 04:42	01/22/21 19:14	1
6:2 FTS	5.0	U	5.0	2.5	ng/L		01/22/21 04:42	01/22/21 19:14	1
8:2 FTS	2.0	U	2.0	0.46	ng/L		01/22/21 04:42	01/22/21 19:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.0	U	2.0	0.40	ng/L		01/22/21 04:42	01/22/21 19:14	1
HFPO-DA (GenX)	4.0	U	4.0	1.5	ng/L		01/22/21 04:42	01/22/21 19:14	1
F-53B Major	2.0	U	2.0	0.24	ng/L		01/22/21 04:42	01/22/21 19:14	1
F-53B Minor	2.0	U	2.0	0.32	ng/L		01/22/21 04:42	01/22/21 19:14	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*93*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C5 PFPeA	*97*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C2 PFHxA	*99*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C4 PFHpA	*99*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C4 PFOA	*103*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C5 PFNA	*102*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C2 PFDA	*97*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C2 PFUnA	*92*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C2 PFDoA	*98*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C2 PFTeDA	*95*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C3 PFBS	*87*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
18O2 PFHxS	*97*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C4 PFOS	*93*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
13C8 FOSA	*96*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*01/22/21 04:42*	*01/22/21 19:14*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-454273/1-A
Matrix: Water
Analysis Batch: 454726

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 454273

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	97		25 - 150	01/22/21 04:42	01/22/21 19:14	1
M2-6:2 FTS	103		25 - 150	01/22/21 04:42	01/22/21 19:14	1
M2-8:2 FTS	91		25 - 150	01/22/21 04:42	01/22/21 19:14	1
M2-4:2 FTS	91		25 - 150	01/22/21 04:42	01/22/21 19:14	1
13C3 HFPO-DA	96		25 - 150	01/22/21 04:42	01/22/21 19:14	1

Lab Sample ID: LCS 320-454273/2-A
Matrix: Water
Analysis Batch: 454726

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 454273

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	43.1		ng/L		108	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	38.9		ng/L		97	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	40.0		ng/L		100	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	40.5		ng/L		101	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	40.0		ng/L		100	70 - 130
Perfluorononanoic acid (PFNA)	40.0	41.3		ng/L		103	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	43.9		ng/L		110	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	41.8		ng/L		105	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	41.6		ng/L		104	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	39.5		ng/L		99	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	42.5		ng/L		106	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	37.1		ng/L		105	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	41.6		ng/L		111	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.4		ng/L		94	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.9		ng/L		107	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	37.5		ng/L		101	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	41.0		ng/L		107	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	39.7		ng/L		103	71 - 131
Perfluorooctanesulfonamide (FOSA)	40.0	44.6		ng/L		111	73 - 133
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.1		ng/L		98	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.4		ng/L		101	76 - 136
4:2 FTS	37.4	39.9		ng/L		107	79 - 139
6:2 FTS	37.9	36.3		ng/L		96	59 - 175
8:2 FTS	38.3	39.7		ng/L		104	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	41.2		ng/L		109	79 - 139
HFPO-DA (GenX)	40.0	39.1		ng/L		98	51 - 173
F-53B Major	37.3	39.1		ng/L		105	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-454273/2-A
Matrix: Water
Analysis Batch: 454726

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 454273

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			37.7	37.4		ng/L		99	54 - 114		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*95*		*25 - 150*
13C5 PFPeA	*100*		*25 - 150*
13C2 PFHxA	*101*		*25 - 150*
13C4 PFHpA	*100*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*105*		*25 - 150*
13C2 PFDA	*97*		*25 - 150*
13C2 PFUnA	*93*		*25 - 150*
13C2 PFDoA	*96*		*25 - 150*
13C2 PFTeDA	*100*		*25 - 150*
13C3 PFBS	*97*		*25 - 150*
18O2 PFHxS	*100*		*25 - 150*
13C4 PFOS	*98*		*25 - 150*
13C8 FOSA	*95*		*25 - 150*
d3-NMeFOSAA	*107*		*25 - 150*
d5-NEtFOSAA	*102*		*25 - 150*
M2-6:2 FTS	*105*		*25 - 150*
M2-8:2 FTS	*102*		*25 - 150*
M2-4:2 FTS	*94*		*25 - 150*
13C3 HFPO-DA	*101*		*25 - 150*

Lab Sample ID: LCSD 320-454273/3-A
Matrix: Water
Analysis Batch: 454726

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 454273

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	44.2		ng/L		110	76 - 136	2	30
Perfluoropentanoic acid (PFPeA)			40.0	42.1		ng/L		105	71 - 131	8	30
Perfluorohexanoic acid (PFHxA)			40.0	41.2		ng/L		103	73 - 133	3	30
Perfluoroheptanoic acid (PFHpA)			40.0	41.0		ng/L		103	72 - 132	1	30
Perfluorooctanoic acid (PFOA)			40.0	39.9		ng/L		100	70 - 130	0	30
Perfluorononanoic acid (PFNA)			40.0	40.2		ng/L		100	75 - 135	3	30
Perfluorodecanoic acid (PFDA)			40.0	44.5		ng/L		111	76 - 136	1	30
Perfluoroundecanoic acid (PFUnA)			40.0	42.0		ng/L		105	68 - 128	1	30
Perfluorododecanoic acid (PFDoA)			40.0	43.4		ng/L		108	71 - 131	4	30
Perfluorotridecanoic acid (PFTriA)			40.0	35.8		ng/L		90	71 - 131	10	30
Perfluorotetradecanoic acid (PFTeA)			40.0	44.8		ng/L		112	70 - 130	5	30
Perfluorobutanesulfonic acid (PFBS)			35.4	38.4		ng/L		109	67 - 127	3	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	41.6		ng/L		111	66 - 126	0	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	35.3		ng/L		97	59 - 119	2	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-454273/3-A
Matrix: Water
Analysis Batch: 454726

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 454273

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	41.0		ng/L		108	76 - 136	0	30
Perfluorooctanesulfonic acid (PFOS)			37.1	38.8		ng/L		105	70 - 130	3	30
Perfluorononanesulfonic acid (PFNS)			38.4	38.2		ng/L		100	75 - 135	7	30
Perfluorodecanesulfonic acid (PFDS)			38.6	40.0		ng/L		104	71 - 131	1	30
Perfluorooctanesulfonamide (FOSA)			40.0	46.8		ng/L		117	73 - 133	5	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	39.0		ng/L		98	76 - 136	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	43.6		ng/L		109	76 - 136	8	30
4:2 FTS			37.4	41.2		ng/L		110	79 - 139	3	30
6:2 FTS			37.9	36.2		ng/L		95	59 - 175	0	30
8:2 FTS			38.3	41.3		ng/L		108	75 - 135	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	40.0		ng/L		106	79 - 139	3	30
HFPO-DA (GenX)			40.0	41.0		ng/L		103	51 - 173	5	30
F-53B Major			37.3	38.6		ng/L		103	75 - 135	1	30
F-53B Minor			37.7	36.5		ng/L		97	54 - 114	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*95*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C4 PFHpA	*101*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C5 PFNA	*106*		*25 - 150*
13C2 PFDA	*93*		*25 - 150*
13C2 PFUnA	*93*		*25 - 150*
13C2 PFDoA	*99*		*25 - 150*
13C2 PFTeDA	*99*		*25 - 150*
13C3 PFBS	*97*		*25 - 150*
18O2 PFHxS	*106*		*25 - 150*
13C4 PFOS	*102*		*25 - 150*
13C8 FOSA	*96*		*25 - 150*
d3-NMeFOSAA	*105*		*25 - 150*
d5-NEtFOSAA	*96*		*25 - 150*
M2-6:2 FTS	*112*		*25 - 150*
M2-8:2 FTS	*101*		*25 - 150*
M2-4:2 FTS	*88*		*25 - 150*
13C3 HFPO-DA	*101*		*25 - 150*

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143339-2

Client Sample ID: GW-12607-011821-DA-010
Lab Sample ID: 240-143339-1
Date Collected: 01/18/21 12:50
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			454273	01/22/21 04:42	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	454726	01/22/21 19:42	K1S	TAL SAC

Client Sample ID: GW-12607-011821-DA-011
Lab Sample ID: 240-143339-2
Date Collected: 01/18/21 15:00
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			454273	01/22/21 04:42	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	454726	01/22/21 19:51	K1S	TAL SAC

Client Sample ID: GW-12607-011921-DA-012
Lab Sample ID: 240-143339-3
Date Collected: 01/19/21 12:05
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			454273	01/22/21 04:42	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	454726	01/22/21 20:00	K1S	TAL SAC

Client Sample ID: GW-12607-011921-DA-013
Lab Sample ID: 240-143339-4
Date Collected: 01/19/21 12:25
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			454273	01/22/21 04:42	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	454726	01/22/21 20:09	K1S	TAL SAC

Client Sample ID: GW-12607-011921-DA-014
Lab Sample ID: 240-143339-5
Date Collected: 01/19/21 14:50
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			454273	01/22/21 04:42	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	454726	01/22/21 20:18	K1S	TAL SAC

Client Sample ID: GW-12607-011921-DA-015
Lab Sample ID: 240-143339-6
Date Collected: 01/19/21 13:20
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			454273	01/22/21 04:42	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	454726	01/22/21 20:27	K1S	TAL SAC

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-143339-2
Project/Site: 12607-T31, RACER Eckles Rd

Client Sample ID: GW-12607-011921-DA-016
Lab Sample ID: 240-143339-7

Date Collected: 01/19/21 13:40
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			454273	01/22/21 04:42	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	454726	01/22/21 20:36	K1S	TAL SAC

Client Sample ID: FB-12607-011921-DA-017
Lab Sample ID: 240-143339-8

Date Collected: 01/19/21 12:00
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			454273	01/22/21 04:42	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	454726	01/22/21 21:04	K1S	TAL SAC

Client Sample ID: GW-12607-011921-DA-018
Lab Sample ID: 240-143339-9

Date Collected: 01/19/21 14:55
Matrix: Water
Date Received: 01/20/21 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			454273	01/22/21 04:42	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	454726	01/22/21 21:13	K1S	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-143339-2
Project/Site: 12607-T31, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2468	01-20-24
ANAB	Dept. of Energy	L2468.01	01-20-21 *
ANAB	ISO/IEC 17025	L2468	01-20-21 *
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-30-21
Hawaii	State	<cert No.>	01-29-21
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	02-01-21
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	01-29-21
Nevada	State	CA000442021-2	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Ohio	State	41252	01-29-22
Oregon	NELAP	4040	01-29-21
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-21
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Michigan
10448 Citation Drive
Suite 200
Brighton, MI 48116
Phone: 810.229.2763 Fax:

MICHIGAN
190

Chain of Custody Record

2-8/29

264911

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: C. MEINUCE	Site Contact: C. MEINUCE	Date: 1/18/21	COC No: 12607
Company Name: GTD SERVICES INC	Tel/Fax: 248 893 3400	Lab Contact: D. ECKLER	Carrier: FED EX	1 of 1 COCs
Address: 26850 HAGGERTY RD	Analysis Turnaround Time			Sampler: D. HANNIS
City/State/Zip: FARMINGTON HILLS, MI 48127	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 248 893 3400	TAT if different from Below _____			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: ECKLES RD	☐ 1 week			
Site: LIVONIA, MI	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	PFAS																Sample Specific Notes:
GW-12607-011821-DA-010	1/18/21	1250	G	W	3			X	X															
-011		1500	G	W	4			X																
GW-12607-011921-DA-012	1/19/21	1205	G	W	4			X																
-013		1225			4			X																
-014		1458			4			X																
-015		1320			4			X																
-016		1346			4			X																
FB-12607-011921-DA-017		1200			2			X																
GW-12607-011921-DA-018		1455			4			X																

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
12607A - T31421

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: _____ Corr'd: _____ | Therm ID No.: _____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	GTD	1/19/21 1630		ETA	1-20-21 950
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

1/31/2021

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 240-143339**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: Matt Snyder

Cooler Received on 1-20-21 Opened on 1-20-21

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

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

TestAmerica Cooler # 10 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF **+0.1** °C) Observed Cooler Temp. 2.8 °C Corrected Cooler Temp. 2.9 °C
   IR GUN #IR-12 (CF **+0.2**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC907861
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

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

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

Concerning _____

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

Samples processed by: MJS ETA CANTON

_____

_____

_____

_____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-131046.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Denise.Heckler@Eurofinset.com	State of Origin: Michigan	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-143339-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 2/2/2021			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: 12607, RACER Eckles Rd	Project #: 24005880			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_PFC (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GW-12607-011821-DA-010 (240-143339-1)	1/18/21	12:50 Eastern		Water			X	1	
GW-12607-011821-DA-011 (240-143339-2)	1/18/21	15:00 Eastern		Water			X	2	
GW-12607-011921-DA-012 (240-143339-3)	1/19/21	12:05 Eastern		Water			X	2	
GW-12607-011921-DA-013 (240-143339-4)	1/19/21	12:25 Eastern		Water			X	2	
GW-12607-011921-DA-014 (240-143339-5)	1/19/21	14:50 Eastern		Water			X	2	
GW-12607-011921-DA-015 (240-143339-6)	1/19/21	13:20 Eastern		Water			X	2	
GW-12607-011921-DA-016 (240-143339-7)	1/19/21	13:40 Eastern		Water			X	2	
FB-12607-011921-DA-017 (240-143339-8)	1/19/21	12:00 Eastern		Water			X	2	
GW-12607-011921-DA-018 (240-143339-9)	1/19/21	14:55 Eastern		Water			X	2	

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

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

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

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by: Cam	1-20-21 1432	240		1/21/21 0900	EMAS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.7a/2.5a

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-143339-2

Login Number: 143339
List Number: 2
Creator: Nelson, Kym D

List Source: Eurofins TestAmerica, Sacramento
List Creation: 01/21/21 03:01 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.7/2.5c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-143339-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-143339-1	GW-12607-011821-DA-010	73	80	102	105	102	103	105	96
240-143339-2	GW-12607-011821-DA-011	65	70	102	116	105	110	126	120
240-143339-3	GW-12607-011921-DA-012	77	78	103	110	102	115	117	117
240-143339-4	GW-12607-011921-DA-013	63	69	87	113	102	119	130	125
240-143339-5	GW-12607-011921-DA-014	81	86	84	106	104	110	107	96
240-143339-6	GW-12607-011921-DA-015	90	92	101	101	104	105	104	103
240-143339-7	GW-12607-011921-DA-016	83	88	91	98	102	98	96	90
240-143339-8	FB-12607-011921-DA-017	89	94	93	95	102	95	95	92
240-143339-9	GW-12607-011921-DA-018	79	87	82	99	104	106	99	99
LCS 320-454273/2-A	Lab Control Sample	95	100	101	100	100	105	97	93
LCSD 320-454273/3-A	Lab Control Sample Dup	95	95	100	101	103	106	93	93
MB 320-454273/1-A	Method Blank	93	97	99	99	103	102	97	92

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
240-143339-1	GW-12607-011821-DA-010	102	102	90	104	101	105	113	107
240-143339-2	GW-12607-011821-DA-011	106	118	95	118	121	111	107	109
240-143339-3	GW-12607-011921-DA-012	109	114	99	109	111	113	117	117
240-143339-4	GW-12607-011921-DA-013	122	121	111	128	127	120	111	116
240-143339-5	GW-12607-011921-DA-014	99	106	110	110	103	110	109	106
240-143339-6	GW-12607-011921-DA-015	93	105	103	105	105	106	108	102
240-143339-7	GW-12607-011921-DA-016	97	97	99	95	100	97	102	102
240-143339-8	FB-12607-011921-DA-017	82	89	92	96	87	92	97	92
240-143339-9	GW-12607-011921-DA-018	92	93	104	107	100	104	103	101
LCS 320-454273/2-A	Lab Control Sample	96	100	97	100	98	95	107	102
LCSD 320-454273/3-A	Lab Control Sample Dup	99	99	97	106	102	96	105	96
MB 320-454273/1-A	Method Blank	98	95	87	97	93	96	98	97

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)				
240-143339-1	GW-12607-011821-DA-010	120	107	112	100				
240-143339-2	GW-12607-011821-DA-011	137	115	130	117				
240-143339-3	GW-12607-011921-DA-012	155 *5+	112	155 *5+	114				
240-143339-4	GW-12607-011921-DA-013	134	137	91	123				
240-143339-5	GW-12607-011921-DA-014	125	107	83	103				
240-143339-6	GW-12607-011921-DA-015	117	103	120	101				
240-143339-7	GW-12607-011921-DA-016	114	99	96	99				
240-143339-8	FB-12607-011921-DA-017	98	90	83	93				
240-143339-9	GW-12607-011921-DA-018	123	101	81	103				
LCS 320-454273/2-A	Lab Control Sample	105	102	94	101				
LCSD 320-454273/3-A	Lab Control Sample Dup	112	101	88	101				
MB 320-454273/1-A	Method Blank	103	91	91	96				

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 240-143339-2
Project/Site: 12607-T31, RACER Eckles Rd

PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

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Sacramento
Sample Receiving Notes

240-143339 Field Sheet

Job: _____

Tracking # : 9148 7502 9147

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Therm. ID: AL-5 Corr. Factor: (+ /-) 2 °C

Ice X Wet X Gel _____ Other _____

Cooler Custody Seal: —

Cooler ID: —

Temp Observed: 27 °C Corrected: 25 °C

From: Temp Blank ☒ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐
Frozen samples show signs of thaw?	☐	☐	☑

Initials: _____ Date: 1/21/21

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☐
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: _____ Date: 1/21/21

Notes:

* Recived a Rogue Nitric Bottle for SA 2-E. Email 1/21/21

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
Samples received within hold time?	☑	☐	☐
NCM Filed?	☐	☐	☐
Log Release checked in TALS?	☐	☐	☑

Initials: _____ Date: 1/21/21

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-144071-1
Client Project/Site: 12607-T31, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
2/13/2021 2:22:25 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-144071-1

Job ID: 240-144071-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-144071-1

Comments
The sample IDs were corrected to reflect year 2021.

Receipt
The samples were received on 2/4/2021 9:30 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.9º C.

LCMS
Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-6:2 FTS of the following samples: GW-12607-020321-DA-009 (240-144071-3) and (MB 320-459928/1-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for 13C3 PFBS of the following sample: GW-12607-020321-DA-010 (240-144071-4). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analyte was outside of the established ratio limits. The qualitative identification of the analyte has some degree of uncertainty. However, analyst judgment was used to positively identify the analyte.

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

Organic Prep
Method 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-459928.

Method 3535: The following samples contained floating particulates in the sample bottle prior to extraction: GW-12607-020321-DA-007 (240-144071-1), GW-12607-020321-DA-009 (240-144071-3) and GW-12607-020321-DA-010 (240-144071-4).

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-144071-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-144071-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-144071-1	GW-12607-020321-DA-007	Water	02/03/21 12:00	02/04/21 09:30	
240-144071-2	GW-12607-020321-DA-008	Water	02/03/21 13:10	02/04/21 09:30	
240-144071-3	GW-12607-020321-DA-009	Water	02/03/21 14:15	02/04/21 09:30	
240-144071-4	GW-12607-020321-DA-010	Water	02/03/21 15:10	02/04/21 09:30	
240-144071-5	FB-12607-020321-DA-011	Water	02/03/21 00:00	02/04/21 09:30	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-144071-1

Client Sample ID: GW-12607-020321-DA-007 — Lab Sample ID: 240-144071-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.0	J	4.7	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.59	J	1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.53	J	1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.5		1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.67	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.8	I	1.9	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-020321-DA-008 — Lab Sample ID: 240-144071-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	12		4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.75	J	1.9	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.1	J	1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.1		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.0		1.9	0.53	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.55	J I	1.9	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-020321-DA-009 — Lab Sample ID: 240-144071-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.6		4.6	2.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.3	J	1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.1	J	1.8	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.76	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.9		1.8	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.7	I	1.8	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-020321-DA-010 — Lab Sample ID: 240-144071-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	6.4		4.8	2.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.1		1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.7	J	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7.2		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	1.6	J I	1.9	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	23	I	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.63	J I	1.9	0.18	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FB-12607-020321-DA-011 — Lab Sample ID: 240-144071-5

No Detections.

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-144071-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-020321-DA-007
Date Collected: 02/03/21 12:00
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144071-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.0**	**J**	4.7	2.2	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluoropentanoic acid (PFPeA)	**0.59**	**J**	1.9	0.46	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.54	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluoroheptanoic acid (PFHpA)	**0.53**	**J**	1.9	0.23	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorooctanoic acid (PFOA)	**3.5**		1.9	0.79	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.68	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.9	0.19	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluoropentanesulfonic acid (PFPeS)	**0.67**	**J**	1.9	0.28	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorohexanesulfonic acid (PFHxS)	**3.8**	**I**	1.9	0.53	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.50	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.34	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		02/09/21 04:26	02/09/21 23:26	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.91	ng/L		02/09/21 04:26	02/09/21 23:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		02/09/21 04:26	02/09/21 23:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		02/09/21 04:26	02/09/21 23:26	1
4:2 FTS	1.9	U	1.9	0.22	ng/L		02/09/21 04:26	02/09/21 23:26	1
6:2 FTS	4.7	U	4.7	2.3	ng/L		02/09/21 04:26	02/09/21 23:26	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		02/09/21 04:26	02/09/21 23:26	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.37	ng/L		02/09/21 04:26	02/09/21 23:26	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		02/09/21 04:26	02/09/21 23:26	1
F-53B Major	1.9	U	1.9	0.22	ng/L		02/09/21 04:26	02/09/21 23:26	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		02/09/21 04:26	02/09/21 23:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*53*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C5 PFPeA	*92*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C2 PFHxA	*86*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C4 PFHpA	*76*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C4 PFOA	*82*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C5 PFNA	*86*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C2 PFDA	*84*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C2 PFUnA	*80*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C2 PFDoA	*84*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C2 PFTeDA	*83*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C3 PFBS	*101*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
18O2 PFHxS	*81*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C4 PFOS	*79*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
13C8 FOSA	*84*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*
d3-NMeFOSAA	*102*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:26*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-020321-DA-007
Date Collected: 02/03/21 12:00
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144071-1
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	97		25 - 150	02/09/21 04:26	02/09/21 23:26	1
M2-6:2 FTS	133		25 - 150	02/09/21 04:26	02/09/21 23:26	1
M2-8:2 FTS	126		25 - 150	02/09/21 04:26	02/09/21 23:26	1
M2-4:2 FTS	114		25 - 150	02/09/21 04:26	02/09/21 23:26	1
13C3 HFPO-DA	81		25 - 150	02/09/21 04:26	02/09/21 23:26	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-020321-DA-008
Date Collected: 02/03/21 13:10
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144071-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**12**		4.6	2.2	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluoropentanoic acid (PFPeA)	**0.75**	**J**	1.9	0.45	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.54	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.23	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorooctanoic acid (PFOA)	**1.1**	**J**	1.9	0.79	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.68	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorobutanesulfonic acid (PFBS)	**3.1**		1.9	0.19	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorohexanesulfonic acid (PFHxS)	**2.0**		1.9	0.53	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorooctanesulfonic acid (PFOS)	**0.55**	**J I**	1.9	0.50	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.34	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		02/09/21 04:26	02/09/21 23:36	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.91	ng/L		02/09/21 04:26	02/09/21 23:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		02/09/21 04:26	02/09/21 23:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		02/09/21 04:26	02/09/21 23:36	1
4:2 FTS	1.9	U	1.9	0.22	ng/L		02/09/21 04:26	02/09/21 23:36	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		02/09/21 04:26	02/09/21 23:36	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		02/09/21 04:26	02/09/21 23:36	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.37	ng/L		02/09/21 04:26	02/09/21 23:36	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		02/09/21 04:26	02/09/21 23:36	1
F-53B Major	1.9	U	1.9	0.22	ng/L		02/09/21 04:26	02/09/21 23:36	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		02/09/21 04:26	02/09/21 23:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*67*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C5 PFPeA	*90*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C2 PFHxA	*86*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C4 PFHpA	*83*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C4 PFOA	*90*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C5 PFNA	*87*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C2 PFDA	*86*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C2 PFUnA	*82*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C2 PFDoA	*82*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C2 PFTeDA	*81*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C3 PFBS	*90*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
18O2 PFHxS	*82*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C4 PFOS	*77*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*
13C8 FOSA	*83*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:36*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-020321-DA-008
Date Collected: 02/03/21 13:10
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144071-2
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	105		25 - 150	02/09/21 04:26	02/09/21 23:36	1
d5-NEtFOSAA	103		25 - 150	02/09/21 04:26	02/09/21 23:36	1
M2-6:2 FTS	147		25 - 150	02/09/21 04:26	02/09/21 23:36	1
M2-8:2 FTS	110		25 - 150	02/09/21 04:26	02/09/21 23:36	1
M2-4:2 FTS	111		25 - 150	02/09/21 04:26	02/09/21 23:36	1
13C3 HFPO-DA	85		25 - 150	02/09/21 04:26	02/09/21 23:36	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-020321-DA-009
Date Collected: 02/03/21 14:15
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144071-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.6**		4.6	2.2	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluoropentanoic acid (PFPeA)	**1.3**	**J**	1.8	0.45	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorohexanoic acid (PFHxA)	**1.1**	**J**	1.8	0.54	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluoroheptanoic acid (PFHpA)	**0.76**	**J**	1.8	0.23	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorooctanoic acid (PFOA)	**2.9**		1.8	0.79	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.29	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.51	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.67	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.8	0.18	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.28	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorohexanesulfonic acid (PFHxS)	**2.7**	**I**	1.8	0.53	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.18	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.50	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.34	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.30	ng/L		02/09/21 04:26	02/09/21 23:45	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.91	ng/L		02/09/21 04:26	02/09/21 23:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.6	U	4.6	1.1	ng/L		02/09/21 04:26	02/09/21 23:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.6	U	4.6	1.2	ng/L		02/09/21 04:26	02/09/21 23:45	1
4:2 FTS	1.8	U	1.8	0.22	ng/L		02/09/21 04:26	02/09/21 23:45	1
6:2 FTS	4.6	U	4.6	2.3	ng/L		02/09/21 04:26	02/09/21 23:45	1
8:2 FTS	1.8	U	1.8	0.43	ng/L		02/09/21 04:26	02/09/21 23:45	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.8	U	1.8	0.37	ng/L		02/09/21 04:26	02/09/21 23:45	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		02/09/21 04:26	02/09/21 23:45	1
F-53B Major	1.8	U	1.8	0.22	ng/L		02/09/21 04:26	02/09/21 23:45	1
F-53B Minor	1.8	U	1.8	0.30	ng/L		02/09/21 04:26	02/09/21 23:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*69*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C5 PFPeA	*104*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C2 PFHxA	*80*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C4 PFHpA	*87*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C4 PFOA	*96*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C5 PFNA	*93*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C2 PFDA	*88*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C2 PFUnA	*84*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C2 PFDoA	*86*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C2 PFTeDA	*91*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C3 PFBS	*105*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
18O2 PFHxS	*88*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C4 PFOS	*81*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
13C8 FOSA	*87*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*
d3-NMeFOSAA	*118*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:45*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-020321-DA-009
Date Collected: 02/03/21 14:15
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144071-3
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	112		25 - 150	02/09/21 04:26	02/09/21 23:45	1
M2-6:2 FTS	151	*5+	25 - 150	02/09/21 04:26	02/09/21 23:45	1
M2-8:2 FTS	111		25 - 150	02/09/21 04:26	02/09/21 23:45	1
M2-4:2 FTS	113		25 - 150	02/09/21 04:26	02/09/21 23:45	1
13C3 HFPO-DA	90		25 - 150	02/09/21 04:26	02/09/21 23:45	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-020321-DA-010
Date Collected: 02/03/21 15:10
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144071-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**6.4**		4.8	2.3	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluoropentanoic acid (PFPeA)	**2.1**		1.9	0.47	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.55	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluoroheptanoic acid (PFHpA)	**1.7**	**J**	1.9	0.24	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorooctanoic acid (PFOA)	**7.2**		1.9	0.81	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.69	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorobutanesulfonic acid (PFBS)	**1.8**	**J**	1.9	0.19	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluoropentanesulfonic acid (PFPeS)	**1.6**	**J I**	1.9	0.29	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorohexanesulfonic acid (PFHxS)	**23**	**I**	1.9	0.54	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.63**	**J I**	1.9	0.18	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.51	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.35	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		02/09/21 04:26	02/09/21 23:54	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.93	ng/L		02/09/21 04:26	02/09/21 23:54	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.8	U	4.8	1.1	ng/L		02/09/21 04:26	02/09/21 23:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.8	U	4.8	1.2	ng/L		02/09/21 04:26	02/09/21 23:54	1
4:2 FTS	1.9	U	1.9	0.23	ng/L		02/09/21 04:26	02/09/21 23:54	1
6:2 FTS	4.8	U	4.8	2.4	ng/L		02/09/21 04:26	02/09/21 23:54	1
8:2 FTS	1.9	U	1.9	0.44	ng/L		02/09/21 04:26	02/09/21 23:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.38	ng/L		02/09/21 04:26	02/09/21 23:54	1
HFPO-DA (GenX)	3.8	U	3.8	1.4	ng/L		02/09/21 04:26	02/09/21 23:54	1
F-53B Major	1.9	U	1.9	0.23	ng/L		02/09/21 04:26	02/09/21 23:54	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		02/09/21 04:26	02/09/21 23:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*80*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C5 PFPeA	*138*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C2 PFHxA	*48*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C4 PFHpA	*109*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C4 PFOA	*91*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C5 PFNA	*111*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C2 PFDA	*118*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C2 PFUnA	*115*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C2 PFDoA	*118*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C2 PFTeDA	*120*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C3 PFBS	*170*	**5+*	*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
18O2 PFHxS	*114*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C4 PFOS	*107*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
13C8 FOSA	*123*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*
d3-NMeFOSAA	*143*		*25 - 150*	*02/09/21 04:26*	*02/09/21 23:54*	*1*

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-144071-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: GW-12607-020321-DA-010
Date Collected: 02/03/21 15:10
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144071-4
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	134		25 - 150	02/09/21 04:26	02/09/21 23:54	1
M2-6:2 FTS	97		25 - 150	02/09/21 04:26	02/09/21 23:54	1
M2-8:2 FTS	138		25 - 150	02/09/21 04:26	02/09/21 23:54	1
M2-4:2 FTS	78		25 - 150	02/09/21 04:26	02/09/21 23:54	1
13C3 HFPO-DA	113		25 - 150	02/09/21 04:26	02/09/21 23:54	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: FB-12607-020321-DA-011
Date Collected: 02/03/21 00:00
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144071-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	4.7	U	4.7	2.2	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.54	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.23	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.79	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.68	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U	1.9	0.53	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.50	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.34	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		02/09/21 04:26	02/10/21 00:03	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.91	ng/L		02/09/21 04:26	02/10/21 00:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	4.7	U	4.7	1.1	ng/L		02/09/21 04:26	02/10/21 00:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	4.7	U	4.7	1.2	ng/L		02/09/21 04:26	02/10/21 00:03	1
4:2 FTS	1.9	U	1.9	0.22	ng/L		02/09/21 04:26	02/10/21 00:03	1
6:2 FTS	4.7	U	4.7	2.3	ng/L		02/09/21 04:26	02/10/21 00:03	1
8:2 FTS	1.9	U	1.9	0.43	ng/L		02/09/21 04:26	02/10/21 00:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.9	U	1.9	0.37	ng/L		02/09/21 04:26	02/10/21 00:03	1
HFPO-DA (GenX)	3.7	U	3.7	1.4	ng/L		02/09/21 04:26	02/10/21 00:03	1
F-53B Major	1.9	U	1.9	0.22	ng/L		02/09/21 04:26	02/10/21 00:03	1
F-53B Minor	1.9	U	1.9	0.30	ng/L		02/09/21 04:26	02/10/21 00:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*80*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C5 PFPeA	*86*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C2 PFHxA	*97*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C4 PFHpA	*96*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C4 PFOA	*95*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C5 PFNA	*90*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C2 PFDA	*94*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C2 PFUnA	*97*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C2 PFDoA	*99*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C2 PFTeDA	*96*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C3 PFBS	*84*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
18O2 PFHxS	*89*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C4 PFOS	*88*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
13C8 FOSA	*92*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
d3-NMeFOSAA	*124*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*
d5-NEtFOSAA	*124*		*25 - 150*	*02/09/21 04:26*	*02/10/21 00:03*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Client Sample ID: FB-12607-020321-DA-011
Date Collected: 02/03/21 00:00
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144071-5
Matrix: Water

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	150		25 - 150	02/09/21 04:26	02/10/21 00:03	1
M2-8:2 FTS	113		25 - 150	02/09/21 04:26	02/10/21 00:03	1
M2-4:2 FTS	124		25 - 150	02/09/21 04:26	02/10/21 00:03	1
13C3 HFPO-DA	89		25 - 150	02/09/21 04:26	02/10/21 00:03	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-144071-1

LCMS

Prep Batch: 459928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-144071-1	GW-12607-020321-DA-007	Total/NA	Water	3535	
240-144071-2	GW-12607-020321-DA-008	Total/NA	Water	3535	
240-144071-3	GW-12607-020321-DA-009	Total/NA	Water	3535	
240-144071-4	GW-12607-020321-DA-010	Total/NA	Water	3535	
240-144071-5	FB-12607-020321-DA-011	Total/NA	Water	3535	
MB 320-459928/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-459928/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-459928/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 460484

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-144071-1	GW-12607-020321-DA-007	Total/NA	Water	537 (modified)	459928
240-144071-2	GW-12607-020321-DA-008	Total/NA	Water	537 (modified)	459928
240-144071-3	GW-12607-020321-DA-009	Total/NA	Water	537 (modified)	459928
240-144071-4	GW-12607-020321-DA-010	Total/NA	Water	537 (modified)	459928
240-144071-5	FB-12607-020321-DA-011	Total/NA	Water	537 (modified)	459928
MB 320-459928/1-A	Method Blank	Total/NA	Water	537 (modified)	459928
LCS 320-459928/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	459928
LCSD 320-459928/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	459928

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-459928/1-A
Matrix: Water
Analysis Batch: 460484

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 459928

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5.0	U	5.0	2.4	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.73	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.0	0.57	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.37	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		02/09/21 04:26	02/09/21 22:50	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.98	ng/L		02/09/21 04:26	02/09/21 22:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	5.0	U	5.0	1.2	ng/L		02/09/21 04:26	02/09/21 22:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	5.0	U	5.0	1.3	ng/L		02/09/21 04:26	02/09/21 22:50	1
4:2 FTS	2.0	U	2.0	0.24	ng/L		02/09/21 04:26	02/09/21 22:50	1
6:2 FTS	5.0	U	5.0	2.5	ng/L		02/09/21 04:26	02/09/21 22:50	1
8:2 FTS	2.0	U	2.0	0.46	ng/L		02/09/21 04:26	02/09/21 22:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.0	U	2.0	0.40	ng/L		02/09/21 04:26	02/09/21 22:50	1
HFPO-DA (GenX)	4.0	U	4.0	1.5	ng/L		02/09/21 04:26	02/09/21 22:50	1
F-53B Major	2.0	U	2.0	0.24	ng/L		02/09/21 04:26	02/09/21 22:50	1
F-53B Minor	2.0	U	2.0	0.32	ng/L		02/09/21 04:26	02/09/21 22:50	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*87*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C5 PFPeA	*84*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C2 PFHxA	*96*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C4 PFHpA	*97*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C4 PFOA	*102*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C5 PFNA	*93*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C2 PFDA	*99*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C2 PFUnA	*94*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C2 PFDoA	*94*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C3 PFBS	*84*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
18O2 PFHxS	*89*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C4 PFOS	*87*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
13C8 FOSA	*90*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*
d3-NMeFOSAA	*122*		*25 - 150*	*02/09/21 04:26*	*02/09/21 22:50*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-459928/1-A
Matrix: Water
Analysis Batch: 460484

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 459928

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	123		25 - 150	02/09/21 04:26	02/09/21 22:50	1
M2-6:2 FTS	169	*5+	25 - 150	02/09/21 04:26	02/09/21 22:50	1
M2-8:2 FTS	118		25 - 150	02/09/21 04:26	02/09/21 22:50	1
M2-4:2 FTS	117		25 - 150	02/09/21 04:26	02/09/21 22:50	1
13C3 HFPO-DA	91		25 - 150	02/09/21 04:26	02/09/21 22:50	1

Lab Sample ID: LCS 320-459928/2-A
Matrix: Water
Analysis Batch: 460484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 459928

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.6		ng/L		104	76 - 136
Perfluoropentanoic acid (PFPeA)	40.0	37.3		ng/L		93	71 - 131
Perfluorohexanoic acid (PFHxA)	40.0	39.9		ng/L		100	73 - 133
Perfluoroheptanoic acid (PFHpA)	40.0	41.9		ng/L		105	72 - 132
Perfluorooctanoic acid (PFOA)	40.0	37.8		ng/L		95	70 - 130
Perfluorononanoic acid (PFNA)	40.0	43.5		ng/L		109	75 - 135
Perfluorodecanoic acid (PFDA)	40.0	42.7		ng/L		107	76 - 136
Perfluoroundecanoic acid (PFUnA)	40.0	42.3		ng/L		106	68 - 128
Perfluorododecanoic acid (PFDoA)	40.0	41.1		ng/L		103	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	41.4		ng/L		103	71 - 131
Perfluorotetradecanoic acid (PFTeA)	40.0	41.3		ng/L		103	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	34.5		ng/L		97	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.6		ng/L		106	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.1		ng/L		96	59 - 119
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.1		ng/L		105	76 - 136
Perfluorooctanesulfonic acid (PFOS)	37.1	37.7		ng/L		102	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	39.1		ng/L		102	75 - 135
Perfluorodecanesulfonic acid (PFDS)	38.6	42.9		ng/L		111	71 - 131
Perfluorooctanesulfonamide (FOSA)	40.0	40.1		ng/L		100	73 - 133
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	36.2		ng/L		90	76 - 136
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.6		ng/L		106	76 - 136
4:2 FTS	37.4	36.7		ng/L		98	79 - 139
6:2 FTS	37.9	36.1		ng/L		95	59 - 175
8:2 FTS	38.3	40.7		ng/L		106	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	37.7	39.5		ng/L		105	79 - 139
HFPO-DA (GenX)	40.0	39.2		ng/L		98	51 - 173
F-53B Major	37.3	40.9		ng/L		110	75 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-459928/2-A
Matrix: Water
Analysis Batch: 460484

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 459928

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			37.7	39.2		ng/L		104	54 - 114		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*73*		*25 - 150*
13C5 PFPeA	*75*		*25 - 150*
13C2 PFHxA	*79*		*25 - 150*
13C4 PFHpA	*81*		*25 - 150*
13C4 PFOA	*86*		*25 - 150*
13C5 PFNA	*81*		*25 - 150*
13C2 PFDA	*84*		*25 - 150*
13C2 PFUnA	*78*		*25 - 150*
13C2 PFDoA	*81*		*25 - 150*
13C2 PFTeDA	*78*		*25 - 150*
13C3 PFBS	*79*		*25 - 150*
18O2 PFHxS	*77*		*25 - 150*
13C4 PFOS	*79*		*25 - 150*
13C8 FOSA	*82*		*25 - 150*
d3-NMeFOSAA	*111*		*25 - 150*
d5-NEtFOSAA	*105*		*25 - 150*
M2-6:2 FTS	*148*		*25 - 150*
M2-8:2 FTS	*99*		*25 - 150*
M2-4:2 FTS	*110*		*25 - 150*
13C3 HFPO-DA	*79*		*25 - 150*

Lab Sample ID: LCSD 320-459928/3-A
Matrix: Water
Analysis Batch: 460484

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 459928

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	41.3		ng/L		103	76 - 136	1	30
Perfluoropentanoic acid (PFPeA)			40.0	38.5		ng/L		96	71 - 131	3	30
Perfluorohexanoic acid (PFHxA)			40.0	40.0		ng/L		100	73 - 133	0	30
Perfluoroheptanoic acid (PFHpA)			40.0	41.3		ng/L		103	72 - 132	1	30
Perfluorooctanoic acid (PFOA)			40.0	38.6		ng/L		96	70 - 130	2	30
Perfluorononanoic acid (PFNA)			40.0	40.0		ng/L		100	75 - 135	9	30
Perfluorodecanoic acid (PFDA)			40.0	44.1		ng/L		110	76 - 136	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	41.8		ng/L		105	68 - 128	1	30
Perfluorododecanoic acid (PFDoA)			40.0	39.4		ng/L		98	71 - 131	4	30
Perfluorotridecanoic acid (PFTriA)			40.0	40.9		ng/L		102	71 - 131	1	30
Perfluorotetradecanoic acid (PFTeA)			40.0	41.2		ng/L		103	70 - 130	0	30
Perfluorobutanesulfonic acid (PFBS)			35.4	34.0		ng/L		96	67 - 127	1	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	37.8		ng/L		101	66 - 126	5	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	34.5		ng/L		95	59 - 119	2	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-459928/3-A
Matrix: Water
Analysis Batch: 460484

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 459928

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	40.4		ng/L		106	76 - 136	1	30
Perfluorooctanesulfonic acid (PFOS)			37.1	36.4		ng/L		98	70 - 130	4	30
Perfluorononanesulfonic acid (PFNS)			38.4	39.3		ng/L		102	75 - 135	1	30
Perfluorodecanesulfonic acid (PFDS)			38.6	40.0		ng/L		104	71 - 131	7	30
Perfluorooctanesulfonamide (FOSA)			40.0	40.5		ng/L		101	73 - 133	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	37.3		ng/L		93	76 - 136	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	41.9		ng/L		105	76 - 136	2	30
4:2 FTS			37.4	36.8		ng/L		98	79 - 139	0	30
6:2 FTS			37.9	36.7		ng/L		97	59 - 175	2	30
8:2 FTS			38.3	43.7		ng/L		114	75 - 135	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			37.7	38.4		ng/L		102	79 - 139	3	30
HFPO-DA (GenX)			40.0	39.8		ng/L		100	51 - 173	2	30
F-53B Major			37.3	40.6		ng/L		109	75 - 135	1	30
F-53B Minor			37.7	40.7		ng/L		108	54 - 114	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*75*		*25 - 150*
13C5 PFPeA	*74*		*25 - 150*
13C2 PFHxA	*78*		*25 - 150*
13C4 PFHpA	*82*		*25 - 150*
13C4 PFOA	*88*		*25 - 150*
13C5 PFNA	*87*		*25 - 150*
13C2 PFDA	*84*		*25 - 150*
13C2 PFUnA	*81*		*25 - 150*
13C2 PFDoA	*87*		*25 - 150*
13C2 PFTeDA	*78*		*25 - 150*
13C3 PFBS	*80*		*25 - 150*
18O2 PFHxS	*82*		*25 - 150*
13C4 PFOS	*82*		*25 - 150*
13C8 FOSA	*85*		*25 - 150*
d3-NMeFOSAA	*109*		*25 - 150*
d5-NEtFOSAA	*105*		*25 - 150*
M2-6:2 FTS	*130*		*25 - 150*
M2-8:2 FTS	*96*		*25 - 150*
M2-4:2 FTS	*105*		*25 - 150*
13C3 HFPO-DA	*79*		*25 - 150*

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-144071-1
Project/Site: 12607-T31, RACER Eckles Rd

Client Sample ID: GW-12607-020321-DA-007
Lab Sample ID: 240-144071-1
Date Collected: 02/03/21 12:00
Matrix: Water
Date Received: 02/04/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			459928	02/09/21 04:26	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	460484	02/09/21 23:26	K1S	TAL SAC

Client Sample ID: GW-12607-020321-DA-008
Lab Sample ID: 240-144071-2
Date Collected: 02/03/21 13:10
Matrix: Water
Date Received: 02/04/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			459928	02/09/21 04:26	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	460484	02/09/21 23:36	K1S	TAL SAC

Client Sample ID: GW-12607-020321-DA-009
Lab Sample ID: 240-144071-3
Date Collected: 02/03/21 14:15
Matrix: Water
Date Received: 02/04/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			459928	02/09/21 04:26	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	460484	02/09/21 23:45	K1S	TAL SAC

Client Sample ID: GW-12607-020321-DA-010
Lab Sample ID: 240-144071-4
Date Collected: 02/03/21 15:10
Matrix: Water
Date Received: 02/04/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			459928	02/09/21 04:26	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	460484	02/09/21 23:54	K1S	TAL SAC

Client Sample ID: FB-12607-020321-DA-011
Lab Sample ID: 240-144071-5
Date Collected: 02/03/21 00:00
Matrix: Water
Date Received: 02/04/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			459928	02/09/21 04:26	EG	TAL SAC
Total/NA	Analysis	537 (modified)		1	460484	02/10/21 00:03	K1S	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-144071-1
Project/Site: 12607-T31, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24
ANAB	Dept. of Defense ELAP	L2468	01-20-24
ANAB	Dept. of Energy	L2468.01	01-20-21 *
ANAB	ISO/IEC 17025	L2468	01-20-21 *
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-29-22
Hawaii	State	<cert No.>	01-29-22
Illinois	NELAP	200060	03-17-21
Kansas	NELAP	E-10375	02-01-21 *
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	01-29-21 *
Nevada	State	CA000442021-2	07-31-21
New Hampshire	NELAP	2997	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Ohio	State	41252	01-29-22
Oregon	NELAP	4040	01-29-21 *
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
West Virginia (DW)	State	9930C	12-31-21
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

MICHIGAN
190

Address:

Chain of Custody Record 361471

eurofins | Environment Testing TestAmerica

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

SGW

TAL-8210

Client Contact	Project Manager: C. MEINCKE	Site Contact: C. MEINCKE	Date: 2/3/21	COC No: 12607-T3[42]
Company Name: GHD SERVICES INC	Tel/Email:	Lab Contact: B. FLETCHER	Carrier: FED EX	1 of 1 COCs
Address: 26850 HAGGERTY RD	Analysis Turnaround Time			Sampler: D. ANTOLIS
City/State/Zip: FARM. HILLS, MI 48331	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 248 893 3400	TAT if different from Below			Walk-in Client:
Fax:	☒ 2 weeks			Lab Sampling:
Project Name: EATON RD	☐ 1 week			Job / SDG No.:
Site: LIVONIA, MI	☐ 2 days			
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	TOFAS	Sample Specific Notes:
GW-12607-020320-DA-007	2/3/21	1200	G	W	4			X	
-008		1310						X	
-009		1415						X	
-010		1510						X	
FB-12607-020321-DA-011		—	—	W	2			X	

240-144071 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	GHD	2/3/21 1600	MJS ETA CANTON	FEB 04 2021	930
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

2/13/2021

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 240-144071**
Canton Facility

Client CHD Site Name

Cooler Received on FEB 04 2021 Opened on FEB 04 2021

Cooler unpacked by: MJS ETA CANTON

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # TA Foam Box Client Cooler Box Other

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 4.8 °C Corrected Cooler Temp. 4.9 °C
   IR GUN #IR-12 (CF +0.2°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	~~Yes~~	No
-Were the seals on the outside of the cooler(s) signed & dated?	~~Yes~~	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	~~Yes~~	No NA
3. Shippers' packing slip attached to the cooler(s)?	~~Yes~~	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No ~~NA~~ pH Strip Lot# HC907861
14. Were VOAs on the COC?	Yes	~~No~~
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	No ~~NA~~
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present?	Yes	(No)

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

Contacted PM Date by via Verbal Voice Mail Other

Concerning

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen:

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-131843.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Denise.Heckler@Eurofinset.com	State of Origin: Michigan	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-144071-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 2/17/2021			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: 12607, RACER Eckles Rd	Project #: 24005880			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_PFC (MOD) PFAS, Standard List (28 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GW-12607-020320-DA-007 (240-144071-1)	2/3/21	12:00 Eastern		Water			X	2	
GW-12607-020320-DA-008 (240-144071-2)	2/3/21	13:10 Eastern		Water			X	2	
GW-12607-020320-DA-009 (240-144071-3)	2/3/21	14:15 Eastern		Water			X	2	
GW-12607-020320-DA-010 (240-144071-4)	2/3/21	15:10 Eastern		Water			X	2	
FB-12607-020320-DA-011 (240-144071-5)	2/3/21	Eastern		Water			X	2	

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

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

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		2/5/2021 1500			2/6/21 900	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☒ Yes △ No	Custody Seal No.: Seal	Cooler Temperature(s) °C and Other Remarks: 1.4 0b, 1-2 corr

Ver: 11/01/2020

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-144071-1

Login Number: 144071
List Number: 2
Creator: Her, David A

List Source: Eurofins TestAmerica, Sacramento
List Creation: 02/06/21 12:06 PM

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

Isotope Dilution Summary

Client: GHD Services Inc.
Project/Site: 12607-T31, RACER Eckles Rd

Job ID: 240-144071-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-144071-1	GW-12607-020321-DA-007	53	92	86	76	82	86	84	80
240-144071-2	GW-12607-020321-DA-008	67	90	86	83	90	87	86	82
240-144071-3	GW-12607-020321-DA-009	69	104	80	87	96	93	88	84
240-144071-4	GW-12607-020321-DA-010	80	138	48	109	91	111	118	115
240-144071-5	FB-12607-020321-DA-011	80	86	97	96	95	90	94	97
LCS 320-459928/2-A	Lab Control Sample	73	75	79	81	86	81	84	78
LCSD 320-459928/3-A	Lab Control Sample Dup	75	74	78	82	88	87	84	81
MB 320-459928/1-A	Method Blank	87	84	96	97	102	93	99	94

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
240-144071-1	GW-12607-020321-DA-007	84	83	101	81	79	84	102	97
240-144071-2	GW-12607-020321-DA-008	82	81	90	82	77	83	105	103
240-144071-3	GW-12607-020321-DA-009	86	91	105	88	81	87	118	112
240-144071-4	GW-12607-020321-DA-010	118	120	170 *5+	114	107	123	143	134
240-144071-5	FB-12607-020321-DA-011	99	96	84	89	88	92	124	124
LCS 320-459928/2-A	Lab Control Sample	81	78	79	77	79	82	111	105
LCSD 320-459928/3-A	Lab Control Sample Dup	87	78	80	82	82	85	109	105
MB 320-459928/1-A	Method Blank	94	94	84	89	87	90	122	123

		Percent Isotope Dilution Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)
240-144071-1	GW-12607-020321-DA-007	133	126	114	81
240-144071-2	GW-12607-020321-DA-008	147	110	111	85
240-144071-3	GW-12607-020321-DA-009	151 *5+	111	113	90
240-144071-4	GW-12607-020321-DA-010	97	138	78	113
240-144071-5	FB-12607-020321-DA-011	150	113	124	89
LCS 320-459928/2-A	Lab Control Sample	148	99	110	79
LCSD 320-459928/3-A	Lab Control Sample Dup	130	96	105	79
MB 320-459928/1-A	Method Blank	169 *5+	118	117	91

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 240-144071-1
Project/Site: 12607-T31, RACER Eckles Rd

M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA

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Sacramento Sample Receiving Notes

240-144071 Field Sheet

Job: _____

Tracking # : 9148 7503 0791

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Therm. ID: L-03 Corr. Factor: (+ / -) 0.2 °C

Ice X Wet X Gel _____ Other _____

Cooler Custody Seal: Seal

Cooler ID: -

Temp Observed: 1.4 °C Corrected: 1.2 °C

From: Temp Blank ☐ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☐	☐
Cooler Temperature is acceptable?	☐	☐	☐
Frozen samples show signs of thaw?	☐	☐	☐

Initials: DLt Date: 2/6/24

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☐	☐	☐
Samples compromised/tampered with?	☐	☐	☐
Sample containers have legible labels?	☐	☐	☐
Sample custody seal?	☐	☐	☐
Containers are not broken or leaking?	☐	☐	☐
Sample date/times are provided?	☐	☐	☐
Appropriate containers are used?	☐	☐	☐
Sample bottles are completely filled?	☐	☐	☐
Sample preservatives verified?	☐	☐	☐
Samples w/o discrepancies?	☐	☐	☐
Zero headspace?*	☐	☐	☐
Alkalinity has no headspace?	☐	☐	☐
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☐
Multiphasic samples are not present?	☐	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: DLt Date: 2/6/24

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☐	☐	☐
Samples received within hold time?	☐	☐	☐
NCM Filed?	☐	☐	☐
Log Release checked in TALS?	☐	☐	☐

Initials: DLt Date: 2/6/24

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-144072-1
Client Project/Site: 12607-T06, RACER Eckles Rd

For:
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
2/11/2021 12:13:20 PM

Denise Heckler, Project Manager II
(330)966-9477
Denise.Heckler@Eurofinset.com

LINKS

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Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

Job ID: 240-144072-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-144072-1

Comments
No additional comments.

Receipt
The samples were received on 2/4/2021 9:30 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.9º C.

Metals
Method 6010B: Some requested practical quantitation limits (PQLs) fall below the laboratory's verified standard quantitation limit. The continuing calibration blanks and method blanks may not support the lower PQL.

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

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

Definitions/Glossary

Client: GHD Services Inc.
Job ID: 240-144072-1
Project/Site: 12607-T06, RACER Eckles Rd

Qualifiers

Metals

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

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

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

Sample Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-144072-1	GW-12607-020321-DA-007	Water	02/03/21 12:00	02/04/21 09:30	
240-144072-2	GW-12607-020321-DA-008	Water	02/03/21 13:10	02/04/21 09:30	
240-144072-3	GW-12607-020321-DA-009	Water	02/03/21 14:15	02/04/21 09:30	
240-144072-4	GW-12607-020321-DA-010	Water	02/03/21 15:10	02/04/21 09:30	

Detection Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

Client Sample ID: GW-12607-020321-DA-007 — Lab Sample ID: 240-144072-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	650		100	23	ug/L	1		6010B	Total Recoverable
Chromium	1.1	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	19	J	20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-020321-DA-008 — Lab Sample ID: 240-144072-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	67	J	100	23	ug/L	1		6010B	Total Recoverable
Chromium	1.3	J	5.0	0.63	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-020321-DA-009 — Lab Sample ID: 240-144072-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	5200		100	23	ug/L	1		6010B	Total Recoverable
Chromium	1.0	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	2500		20	2.2	ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-020321-DA-010 — Lab Sample ID: 240-144072-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Boron	13000		100	23	ug/L	1		6010B	Total Recoverable
Chromium	1.1	J	5.0	0.63	ug/L	1		6010B	Total Recoverable
Nickel	12000		20	2.2	ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN
7196A	Chromium, Hexavalent	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-020321-DA-007
Date Collected: 02/03/21 12:00
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144072-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	650		100	23	ug/L		02/08/21 14:00	02/09/21 15:39	1
Chromium	1.1	J	5.0	0.63	ug/L		02/08/21 14:00	02/09/21 15:39	1
Nickel	19	J	20	2.2	ug/L		02/08/21 14:00	02/09/21 15:39	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-020321-DA-008
Date Collected: 02/03/21 13:10
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144072-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**67**	**J**	100	23	ug/L		02/08/21 14:00	02/09/21 15:43	1
Chromium	**1.3**	**J**	5.0	0.63	ug/L		02/08/21 14:00	02/09/21 15:43	1
Nickel	20	U	20	2.2	ug/L		02/08/21 14:00	02/09/21 15:43	1

Client: GHD Services Inc.
Job ID: 240-144072-1
Project/Site: 12607-T06, RACER Eckles Rd

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-020321-DA-009
Lab Sample ID: 240-144072-3
Date Collected: 02/03/21 14:15
Matrix: Water
Date Received: 02/04/21 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	5200		100	23	ug/L		02/08/21 14:00	02/09/21 15:47	1
Chromium	1.0	J	5.0	0.63	ug/L		02/08/21 14:00	02/09/21 15:47	1
Nickel	2500		20	2.2	ug/L		02/08/21 14:00	02/09/21 15:47	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

Method: 6010B - Metals (ICP) - Total Recoverable

Client Sample ID: GW-12607-020321-DA-010
Date Collected: 02/03/21 15:10
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144072-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	13000		100	23	ug/L		02/08/21 14:00	02/09/21 15:51	1
Chromium	1.1	J	5.0	0.63	ug/L		02/08/21 14:00	02/09/21 15:51	1
Nickel	12000		20	2.2	ug/L		02/08/21 14:00	02/09/21 15:51	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

General Chemistry

Client Sample ID: GW-12607-020321-DA-007
Date Collected: 02/03/21 12:00
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144072-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			02/04/21 11:23	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

General Chemistry

Client Sample ID: GW-12607-020321-DA-008
Date Collected: 02/03/21 13:10
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144072-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			02/04/21 11:25	1

Client: GHD Services Inc.
Job ID: 240-144072-1
Project/Site: 12607-T06, RACER Eckles Rd

General Chemistry

Client Sample ID: GW-12607-020321-DA-009
Lab Sample ID: 240-144072-3
Date Collected: 02/03/21 14:15
Matrix: Water
Date Received: 02/04/21 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			02/04/21 11:26	1

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

General Chemistry

Client Sample ID: GW-12607-020321-DA-010
Date Collected: 02/03/21 15:10
Date Received: 02/04/21 09:30

Lab Sample ID: 240-144072-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			02/04/21 11:27	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12607-T06, RACER Eckles Rd

Job ID: 240-144072-1

Metals

Prep Batch: 472130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-144072-1	GW-12607-020321-DA-007	Total Recoverable	Water	3005A	
240-144072-2	GW-12607-020321-DA-008	Total Recoverable	Water	3005A	
240-144072-3	GW-12607-020321-DA-009	Total Recoverable	Water	3005A	
240-144072-4	GW-12607-020321-DA-010	Total Recoverable	Water	3005A	
MB 240-472130/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-472130/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 472364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-144072-1	GW-12607-020321-DA-007	Total Recoverable	Water	6010B	472130
240-144072-2	GW-12607-020321-DA-008	Total Recoverable	Water	6010B	472130
240-144072-3	GW-12607-020321-DA-009	Total Recoverable	Water	6010B	472130
240-144072-4	GW-12607-020321-DA-010	Total Recoverable	Water	6010B	472130
MB 240-472130/1-A	Method Blank	Total Recoverable	Water	6010B	472130
LCS 240-472130/2-A	Lab Control Sample	Total Recoverable	Water	6010B	472130

General Chemistry

Analysis Batch: 471830

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-144072-1	GW-12607-020321-DA-007	Total/NA	Water	7196A	
240-144072-2	GW-12607-020321-DA-008	Total/NA	Water	7196A	
240-144072-3	GW-12607-020321-DA-009	Total/NA	Water	7196A	
240-144072-4	GW-12607-020321-DA-010	Total/NA	Water	7196A	
MB 240-471830/3	Method Blank	Total/NA	Water	7196A	
LCS 240-471830/4	Lab Control Sample	Total/NA	Water	7196A	
240-144072-1 MS	GW-12607-020321-DA-007	Total/NA	Water	7196A	
240-144072-1 MSD	GW-12607-020321-DA-007	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-472130/1-A
Matrix: Water
Analysis Batch: 472364

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 472130

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	100	U	100	23	ug/L		02/08/21 14:00	02/09/21 14:48	1
Chromium	5.0	U	5.0	0.63	ug/L		02/08/21 14:00	02/09/21 14:48	1
Nickel	20	U	20	2.2	ug/L		02/08/21 14:00	02/09/21 14:48	1

Lab Sample ID: LCS 240-472130/2-A
Matrix: Water
Analysis Batch: 472364

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 472130

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1000	1040		ug/L		104	80 - 120
Chromium	1000	965		ug/L		96	80 - 120
Nickel	1000	983		ug/L		98	80 - 120

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-471830/3
Matrix: Water
Analysis Batch: 471830

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	0.010	U	0.010	0.0070	mg/L			02/04/21 11:21	1

Lab Sample ID: LCS 240-471830/4
Matrix: Water
Analysis Batch: 471830

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.268		mg/L		107	80 - 123

Lab Sample ID: 240-144072-1 MS
Matrix: Water
Analysis Batch: 471830

Client Sample ID: GW-12607-020321-DA-007
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.010	U	0.250	0.243		mg/L		97	31 - 151

Lab Sample ID: 240-144072-1 MSD
Matrix: Water
Analysis Batch: 471830

Client Sample ID: GW-12607-020321-DA-007
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	0.010	U	0.250	0.225		mg/L		90	31 - 151	8	20

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-144072-1
Project/Site: 12607-T06, RACER Eckles Rd

Client Sample ID: GW-12607-020321-DA-007
Lab Sample ID: 240-144072-1
Date Collected: 02/03/21 12:00
Matrix: Water
Date Received: 02/04/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			472130	02/08/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	472364	02/09/21 15:39	RKT	TAL CAN
Total/NA	Analysis	7196A		1	471830	02/04/21 11:23	BLW	TAL CAN

Client Sample ID: GW-12607-020321-DA-008
Lab Sample ID: 240-144072-2
Date Collected: 02/03/21 13:10
Matrix: Water
Date Received: 02/04/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			472130	02/08/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	472364	02/09/21 15:43	RKT	TAL CAN
Total/NA	Analysis	7196A		1	471830	02/04/21 11:25	BLW	TAL CAN

Client Sample ID: GW-12607-020321-DA-009
Lab Sample ID: 240-144072-3
Date Collected: 02/03/21 14:15
Matrix: Water
Date Received: 02/04/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			472130	02/08/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	472364	02/09/21 15:47	RKT	TAL CAN
Total/NA	Analysis	7196A		1	471830	02/04/21 11:26	BLW	TAL CAN

Client Sample ID: GW-12607-020321-DA-010
Lab Sample ID: 240-144072-4
Date Collected: 02/03/21 15:10
Matrix: Water
Date Received: 02/04/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			472130	02/08/21 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	472364	02/09/21 15:51	RKT	TAL CAN
Total/NA	Analysis	7196A		1	471830	02/04/21 11:27	BLW	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-144072-1
Project/Site: 12607-T06, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-21
Connecticut	State	PH-0590	12-31-21
Florida	NELAP	E87225	06-30-21
Georgia	State	4062	02-23-21
Illinois	NELAP	004498	07-31-21
Iowa	State	421	06-01-21
Kansas	NELAP	E-10336	04-30-21
Kentucky (UST)	State	112225	02-23-21
Kentucky (WW)	State	KY98016	12-31-21
Minnesota	NELAP	OH00048	12-31-21
Minnesota (Petrofund)	State	3506	08-01-21
New Jersey	NELAP	OH001	06-30-21
New York	NELAP	10975	03-31-21
Ohio VAP	State	CL0024	12-21-23
Oregon	NELAP	4062	02-24-21
Pennsylvania	NELAP	68-00340	08-31-21
Texas	NELAP	T104704517-18-10	08-31-21
USDA	US Federal Programs	P330-18-00281	09-17-21
Virginia	NELAP	010101	09-14-21
Washington	State	C971	01-12-22
West Virginia DEP	State	210	12-31-21

Chain of Custody Record

361470 eurofins | Environment Testin TestAmerica

MICHIGAN

Address: 190

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

TAL-8210

Client Contact	Project Manager: C. MCELWEE	Site Contact: C. MCELWEE	Date: 2/3/21	COC No: 12607-TOC 02
Company Name: GHD SERVICES INC	Tel/Email: 248 913 3400	Lab Contact: P. HECKLER	Carrier: FEDEX	1 of 1 COCs
Address: 26050 HAGGERTY	Analysis Turnaround Time			Sampler: P. ANTULS
City/State/Zip: FARM. HILLS, MI 48331	☐ CALENDAR DAYS ☑ WORKING DAYS			For Lab Use Only:
Phone: 248 893 3400	TAT if different from Below			Walk-in Client:
Fax:	☑ 2 weeks			Lab Sampling:
Project Name: ECKLES RD	☐ 1 week			
Site: LIVONIA, MI	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	METALS	HEX CHROME	Sample Specific Notes:
GW-12607-020321-DA-007	2/3/21	1200	G	W	4			X	X	METALS: CHROM, NICKEL, BORON
-008		1310						X	X	
-009		1415						X	X	
-010		1510						X	X	
~~FB-12607-020321-DA-011~~	2/3/21				2					

240-144072 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☑ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____ Corr'd: _____		Therm ID No.: _____
Relinquished by:	Company: GHD	Date/Time: 2/3/21 1600	Received by: MJS	Company: ETA CANTON	Date/Time: FEB 04 202 930
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 240-144072**
Canton Facility

Client CHD Site Name

Cooler Received on FEB 04 2021 Opened on FEB 04 2021

Cooler unpacked by: MJS ETA CANTON

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other

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

TestAmerica Cooler # 1A Foam Box Client Cooler Box Other

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

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

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 4.8 °C Corrected Cooler Temp. 4.9 °C
   IR GUN #IR-12 (CF +0.2°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	(Yes)	No
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	(Yes)	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
11. Sufficient quantity received to perform indicated analyses?	(Yes)	No
12. Are these work share samples and all listed on the COC?	Yes	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	(Yes)	No NA pH Strip Lot# HC907861
14. Were VOAs on the COC?	Yes	(No)
15. Were air bubbles >6 mm in any VOA vials? ● ← Larger than this.	Yes	(No) NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	Yes	(No)
17. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

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

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

Concerning ____

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

Samples processed by:

19. SAMPLE CONDITION

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

20. SAMPLE PRESERVATION

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

VOA Sample Preservation - Date/Time VOAs Frozen: ____

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #

Attachment D

Data Validation Memorandum

Memorandum

November 12, 2020

To:	Chris Meincke, GHD	Ref. No.:	012607A-T31Y20
From:	Ruth Mickle/lg/266	Tel:	248-893-3400

Subject: **Analytical Results and Reduced Validation**
PFAS Site Characterization Sampling
13000 Eckles Road
Livonia, Michigan
October 2020

1. Introduction

This document details a reduced validation of analytical results for groundwater samples collected in support of the PFAS Site Characterization Sampling at the 13000 Eckles Road site during October 2020. Samples were submitted to Eurofins TestAmerica, located in West Sacramento, California. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from isotope dilution analytes (IDA)/laboratory control samples (LCS)/matrix spikes (MS) and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical method referenced in Table 3 and applicable guidance from the documents entitled:

i) "National Functional Guidelines for Organic Superfund Methods Data Review", United States Environmental Protection Agency (USEPA) 540/R-2017-002, January 2017

ii) “Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537”, EPA 910-R-18-001, November 2018

Items i) and ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and 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. The samples were analyzed within the required holding time.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory 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.

One method blank yielded a low-level detection of perfluorooctane sulfonic acid (PFOS), which indicates a potential for laboratory contamination. The associated sample results, however, yielded detections that did not require qualification. The remaining method blank results were non-detect.

4. Isotope Dilution Analyte (IDA) Spike Recoveries

IDA data were evaluated for all PFAS sample analyses. IDAs are isotopically labeled analogs of the analytes of interest added to the investigative and QC samples at the time of extraction. All results are then calculated as a ratio of the IDA responses.

The IDA recovery results for each sample were evaluated against the following lab criteria:

i) IDA recoveries must be within 25-150 %

Several IDAs were recovered outside the laboratory control limits. Table 4 presents the associated qualified sample results. All remaining IDA recoveries met the above criteria.

5. Laboratory Control Sample (LCS) Analyses

LCS and laboratory control sample duplicates (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision.

For this study, LCS/LCSD were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS/LCSD contained all compounds of interest. With one exception, the LCS recoveries and RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision. One LCS recovery was above the upper control limit. However, since the associated sample data were non-detect, no data qualification was required.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical

precision. MS/MSD analyses were not performed on any project specific samples. Therefore, MS/MSD data were not used to assess project sample data.

7. Field QA/QC Samples

The field QA/QC consisted of one field blank sample, two equipment blank samples, and two field duplicate sample sets.

Field Blank Sample Analysis

To assess ambient conditions at the site and cleanliness of sample containers, one field blank was submitted for analysis, as identified in Table 1. The field blank yielded several detectable concentrations of target analytes. Table 5 presents the detections and the associated sample results that were qualified non-detect.

Equipment Blank Sample Analysis

To assess field decontamination procedures, ambient conditions at the site and cleanliness of sample containers, two equipment blanks were submitted for analysis, as identified in Table 1. The equipment blanks yielded several detectable concentrations of target analytes. Since the associated data were previously qualified or did not require qualification, no data were qualified based in equipment blank detections.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate samples were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with the duplicate sample must be less than 50 percent. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criterion is one times the RL value.

The majority of field duplicate results were within acceptable agreement. Table 6 presents non-comparable duplicate results for one PFAS parameter from one field duplicate set. The associated sample data were qualified estimated, as noted in the table.

8. Target Compound Identification

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra were evaluated according to the identification criteria established by the methods. The lab noted in the case narrative that several samples had transition mass ratio issues, which affected the identification of the noted PFAS parameters. As a result, the associated detections were qualified estimated, as noted in Table 7.

9. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated

(J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

10. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters PFAS	Comments
TestAmerica Lab SDG: 240-138666-2						
GW-12607-102020-SK-001	TW68S-20	water	10/20/2020	10:50	X	
GW-12607-102020-SK-002	TW88S-20	water	10/20/2020	13:20	X	
GW-12607-102020-SK-003	TW87S-20	water	10/20/2020	15:30	X	
GW-12607-102020-SK-004	TW87D-20	water	10/20/2020	16:50	X	
TestAmerica Lab SDG: 240-138755-2						
GW-12607-102120-SK-005	TW85S-20	water	10/21/2020	12:10	X	
GW-12607-102120-SK-006	TW85D-20	water	10/21/2020	13:40	X	
GW-12607-102120-SK-007	TW86S-20	water	10/21/2020	15:00	X	
GW-12607-102120-SK-008	TW86D-20	water	10/21/2020	16:25	X	
TestAmerica Lab SDG: 240-138829-2						
GW-12607-102220-SK-009	TW83S-20	water	10/22/2020	12:20	X	
GW-12607-102220-SK-010	TW83S-20	water	10/22/2020	12:25	X	Field Duplicate of -SK-009
GW-12607-102220-SK-011	TW83D-20	water	10/22/2020	14:15	X	
GW-12607-102220-SK-012	TW84S-20	water	10/22/2020	15:35	X	
GW-12607-102220-SK-013	TW84D-20	water	10/22/2020	16:50	X	
EB-12607-102220-SK-001	Equipment Blank S/S Screen	water	10/22/2020	10:45	X	Equipment Blank
EB-12607-102220-SK-002	Equipment Blank Tubing	water	10/22/2020	15:55	X	Equipment Blank
FB-12607-102220-SK-003	Field Blank	water	10/22/2020	16:00	X	Field Blank
TestAmerica Lab SDG: 240-138921-2						
GW-12607-102320-SK-014	MW-68D-16	water	10/23/2020	9:40	X	
GW-12607-102320-SK-015	PZ-SW-10	water	10/23/2020	10:25	X	
GW-12607-102320-SK-016	MW-S-7S	water	10/23/2020	11:40	X	
GW-12607-102320-SK-017	MW-27	water	10/23/2020	12:55	X	
GW-12607-102320-SK-018	HA-15	water	10/23/2020	13:45	X	
GW-12607-102320-SK-019	PZ-SW-9	water	10/23/2020	15:10	X	

Table 1

Sample Collection and Analysis Summary
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters PFAS	Comments
TestAmerica Lab SDG: 240-138986-1						
GW-12607-102620-DR-020	MW-OS-4D	water	10/26/2020	9:55	X	
GW-12607-102620-DR-021	MW-OS-4S	water	10/26/2020	10:40	X	
GW-12607-102620-DR-022	HA-MW-11	water	10/26/2020	11:30	X	
GW-12607-102620-DR-023	OW-24	water	10/26/2020	12:30	X	
GW-12607-102620-DR-024	MW-69D-16	water	10/26/2020	13:25	X	
GW-12607-102620-DR-025	MW-69S-19	water	10/26/2020	14:10	X	
TestAmerica Lab SDG: 240-139047-1						
GW-12607-102720-DR-026	HA-16	water	10/27/2020	10:55	X	
GW-12607-102720-DR-027	PZ-SW-18	water	10/27/2020	12:00	X	
GW-12607-102720-DR-028	HA-14	water	10/27/2020	12:45	X	
GW-12607-102720-DR-029	MW-70D-16	water	10/27/2020	13:20	X	
GW-12607-102720-DR-030	MW-67D-16	water	10/27/2020	14:15	X	
GW-12607-102720-DR-031	MW-67D-16	water	10/27/2020	14:30	X	Field Duplicate of -DR-030
GW-12607-102720-DR-032	MW-67S-19	water	10/27/2020	14:35	X	

Notes:

SDG - Sample Delivery Group
PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

	Location ID:	HA-14	HA-15	HA-16	HA-MW-11	MW-27
	Sample Name:	GW-12607-102720-DR-028	GW-12607-102320-SK-018	GW-12607-102720-DR-026	GW-12607-102620-DR-022	GW-12607-102320-SK-017
	Sample Date:	10/27/2020	10/23/2020	10/27/2020	10/26/2020	10/23/2020
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.6 U	4.4 U	4.6 U	4.5 U	4.3 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.7 U	3.5 U	3.7 U	3.6 U	3.5 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.6 U	4.4 U	4.6 U	4.5 U	4.3 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.6 U	4.4 U	4.6 U	4.5 U	4.3 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.5 J	1.5 J	0.85 J	1.1 J	1.6 J
Perfluorobutanoic acid (PFBA)	ng/L	7.1	5.3	3.8 J	8.1	4.4
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.7 UJ	1.8 U	1.8 U	1.7 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	0.82 J	1.8 U	1.8 U	1.7 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.1 J	1.5 J	1.8 U	1.7 J	0.44 J
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.3 U	23 J	14 J	1.9 U	1.7 J
Perfluorohexanoic acid (PFHxA)	ng/L	1.3 J	1.7 U	1.8 U	2.5	1.7 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	11 U	11 J	1.8 U	1.8 U	2.5 J
Perfluorooctanoic acid (PFOA)	ng/L	5.8	8.5	1.8 U	2.1	2.3
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	2.2 J	1.8 U	1.8 U	0.31 J
Perfluoropentanoic acid (PFPeA)	ng/L	1.5 J	1.7 U	0.72 J	1.9	0.51 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.7 U	1.8 U	1.8 U	1.7 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
J- - Estimated concentration; the result may be biased low
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Location ID:		**HA-14**	**MW-67D-16**	**MW-67D-16**	**MW-67S-19**	**MW-68D-16**
Sample Name:		**GW-12607-102720-DR-028**	**GW-12607-102720-DR-030**	**GW-12607-102720-DR-031**	**GW-12607-102720-DR-032**	**GW-12607-102320-SK-014**
Sample Date:		**10/27/2020**	**10/27/2020**	**10/27/2020 Duplicate**	**10/27/2020**	**10/23/2020**
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.6 U	4.5 U	4.5 U	4.7 U	4.3 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.7 U	3.6 U	3.6 U	3.8 U	3.5 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.6 U	4.5 U	4.5 U	4.7 U	4.3 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.6 U	4.5 U	4.5 U	4.7 U	4.3 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.5 J	1.6 J	2.2	2.0	1.7
Perfluorobutanoic acid (PFBA)	ng/L	7.1	7.8	7.6	9.2	8.1
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	4.1 U	4.7 U	1.9 U	3.4 J
Perfluoroheptanoic acid (PFHpA)	ng/L	1.1 J	1.0 J	1.0 J	4.4	1.7
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.3 U	24 U	24 U	4.0	16 J
Perfluorohexanoic acid (PFHxA)	ng/L	1.3 J	1.8 U	1.8 U	5.7	2.4 J
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.8 U	0.32 J	1.9 U	0.96 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	11 U	140 U	150 U	20 U	120 J
Perfluorooctanoic acid (PFOA)	ng/L	5.8	5.4	5.5	14	11
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	5.1 J	8.2 J	0.41 J	2.4 J
Perfluoropentanoic acid (PFPeA)	ng/L	1.5 J	1.8 U	1.8 U	2.8	0.92 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.8 U	1.9 U	1.7 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
J- - Estimated concentration; the result may be biased low
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Location ID:		**HA-14**	**MW-69D-16**	**MW-69S-19**	**MW-70D-16**	**MW-OS-4D**
Sample Name:		**GW-12607-102720-DR-028**	**GW-12607-102620-DR-024**	**GW-12607-102620-DR-025**	**GW-12607-102720-DR-029**	**GW-12607-102620-DR-020**
Sample Date:		**10/27/2020**	**10/26/2020**	**10/26/2020**	**10/27/2020**	**10/26/2020**
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	36 U	1.9 U	19 U	1.8 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.6 U	4.5 U	4.7 U	49 U	4.5 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.7 U	3.6 U	3.7 U	39 U	3.6 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.6 U	4.5 U	4.7 U	49 U	4.5 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.6 U	4.5 U	4.7 U	49 U	4.5 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.5 J	4.7	1.3 J	19 U	1.1 J
Perfluorobutanoic acid (PFBA)	ng/L	7.1	21 J-	24	49 U	5.5
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.2 J	1.9 U	19 U	1.8 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.1 J	1.5 J	6.4	19 U	0.31 J
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.3 U	15 J	3.6	22 U	1.8 U
Perfluorohexanoic acid (PFHxA)	ng/L	1.3 J	36 U	9.0	19 U	1.8 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.8 U	4.0	19 U	1.8 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	11 U	14 J	260	40 U	1.8 U
Perfluorooctanoic acid (PFOA)	ng/L	5.8	4.9	14	19 U	1.8 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	3.9 J	1.9 U	6.3 J	1.8 U
Perfluoropentanoic acid (PFPeA)	ng/L	1.5 J	1.8 U	8.2	19 U	1.3 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.9 U	19 U	1.8 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
J- - Estimated concentration; the result may be biased low
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

	Location ID:	HA-14	MW-OS-4S	MW-S-7S	OW-24	PZ-SW-9
	Sample Name:	GW-12607-102720-DR-028	GW-12607-102620-DR-021	GW-12607-102320-SK-016	GW-12607-102620-DR-023	GW-12607-102320-SK-019
	Sample Date:	10/27/2020	10/26/2020	10/23/2020	10/26/2020	10/23/2020
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.6 U	4.5 U	4.3 U	4.7 U	4.3 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	1.8 U	1.7 U	1.9 UJ	1.7 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.7 U	3.6 U	3.5 U	3.8 U	3.5 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.6 U	4.5 U	4.3 U	4.7 U	4.3 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.6 U	4.5 U	4.3 U	4.7 U	4.3 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.5 J	3.3	2.1	4.6 J	1.1 J
Perfluorobutanoic acid (PFBA)	ng/L	7.1	13	4.9	12	7.9
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.8 U	1.7 U	1.9 UJ	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.8 U	1.7 U	3.2 J	0.79 J
Perfluoroheptanoic acid (PFHpA)	ng/L	1.1 J	0.40 J	1.7 U	1.2 J	1.8
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.3 U	1.8 U	2.3 J	26 J	2.9 J
Perfluorohexanoic acid (PFHxA)	ng/L	1.3 J	1.5 J	1.7 U	1.9 U	2.8
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.8 U	1.7 U	0.28 J	1.7 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	11 U	1.8 U	2.1 J	130 J	14 J
Perfluorooctanoic acid (PFOA)	ng/L	5.8	1.0 J	1.5 J	4.3	6.1
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	1.8 U	1.7 U	4.7 J	1.7 U
Perfluoropentanoic acid (PFPeA)	ng/L	1.5 J	2.6	0.97 J	1.9 U	1.9
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.7 U	1.9 U	1.7 U

Notes:

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J+ - Estimated concentration; the result may be biased high
J- - Estimated concentration; the result may be biased low
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Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Location ID:		**HA-14**	**PZ-SW-10**	**PZ-SW-18**	**TW68S-20**	**TW83D-20**
Sample Name:		**GW-12607-102720-DR-028**	**GW-12607-102320-SK-015**	**GW-12607-102720-DR-027**	**GW-12607-102020-SK-001**	**GW-12607-102220-SK-011**
Sample Date:		**10/27/2020**	**10/23/2020**	**10/27/2020**	**10/20/2020**	**10/22/2020**
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	1.8 U	1.9 U	1.8 UJ	1.7 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.6 U	4.4 U	4.7 U	4.5 UJ	4.2 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	1.8 U	1.9 U	1.8 UJ	1.7 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.7 U	3.5 U	3.7 U	3.6 U	3.4 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.6 U	4.4 U	4.7 U	4.5 U	4.2 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.6 U	4.4 U	4.7 U	4.5 U	4.2 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.5 J	1.2 J	1.9	2.3	1.7 U
Perfluorobutanoic acid (PFBA)	ng/L	7.1	8.5	8.1	19	4.2 U
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.9 J	1.9 U	1.9	1.7 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.1 J	0.97 J	0.85 J	6.4	1.7 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.3 U	5.6 J	2.0 J	9.5	1.5 J
Perfluorohexanoic acid (PFHxA)	ng/L	1.3 J	1.5 J	1.1 J	11	1.7 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	0.31 J	1.9 U	0.97 J	0.42 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	11 U	56 J	13 J	110	1.8
Perfluorooctanoic acid (PFOA)	ng/L	5.8	5.4	3.8	27	3.9
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	1.0 J	0.34 J	0.92 J	1.7 U
Perfluoropentanoic acid (PFPeA)	ng/L	1.5 J	1.8 U	2.5	4.9	1.7 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.9 U	1.8 U	1.7 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
J- - Estimated concentration; the result may be biased low
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

	Location ID:	HA-14	TW83S-20	TW83S-20	TW84D-20	TW84S-20
	Sample Name:	GW-12607-102720-DR-028	GW-12607-102220-SK-009	GW-12607-102220-SK-010	GW-12607-102220-SK-013	GW-12607-102220-SK-012
	Sample Date:	10/27/2020	10/22/2020	10/22/2020 Duplicate	10/22/2020	10/22/2020
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.6 U	4.4 U	4.5 U	3.7 J	4.4 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.7 U	3.5 U	3.6 U	3.5 U	3.5 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.6 U	4.4 U	4.5 U	4.4 U	4.4 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.6 U	4.4 U	4.5 U	4.4 U	4.4 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.5 J	1.1 J	1.2 J	1.8 U	1.2 J
Perfluorobutanoic acid (PFBA)	ng/L	7.1	5.2	5.3	4.0 J	14
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	5.4
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.1 J	1.8 U	1.8 U	1.8 U	3.8
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.3 U	1.1 J	1.1 J	1.3 J	1.6 J
Perfluorohexanoic acid (PFHxA)	ng/L	1.3 J	1.8 U	1.8 U	1.8 U	6.4
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.8 U	1.8 U	0.25 J	2.9
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	11 U	1.8 U	1.8 U	3.4	87
Perfluorooctanoic acid (PFOA)	ng/L	5.8	2.2	2.4	3.2	8.6
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	0.70 J	0.53 J	1.8 U	1.8 U
Perfluoropentanoic acid (PFPeA)	ng/L	1.5 J	1.8 U	1.8 U	3.7	7.0
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
J- - Estimated concentration; the result may be biased low
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Location ID:		**HA-14**	**TW85D-20**	**TW85S-20**	**TW86D-20**	**TW86S-20**
Sample Name:		**GW-12607-102720-DR-028**	**GW-12607-102120-SK-006**	**GW-12607-102120-SK-005**	**GW-12607-102120-SK-008**	**GW-12607-102120-SK-007**
Sample Date:		**10/27/2020**	**10/21/2020**	**10/21/2020**	**10/21/2020**	**10/21/2020**
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.6 U	4.4 UJ	4.4 U	110 J+	4.6 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.7 U	3.5 U	3.5 U	3.7 U	3.7 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.6 U	4.4 U	4.4 U	4.6 U	4.6 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.6 U	4.4 U	4.4 U	4.6 U	4.6 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.5 J	3.2 J	1.9	18 U	1.2 J
Perfluorobutanoic acid (PFBA)	ng/L	7.1	44 U	20	46 U	11
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	0.42 J	1.8 U	1.8 U	1.8 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.8 U	0.35 J	1.8 U	1.8 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.1 J	18 U	3.2	18 U	1.9
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.3 U	1.0 J	1.6 J	18 U	1.6 J
Perfluorohexanoic acid (PFHxA)	ng/L	1.3 J	18 U	5.9	18 U	2.7
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	0.69 J	1.0 J	1.8 U	1.8 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	11 U	15	19 J	2.2 J	12 J
Perfluorooctanoic acid (PFOA)	ng/L	5.8	18 U	4.2	18 U	4.0
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	18 U	0.52 J	18 U	0.53 J
Perfluoropentanoic acid (PFPeA)	ng/L	1.5 J	18 U	5.8	18 U	2.0
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
J- - Estimated concentration; the result may be biased low
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Location ID:		**HA-14**	**TW87D-20**	**TW87S-20**	**TW88S-20**
Sample Name:		**GW-12607-102720-DR-028**	**GW-12607-102020-SK-004**	**GW-12607-102020-SK-003**	**GW-12607-102020-SK-002**
Sample Date:		**10/27/2020**	**10/20/2020**	**10/20/2020**	**10/20/2020**
Parameters	**Unit**				
Per/Polyfluoroalkyl Substances (PFAS)					
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.8 U	1.8 UJ	1.8 U	1.8 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.6 U	4.6 UJ	4.4 UJ	4.6 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.8 U	1.8 UJ	1.8 U	1.8 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.7 U	3.6 U	3.5 U	3.7 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.6 U	4.6 U	4.4 U	4.6 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.6 U	4.6 U	4.4 U	4.6 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.5 J	1.6 J	2.3	2.6
Perfluorobutanoic acid (PFBA)	ng/L	7.1	12	15	7.0
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.1 J	0.64 J	3.3	0.42 J
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.3 U	4.0	5.2	2.7 J
Perfluorohexanoic acid (PFHxA)	ng/L	1.3 J	2.9	8.2	1.3 J
Perfluorononane sulfonic acid (PFNS)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.8 U	1.0 J	1.8 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	11 U	16 J	1.8 U	1.8 U
Perfluorooctanoic acid (PFOA)	ng/L	5.8	4.9	6.7	2.8
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.8 U	1.8 U	0.61 J	0.51 J
Perfluoropentanoic acid (PFPeA)	ng/L	1.5 J	1.2 J	4.4	1.1 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.8 U	1.8 U	1.8 U	1.8 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
J- - Estimated concentration; the result may be biased low
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 3

Analytical Methods
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Parameter	Method [1]	Matrix	Holding Time	
			Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
PFAS	EPA 537 modified	water	14	28

Notes:

[1] Method Reference:
EPA - "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", Version 1.1, September 2009, EPA/600/R-08/092

PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances

Table 4

Qualified Sample Data Due to Outlying IDA Recoveies
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Parameter	Sample ID	IDA	IDA % Recovery	Control Limits % Recovery	Analyte	Qualified Result		Units
PFAS	GW-12607-102020-SK-001	M2-4:2FTS	163	25-150	Fluorotelomer sulfonic acid (4:2)	1.8	UJ	ng/L
		M2-8-2FTS	195	25-150	Fluorotelomer sulfonic acid (8:2)	1.8	UJ	ng/L
		M2-6-2FTS	181	25-150	Fluorotelomer sulfonic acid (6:2)	4.5	UJ	ng/L
PFAS	GW-12607-102020-SK-003	M2-6-2FTS	156	25-150	Fluorotelomer sulfonic acid (6:2)	4.4	UJ	ng/L
PFAS	GW-12607-102020-SK-004	M2-4:2FTS	177	25-150	Fluorotelomer sulfonic acid (4:2)	1.8	UJ	ng/L
		M2-8-2FTS	190	25-150	Fluorotelomer sulfonic acid (8:2)	1.8	UJ	ng/L
		M2-6-2FTS	214	25-150	Fluorotelomer sulfonic acid (6:2)	4.6	UJ	ng/L
PFAS	GW-12607-102120-SK-006	M2-6-2FTS	165	25-150	Fluorotelomer sulfonic acid (6:2)	4.4	UJ	ng/L
PFAS	GW-12607-102120-SK-008	M2-6-2FTS	170	25-150	Fluorotelomer sulfonic acid (6:2)	110	J+	ng/L
PFAS	GW-12607-102320-SK-018	13C2-PFDA	151	25-150	Perfluorodecanoic acid (PFDA)	1.7	UJ	ng/L
PFAS	GW-12607-102620-DR-023	13C2-PFDoA	163	25-150	Perfluorododecanoic acid (PFDoDA)	1.9	UJ	ng/L
		M2-8-2FTS	167	25-150	Fluorotelomer sulfonic acid (8:2)	1.9	UJ	ng/L
PFAS	GW-12607-102620-DR-024	13C4-PFBA	20	25-150	Perfluorobutanoic acid (PFBA)	21	J-	ng/L

Notes:

PFAS - Per- and Polyfluoroalkyl Substances
IDA - Isotope Dilution Analytes
J+ - Estimated concentration; the result may be biased high
J- - Estimated concentration; the result may be biased low
UJ - Not detected; associated reporting limit is estimated

Table 5

Qualified Sample Results Due to Analyte Concentrations in the Field QC Blanks
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Parameter	Analyte	Blank ID	Blank Result *	DF	Sample ID	Original Result	Qualified Result	Units
PFAS	Perfluoroheptanoic acid (PFHpA)	FB-12607-102220-SK-003	0.32 J	1	GW-12607-102220-SK-009	0.71 J	1.8 U	ng/L
					GW-12607-102220-SK-010	0.66 J	1.8 U	ng/L
					GW-12607-102220-SK-011	1.4 J	1.7 U	ng/L
					GW-12607-102220-SK-013	1.2 J	1.8 U	ng/L
PFAS	Perfluorohexanoic acid (PFHxA)	FB-12607-102220-SK-003	2.6	1	GW-12607-102220-SK-009	1.8	1.8 U	ng/L
					GW-12607-102220-SK-010	1.8	1.8 U	ng/L
PFAS	Perfluoropentanoic acid (PFPeA)	FB-12607-102220-SK-003	2.5	1	GW-12607-102220-SK-009	0.83 J	1.8 U	ng/L
					GW-12607-102220-SK-010	0.90 J	1.8 U	ng/L

Notes:

PFAS - Per- and Polyfluoroalkyl Substances
* - Blank result adjusted for sample factors where applicable
DF - Dilution factor
J - Estimated concentration
U - Not detected at the associated reporting limit

Table 6

Qualified Sample Data Due to Variability in Field Duplicate Results
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Parameter	Analyte	RPD/Diff		Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
PFAS	Perfluoropentane sulfonic acid (PFPeS)	3.1	Diff	GW-12607-102720-DR-030	5.1 J	GW-12607-102720-DR-031	8.2 J	ng/L

Notes:

Diff - Difference (i.e., >1X RL for waters)
PFAS - Per- and Polyfluoroalkyl Substances
RPD - Relative Percent Difference
J - Estimated concentration

Table 7

Qualified Sample Data Due to Potential Analyte Identification Issues
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Parameter	Sample ID	Analyte	Qualified Result	Units
PFAS	GW-12607-102020-SK-002	Perfluorohexane sulfonic acid (PFHxS)	2.7 J	ng/L
	GW-12607-102020-SK-004	Perfluorooctane sulfonic acid (PFOS)	16 J	ng/L
	GW-12607-102120-SK-005	Perfluoroheptane sulfonic acid (PFHpS)	0.35 J	ng/L
	GW-12607-102120-SK-005	Perfluorohexane sulfonic acid (PFHxS)	1.6 J	ng/L
	GW-12607-102120-SK-005	Perfluorooctane sulfonic acid (PFOS)	19 J	ng/L
	GW-12607-102120-SK-006	Perfluorobutane sulfonic acid (PFBS)	3.2 J	ng/L
	GW-12607-102120-SK-007	Perfluorohexane sulfonic acid (PFHxS)	1.6 J	ng/L
	GW-12607-102120-SK-007	Perfluorooctane sulfonic acid (PFOS)	12 J	ng/L
	GW-12607-102120-SK-008	Perfluorooctane sulfonic acid (PFOS)	2.2 J	ng/L
	GW-12607-102220-SK-009	Perfluorohexane sulfonic acid (PFHxS)	1.1 J	ng/L
	GW-12607-102220-SK-010	Perfluorohexane sulfonic acid (PFHxS)	1.1 J	ng/L
	GW-12607-102320-SK-014	Perfluoroheptane sulfonic acid (PFHpS)	3.4 J	ng/L
	GW-12607-102320-SK-014	Perfluorohexane sulfonic acid (PFHxS)	16 J	ng/L
	GW-12607-102320-SK-014	Perfluorohexanoic acid (PFHxA)	2.4 J	ng/L
	GW-12607-102320-SK-014	Perfluorooctane sulfonic acid (PFOS)	120 J	ng/L
	GW-12607-102320-SK-014	Perfluoropentane sulfonic acid (PFPeS)	2.4 J	ng/L
	GW-12607-102320-SK-015	Perfluoroheptane sulfonic acid (PFHpS)	1.9 J	ng/L
	GW-12607-102320-SK-015	Perfluorohexane sulfonic acid (PFHxS)	5.6 J	ng/L
	GW-12607-102320-SK-015	Perfluorooctane sulfonic acid (PFOS)	56 J	ng/L
	GW-12607-102320-SK-015	Perfluoropentane sulfonic acid (PFPeS)	1.0 J	ng/L
	GW-12607-102320-SK-016	Perfluorohexane sulfonic acid (PFHxS)	2.3 J	ng/L
	GW-12607-102320-SK-016	Perfluorooctane sulfonic acid (PFOS)	2.1 J	ng/L
	GW-12607-102320-SK-017	Perfluorohexane sulfonic acid (PFHxS)	1.7 J	ng/L
	GW-12607-102320-SK-017	Perfluorooctane sulfonic acid (PFOS)	2.5 J	ng/L
	GW-12607-102320-SK-018	Perfluoroheptane sulfonic acid (PFHpS)	0.82 J	ng/L
	GW-12607-102320-SK-018	Perfluorohexane sulfonic acid (PFHxS)	23 J	ng/L
	GW-12607-102320-SK-018	Perfluorooctane sulfonic acid (PFOS)	11 J	ng/L

Table 7

Qualified Sample Data Due to Potential Analyte Identification Issues
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Parameter	Sample ID	Analyte	Qualified Result	Units
	GW-12607-102320-SK-018	Perfluoropentane sulfonic acid (PFPeS)	2.2 J	ng/L
	GW-12607-102320-SK-019	Perfluoroheptane sulfonic acid (PFHpS)	0.79 J	ng/L
	GW-12607-102320-SK-019	Perfluorohexane sulfonic acid (PFHxS)	2.9 J	ng/L
	GW-12607-102320-SK-019	Perfluorooctane sulfonic acid (PFOS)	14 J	ng/L
	GW-12607-102620-DR-023	Perfluorobutane sulfonic acid (PFBS)	4.6 J	ng/L
	GW-12607-102620-DR-023	Perfluoroheptane sulfonic acid (PFHpS)	3.2 J	ng/L
	GW-12607-102620-DR-023	Perfluorohexane sulfonic acid (PFHxS)	26 J	ng/L
	GW-12607-102620-DR-023	Perfluorooctane sulfonic acid (PFOS)	130 J	ng/L
	GW-12607-102620-DR-023	Perfluoropentane sulfonic acid (PFPeS)	4.7 J	ng/L
	GW-12607-102620-DR-024	Perfluorobutanoic acid (PFBA)	21 J	ng/L
	GW-12607-102620-DR-024	Perfluoroheptane sulfonic acid (PFHpS)	1.2 J	ng/L
	GW-12607-102620-DR-024	Perfluorohexane sulfonic acid (PFHxS)	15 J	ng/L
	GW-12607-102620-DR-024	Perfluorooctane sulfonic acid (PFOS)	14 J	ng/L
	GW-12607-102620-DR-024	Perfluoropentane sulfonic acid (PFPeS)	3.9 J	ng/L
	GW-12607-102720-DR-026	Perfluorohexane sulfonic acid (PFHxS)	14 J	ng/L
	GW-12607-102720-DR-027	Perfluorohexane sulfonic acid (PFHxS)	2.0 J	ng/L
	GW-12607-102720-DR-027	Perfluorooctane sulfonic acid (PFOS)	13 J	ng/L
	GW-12607-102720-DR-029	Perfluoropentane sulfonic acid (PFPeS)	6.3 J	ng/L
	GW-12607-102720-DR-030	Perfluoropentane sulfonic acid (PFPeS)	5.1 J	ng/L

Notes:

PFAS - Per- and Polyfluoroalkyl Substances
J - Estimated concentration

Memorandum

November 16, 2020

To:	Chris Meincke, GHD	Ref. No.:	012607A-T06Y20
From:	Ruth Mickle/lg/269	Tel:	248-893-3400

Subject: **Analytical Results and Reduced Validation**
Area 1 Metals Characterization/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

1. Introduction

This document details a reduced validation of analytical results for groundwater samples collected in support of the Area 1 Metals Characterization/GMP Sampling at the 13000 Eckles Road Site during October 2020. Samples were submitted to Eurofins TestAmerica, located in North Canton, Ohio. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from laboratory control samples (LCS) and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the document entitled:

i) "National Functional Guidelines for Inorganic Superfund Methods Data Review", United States Environmental Protection Agency (USEPA) 540/R-2017-001, January 2017

Item i) will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and 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. The hexavalent and trivalent chromium samples were analyzed outside the required holding time. As a result, the associated sample results were qualified estimated, as noted in Table 4.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory 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.

One method blank yielded a low-level detection of total chromium, which indicates a potential for laboratory contamination. The associated dissolved chromium results were qualified non-detect, as noted in Table 5. The remaining method blank results were non-detect.

4. Laboratory Control Sample (LCS) Analyses

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.

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1. The laboratory performed additional site-specific MS/MSD analyses internally.

The MS/MSD samples were spiked with all compounds of interest. The majority of percent recoveries and RPD values were within the laboratory control limits. Sample GW-12607-102620-DR-024 yielded zero percent recoveries from the original undiluted hexavalent chromium MS/MSD analyses. As noted in the lab report narrative, the sample matrix was determined to be reductive in nature, which has the potential to convert hexavalent chromium to trivalent chromium. Because of this, the sample was diluted and reanalyzed. The MS/MSD results were within acceptance criteria. The hexavalent chromium sample results from re-analyses are reported in Table 2.

6. Field QA/QC Samples

The field QA/QC consisted of two field duplicate sample sets.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate samples were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with the duplicate sample must be less than 50 percent. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criterion is one times the RL value.

The field duplicate results were within acceptable agreement.

7. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were reported as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

8. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Area 1 Metals Characterization/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters: Select Metals	Analysis/Parameters: Hexavalent & Trivalent Chromium	Comments
TestAmerica SDG No.: 240-138666-1							
GW-12607-102020-SK-001	TW68S-20	Water	10/20/2020	10:50	X		
GW-12607-102020-SK-002	TW88S-20	Water	10/20/2020	13:20	X		
GW-12607-102020-SK-003	TW87S-20	Water	10/20/2020	15:30	X	X	MS/MSD-p
GW-12607-102020-SK-004	TW87D-20	Water	10/20/2020	16:50	X	X	
TestAmerica SDG No.: 240-138755-1							
GW-12607-102120-SK-005	TW85S-20	Water	10/21/2020	12:10	X	X	
GW-12607-102120-SK-006	TW85D-20	Water	10/21/2020	13:40	X	X	
GW-12607-102120-SK-007	TW86S-20	Water	10/21/2020	15:00	X	X	
GW-12607-102120-SK-008	TW86D-20	Water	10/21/2020	16:25	X	X	
TestAmerica SDG No.: 240-138829-1							
GW-12607-102220-SK-009	TW83S-20	Water	10/22/2020	12:20	X	X	
GW-12607-102220-SK-010	TW83S-20	Water	10/22/2020	12:25	X	X	Field Duplicate of -SK-009
GW-12607-102220-SK-011	TW83D-20	Water	10/22/2020	14:15	X	X	
GW-12607-102220-SK-012	TW84S-20	Water	10/22/2020	15:35	X	X	
GW-12607-102220-SK-013	TW84D-20	Water	10/22/2020	16:50	X	X	
TestAmerica SDG No.: 240-138921-1							
GW-12607-102320-SK-014	MW-68D-16	Water	10/23/2020	09:40	X		
GW-12607-102320-SK-015	PZ-SW-10	Water	10/23/2020	10:25	X		
GW-12607-102320-SK-016	MW-S-7S	Water	10/23/2020	11:40	X		
GW-12607-102320-SK-017	MW-27	Water	10/23/2020	12:55	X		
GW-12607-102320-SK-018	HA-15	Water	10/23/2020	13:45	X		
GW-12607-102320-SK-019	PZ-SW-9	Water	10/23/2020	15:10	X	X	MS/MSD-p

Table 1

Sample Collection and Analysis Summary
Area 1 Metals Characterization/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters: Select Metals	Analysis/Parameters: Hexavalent & Trivalent Chromium	Comments
TestAmerica SDG No.: 240-138987-1							
GW-12607-102620-DR-020	MW-OS-4D	Water	10/26/2020	09:55	X		
GW-12607-102620-DR-021	MW-OS-4S	Water	10/26/2020	10:40	X		
GW-12607-102620-DR-022	HA-MW-11	Water	10/26/2020	11:30	X		
GW-12607-102620-DR-023	OW-24	Water	10/26/2020	12:30	X	X	
GW-12607-102620-DR-024	MW-69D-16	Water	10/26/2020	13:25	X	X	MS/MSD-p
GW-12607-102620-DR-025	MW-69S-19	Water	10/26/2020	14:10	X	X	
TestAmerica SDG No.: 240-139046-1							
GW-12607-102720-DR-026	HA-16	Water	10/27/2020	10:55	X		
GW-12607-102720-DR-027	PZ-SW-18	Water	10/27/2020	12:00	X	X	MS/MSD-p
GW-12607-102720-DR-028	HA-14	Water	10/27/2020	12:45	X	X	
GW-12607-102720-DR-029	MW-70D-16	Water	10/27/2020	13:20	X	X	
GW-12607-102720-DR-030	MW-67D-16	Water	10/27/2020	14:15	X	X	
GW-12607-102720-DR-031	MW-67D-16	Water	10/27/2020	14:30	X	X	Field Duplicate of -DR-030
GW-12607-102720-DR-032	MW-67S-19	Water	10/27/2020	14:35	X	X	
TestAmerica SDG No.: 240-139198-1							
GW-12607-102820-DR-033	MW-OS-8D	Water	10/28/2020	09:25	X		
GW-12607-102820-DR-034	MW-OS-5D	Water	10/28/2020	10:10	X		

Notes:

Select Metals -One or more of the following: Total Chromium, Dissolved Chromium, Total Nickel, Dissolved Nickel
MS/MSD-p - Matrix Spike/Matrix Spike Duplicate-partial parameters
SDG - Sample Delivery Group

Table 2

Validated Analytical Summary Results
Area 1 Metals Characteriation/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Location ID:		HA-14	HA-15	HA-16	HA-MW-11	MW-27	MW-67D-16	MW-67D-16
Sample Name:		GW-12607-102720-DR-028	GW-12607-102320-SK-018	GW-12607-102720-DR-026	GW-12607-102620-DR-022	GW-12607-102320-SK-017	GW-12607-102720-DR-030	GW-12607-102720-DR-031
Sample Date:		10/27/2020	10/23/2020	10/27/2020	10/26/2020	10/23/2020	10/27/2020	10/27/2020 Duplicate
Parameters	**Unit**							
Metals								
Chromium III (trivalent)	mg/L	0.010 UJ	--	--	--	--	0.14	0.14
Chromium VI (hexavalent)	mg/L	0.010 UJ	--	--	--	--	0.010 U	0.010 U
Chromium	µg/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	140	140
Chromium (dissolved)	µg/L	--	--	--	--	--	--	--
Nickel	µg/L	740	19000	130000	110	1400	240	240
Nickel (dissolved)	µg/L	--	--	--	--	--	--	--

Table 2

Validated Analytical Summary Results
Area 1 Metals Characteriation/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Location ID:		MW-67S-19	MW-68D-16	MW-69D-16	MW-69S-19	MW-70D-16	MW-OS-4D	MW-OS-4S
Sample Name:		GW-12607-102720-DR-032	GW-12607-102320-SK-014	GW-12607-102620-DR-024	GW-12607-102620-DR-025	GW-12607-102720-DR-029	GW-12607-102620-DR-020	GW-12607-102620-DR-021
Sample Date:		10/27/2020	10/23/2020	10/26/2020	10/26/2020	10/27/2020	10/26/2020	10/26/2020
Parameters	**Unit**							
Metals								
Chromium III (trivalent)	mg/L	0.0022 J	--	0.010 U	0.016	0.0045 J-	--	--
Chromium VI (hexavalent)	mg/L	0.025	--	0.20 U	0.010 U	0.010 UJ	--	--
Chromium	µg/L	27	42	100 U	16	4.5 J	--	--
Chromium (dissolved)	µg/L	--	6.9	--	--	--	--	--
Nickel	µg/L	7.1 J	33	4000000	23	120	14000	2200
Nickel (dissolved)	µg/L	--	32 J	--	--	--	--	--

Table 2

Validated Analytical Summary Results
Area 1 Metals Characteriation/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Location ID:		MW-OS-5D	MW-OS-8D	MW-S-7S	OW-24	PZ-SW-9	PZ-SW-10	PZ-SW-18
Sample Name:		GW-12607-102820-DR-034	GW-12607-102820-DR-033	GW-12607-102320-SK-016	GW-12607-102620-DR-023	GW-12607-102320-SK-019	GW-12607-102320-SK-015	GW-12607-102720-DR-027
Sample Date:		10/28/2020	10/28/2020	10/23/2020	10/26/2020	10/23/2020	10/23/2020	10/27/2020
Parameters	**Unit**							
Metals								
Chromium III (trivalent)	mg/L	--	--	--	0.072	0.010 U	--	0.010 UJ
Chromium VI (hexavalent)	mg/L	--	--	--	0.012	0.010 U	--	0.010 UJ
Chromium	µg/L	--	--	5.0 U	85	5.0 U	5.0 U	0.86 J
Chromium (dissolved)	µg/L	--	--	--	--	--	--	--
Nickel	µg/L	14 J	8.8 J	360	130	39	15 J	220
Nickel (dissolved)	µg/L	--	--	--	--	--	--	--

Table 2

Validated Analytical Summary Results
Area 1 Metals Characteriation/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Location ID:		TW68S-20	TW83D-20	TW83S-20	TW83S-20	TW84D-20	TW84S-20	TW85D-20
Sample Name:		GW-12607-102020-SK-001	GW-12607-102220-SK-011	GW-12607-102220-SK-009	GW-12607-102220-SK-010	GW-12607-102220-SK-013	GW-12607-102220-SK-012	GW-12607-102120-SK-006
Sample Date:		10/20/2020	10/22/2020	10/22/2020	10/22/2020 Duplicate	10/22/2020	10/22/2020	10/21/2020
Parameters	**Unit**							
Metals								
Chromium III (trivalent)	mg/L	--	0.35	0.010 UJ	0.010 UJ	0.29	0.010 U	0.011
Chromium VI (hexavalent)	mg/L	--	0.010 U	0.010 UJ	0.010 UJ	0.050 U	0.010 U	0.010 U
Chromium	µg/L	6.8	350	1.7 J	0.85 J	290	1.1 J	11
Chromium (dissolved)	µg/L	5.0 U	140	--	--	18	--	1.4 J
Nickel	µg/L	30	92	14 J	14 J	110	3.1 J	5.7 J
Nickel (dissolved)	µg/L	29 J	40	--	--	12 J	--	3.4 J

Table 2

Validated Analytical Summary Results
Area 1 Metals Characteriation/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Location ID:		TW85S-20	TW86D-20	TW86S-20	TW87D-20	TW87S-20	TW88S-20
Sample Name:		GW-12607-102120-SK-005	GW-12607-102120-SK-008	GW-12607-102120-SK-007	GW-12607-102020-SK-004	GW-12607-102020-SK-003	GW-12607-102020-SK-002
Sample Date:		10/21/2020	10/21/2020	10/21/2020	10/20/2020	10/20/2020	10/20/2020
Parameters	**Unit**						
Metals							
Chromium III (trivalent)	mg/L	0.010 U	0.22	0.017	0.0072 J	0.010 U	--
Chromium VI (hexavalent)	mg/L	0.010 U	0.010 U	0.20	0.010 U	0.010 U	--
Chromium	µg/L	0.86 J	220	220	7.2	5.0 U	7.5
Chromium (dissolved)	µg/L	--	32	--	5.0 U	--	5.0 U
Nickel	µg/L	3.3 J	80	17 J	13 J	9.7 J	13 J
Nickel (dissolved)	µg/L	--	17 J	--	12 J	--	14 J

Notes:

J- - Estimated concentration; the result may be biased low
J - Estimated concentration
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 3

Analytical Methods
Area 1 Metals Characterization/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
Nickel and Chromium (total & dissolved)	SW-846 6010B	Water	-	180
Hexavalent/Trivalent Chromium	SW 7196A	Water	-	24 hours

Notes:

Method Reference:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Results Due to Holding Time Exceedance
Area 1 Metals Characterization/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Parameter	Sample ID	Holding Time (hours)	Holding Time Criteria (hours)	Analyte	Qualified Sample Results	Units
Metals	GW-12607-102220-SK-009	25.0	24	Chromium III (trivalent)	0.010 UJ	mg/L
	GW-12607-102220-SK-010	25.0	24	Chromium III (trivalent)	0.010 UJ	mg/L
	GW-12607-102720-DR-027	26.0	24	Chromium III (trivalent)	0.010 UJ	mg/L
	GW-12607-102720-DR-028	25.0	24	Chromium III (trivalent)	0.010 UJ	mg/L
	GW-12607-102720-DR-029	24.5	24	Chromium III (trivalent)	0.0045 J-	mg/L
Metals	GW-12607-102220-SK-009	25.0	24	Chromium VI (hexavalent)	0.010 UJ	mg/L
	GW-12607-102220-SK-010	25.0	24	Chromium VI (hexavalent)	0.010 UJ	mg/L
	GW-12607-102720-DR-027	26.0	24	Chromium VI (hexavalent)	0.010 UJ	mg/L
	GW-12607-102720-DR-028	25.0	24	Chromium VI (hexavalent)	0.010 UJ	mg/L
	GW-12607-102720-DR-029	24.5	24	Chromium VI (hexavalent)	0.010 UJ	mg/L

Notes:

J- - Estimated concentration; the result may be biased low
UJ - Not detected; associated reporting limit is estimated

Table 5

Qualified Sample Results Due to Analyte Concentrations in the Method Blanks
Area 1 Metals Characterization/GMP Sampling
13000 Eckles Road Site
Livonia, Michigan
October 2020

Parameter	Analyte	Analysis Date (mm/dd/yyyy)	Blank Result	Sample ID	Original Result	Qualified Result	Units
Select Metals	Chromium (dissolved)	10/01/2020	0.793 J	GW-12607-102020-SK-001	2.1 J	5.0 U	µg/L
				GW-12607-102020-SK-002	1.6 J	5.0 U	µg/L
				GW-12607-102020-SK-004	4.0 J	5.0 U	µg/L

Notes:

U - Not detected at the associated reporting limit
J - Estimated concentration

Memorandum

February 23, 2021

To:	Chris Meincke, GHD	Ref. No.:	012607A-T31Y21
From:	Ruth Mickle/lg/275	Tel:	612-524-6872

Subject: **Analytical Results and Reduced Validation**
PFAS Site Characterization Sampling
13000 Eckles Road
Livonia, Michigan
January-February 2021

1. Introduction

This document details a reduced validation of analytical results for groundwater samples collected in support of the PFAS Site Characterization Sampling at the 13000 Eckles Road site during January-February 2021. Samples were submitted to Eurofins TestAmerica, located in West Sacramento, California. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from isotope dilution analytes (IDA)/laboratory control samples (LCS)/matrix spikes (MS) and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical method referenced in Table 3 and applicable guidance from the documents entitled:

i) "National Functional Guidelines for Organic Superfund Methods Data Review", United States Environmental Protection Agency (USEPA) 540/R-2017-002, January 2017

ii) “Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537”, EPA 910-R-18-001, November 2018

Items i) and ii) will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and 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. The samples were analyzed within the required holding time.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory 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, indicating that laboratory contamination was not a factor for this investigation.

4. Isotope Dilution Analyte (IDA) Spike Recoveries

IDA data were evaluated for all PFAS sample analyses. IDAs are isotopically labeled analogs of the analytes of interest added to the investigative and QC samples at the time of extraction. All results are then calculated as a ratio of the IDA responses.

The IDA recovery results for each sample were evaluated against the following lab criteria:

i) IDA recoveries must be within 25-150 %

Several IDAs were recovered outside the laboratory control limits. Table 4 presents the associated qualified sample results. All remaining IDA recoveries met the above criteria.

5. Laboratory Control Sample (LCS) Analyses

LCS and laboratory control sample duplicates (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision.

For this study, LCS/LCSD were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS/LCSD contained all compounds of interest. The LCS recoveries and RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical

precision. MS/MSD analyses were not performed on any project specific samples. Therefore, MS/MSD data were not used to assess project sample data.

7. Field QA/QC Samples

The field QA/QC consisted of three field blank samples, one equipment blank sample, and two field duplicate sample sets.

Field Blank Sample Analysis

To assess ambient conditions at the site and cleanliness of sample containers, three field blanks were submitted for analysis, as identified in Table 1. One field blank yielded several detectable concentrations of target analytes. Table 5 presents the detections and the associated sample results that were qualified non-detect. The remaining field blank results were non-detect.

Equipment Blank Sample Analysis

To assess field decontamination procedures, ambient conditions at the site and cleanliness of sample containers, one equipment blank was submitted for analysis, as identified in Table 1. All results were non-detect for the analytes of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate samples were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with the duplicate sample must be less than 50 percent. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criterion is one times the RL value.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

8. Target Compound Identification

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra were evaluated according to the identification criteria established by the methods. The lab noted in the case narrative that several samples had transition mass ratio issues, which affected the identification of the noted PFAS parameters. As a result, the associated detections were qualified estimated, as noted in Table 6.

9. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

10. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Sample Identification	Location	Initial Sample Depth (ft. bgs.)	Final Sample Depth (ft. bgs.)	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters PFAS	Comments
TestAmerica Lab SDG: 240-143249-2								
GW-12607-011321-DA-001	TW-OS-11S	11	11	water	01/13/2021	11:4	X	
EB-12607-011321-DA-002	Equipment Blank	--	--	water	01/13/2021	11:30	X	Equipment Blank
FB-12607-011321-DA-003	Field Blank	--	--	water	01/13/2021	11:35	X	Field Blank
GW-12607-011321-DA-004	TW-OS-11D	21	21	water	01/13/2021	13:55	X	
GW-12607-011321-DA-005	TW-OS-12S	12	12	water	01/13/2021	15:00	X	
GW-12607-011421-DA-006	TW-OS-12D	21	21	water	01/14/2021	10:05	X	
GW-12607-011421-DA-007	TW-OS-13S	11	11	water	01/14/2021	12:55	X	
GW-12607-011421-DA-008	TW-OS-13D	19	19	water	01/14/2021	13:00	X	
GW-12607-011421-DA-009	TW-OS-13D	19	19	water	01/14/2021	13:00	X	Field Duplicate of -DA-008
TestAmerica Lab SDG: 240-143339-2								
GW-12607-011821-DA-010	TW-OS-14S	14	14	water	01/18/2021	12:50	X	
GW-12607-011821-DA-011	TW-OS-14D	21	21	water	01/18/2021	15:00	X	
GW-12607-011921-DA-012	PZ-SW-10	--	--	water	01/19/2021	12:05	X	
GW-12607-011921-DA-013	MW-68D-16	--	--	water	01/19/2021	12:25	X	
GW-12607-011921-DA-014	HA-14	--	--	water	01/19/2021	14:50	X	
GW-12607-011921-DA-015	MW-S-7S	--	--	water	01/19/2021	13:20	X	
GW-12607-011921-DA-016	MW-27	--	--	water	01/19/2021	13:40	X	
FB-12607-011921-DA-017	Field Blank	--	--	water	01/19/2021	12:00	X	Field Blank
GW-12607-011921-DA-018	HA-14	--	--	water	01/19/2021	14:55	X	Field Duplicate of -DA-014
TestAmerica Lab SDG: 240-144071-1								
GW-12607-020321-DA-007	MW-77D-16	--	--	water	02/03/2021	12:00	X	
GW-12607-020321-DA-008	MW-S-8S	--	--	water	02/03/2021	13:10	X	
GW-12607-020321-DA-009	MW-S-8D	--	--	water	02/03/2021	14:15	X	
GW-12607-020321-DA-010	HA-15	--	--	water	02/03/2021	15:10	X	
FB-12607-020321-DA-011	Field Blank	--	--	water	02/03/2021	--	X	Field Blank

Notes:

SDG - Sample Delivery Group
PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Location ID:		**HA-14**	**HA-14**	**HA-15**	**MW-27**	**MW-68D-16**
Sample Name:		**GW-12607-011921-DA-014**	**GW-12607-011921-DA-018**	**GW-12607-020321-DA-010**	**GW-12607-011921-DA-016**	**GW-12607-011921-DA-013**
Sample Date:		**01/19/2021**	**01/19/2021**	**02/03/2021**	**01/19/2021**	**01/19/2021**
Depth:		**--**	**--**	**--**	**--**	**--**
			Duplicate			
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.8 U	4.6 U	4.8 U	4.8 U	4.5 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.9 U	3.7 U	3.8 U	3.8 U	3.6 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.8 U	4.6 U	4.8 U	4.8 U	4.5 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.8 U	4.6 U	4.8 U	4.8 U	4.5 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.6 J	1.9	1.8 J+	2.1	1.8 U
Perfluorobutanoic acid (PFBA)	ng/L	9.2	8.2	6.4	5.6	13
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.9 U	1.9 U	0.63 J	1.9 U	2.9 J
Perfluoroheptanoic acid (PFHpA)	ng/L	1.9 U	1.9 U	1.7 J	1.9 U	2.4
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.2 J	4.1 J	23 J	2.1 J	15 J
Perfluorohexanoic acid (PFHxA)	ng/L	2.1 U	2.5 U	1.9 U	1.9 U	2.0 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	0.73 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	12 J	12 J	1.9 U	2.5 J	120 J
Perfluorooctanoic acid (PFOA)	ng/L	6.2	6.2	7.2	2.3	10
Perfluoropentane sulfonic acid (PFPeS)	ng/L	0.91 J	0.85 J	1.6 J	0.33 J	2.3 J
Perfluoropentanoic acid (PFPeA)	ng/L	2.4 U	2.5 U	2.1	1.9 U	2.8 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Location ID:		**HA-14**	**MW-77D-16**	**MW-S-7S**	**MW-S-8D**	**MW-S-8S**
Sample Name:		**GW-12607-011921-DA-014**	**GW-12607-020321-DA-007**	**GW-12607-011921-DA-015**	**GW-12607-020321-DA-009**	**GW-12607-020321-DA-008**
Sample Date:		**01/19/2021**	**02/03/2021**	**01/19/2021**	**02/03/2021**	**02/03/2021**
Depth:		**--**	**--**	**--**	**--**	**--**
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.8 U	4.7 U	4.7 U	4.6 U	4.6 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.9 U	3.7 U	3.8 U	3.7 U	3.7 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.8 U	4.7 U	4.7 U	4.6 U	4.6 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.8 U	4.7 U	4.7 U	4.6 U	4.6 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.6 J	1.1 J	2.0	1.6 J	3.1
Perfluorobutanoic acid (PFBA)	ng/L	9.2	4.0 J	8.6	7.6	12
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.9 U	0.53 J	1.9 U	0.76 J	1.9 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.2 J	3.8 J	2.0 J	2.7 J	2.0
Perfluorohexanoic acid (PFHxA)	ng/L	2.1 U	1.9 U	2.7 U	1.1 J	1.9 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Perfluorononanoic acid (PFNA)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	12 J	1.9 U	2.0 J	1.8 U	0.55 J
Perfluorooctanoic acid (PFOA)	ng/L	6.2	3.5	2.3	2.9	1.1 J
Perfluoropentane sulfonic acid (PFPeS)	ng/L	0.91 J	0.67 J	1.9 U	1.8 U	1.9 U
Perfluoropentanoic acid (PFPeA)	ng/L	2.4 U	0.59 J	2.1 U	1.3 J	0.75 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	1.9 U	1.9 U	1.8 U	1.9 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Location ID:		**HA-14**	**PZ-SW-10**	**TW-OS-11D**	**TW-OS-11S**	**TW-OS-12D**
Sample Name:		**GW-12607-011921-DA-014**	**GW-12607-011921-DA-012**	**GW-12607-011321-DA-004**	**GW-12607-011321-DA-001**	**GW-12607-011421-DA-006**
Sample Date:		**01/19/2021**	**01/19/2021**	**01/13/2021**	**01/13/2021**	**01/14/2021**
Depth:		**--**	**--**	**21-21 ft BGS**	**11-11 ft BGS**	**21-21 ft BGS**
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.9 U	1.8 UJ	1.8 U	1.9 U	1.8 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.8 U	4.4 UJ	4.6 U	4.7 UJ	4.5 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.9 U	3.6 U	3.7 U	3.8 U	3.6 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.8 U	4.4 U	4.6 U	4.7 U	4.5 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.8 U	4.4 U	4.6 U	4.7 U	4.5 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.6 J	2.2	1.8 U	1.6 J	0.47 J
Perfluorobutanoic acid (PFBA)	ng/L	9.2	8.3	7.8	8.6	3.8 J
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.9 U	2.2 J	1.8 U	1.9 U	1.8 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.9 U	1.8 U	0.24 J	2.0	1.8 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.2 J	5.9 J	1.8 U	1.8 J	1.8 U
Perfluorohexanoic acid (PFHxA)	ng/L	2.1 U	2.2 U	0.76 J	4.3	1.0 J
Perfluorononane sulfonic acid (PFNS)	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.9 U	0.26 J	1.8 U	1.9 U	1.8 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	12 J	56 J	1.8 U	0.92 J	1.8 U
Perfluorooctanoic acid (PFOA)	ng/L	6.2	5.4	1.8 U	2.9	1.8 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L	0.91 J	1.1 J	0.36 J	0.74 J	0.29 J
Perfluoropentanoic acid (PFPeA)	ng/L	2.4 U	1.8 U	3.1	4.5	1.0 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	1.8 U	1.8 U	1.9 U	1.8 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Location ID:		**HA-14**	**TW-OS-12S**	**TW-OS-13D**	**TW-OS-13D**	**TW-OS-13S**
Sample Name:		**GW-12607-011921-DA-014**	**GW-12607-011321-DA-005**	**GW-12607-011421-DA-008**	**GW-12607-011421-DA-009**	**GW-12607-011421-DA-007**
Sample Date:		**01/19/2021**	**01/13/2021**	**01/14/2021**	**01/14/2021**	**01/14/2021**
Depth:		**--**	**12-12 ft BGS**	**19-19 ft BGS**	**19-19 ft BGS Duplicate**	**11-11 ft BGS**
Parameters	**Unit**					
Per/Polyfluoroalkyl Substances (PFAS)						
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.8 U	4.8 U	4.5 UJ	4.7 UJ	4.6 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.9 U	1.9 U	1.8 UJ	1.9 UJ	1.8 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.9 U	3.8 U	3.6 U	3.7 U	3.6 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.8 U	4.8 U	4.5 U	4.7 U	4.6 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.8 U	4.8 U	4.5 U	4.7 U	4.6 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.6 J	2.0	1.4 J	1.5 J	2.0
Perfluorobutanoic acid (PFBA)	ng/L	9.2	8.9	8.4	8.0	7.6
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.9 U	1.9 U	1.5 J	1.5 J	0.89 J
Perfluoroheptanoic acid (PFHpA)	ng/L	1.9 U	1.5 J	2.2	2.3	2.8
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.2 J	2.8 J	9.3 J	9.3 J	6.2 J
Perfluorohexanoic acid (PFHxA)	ng/L	2.1 U	2.1	2.2	2.2	2.7
Perfluorononane sulfonic acid (PFNS)	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
Perfluorononanoic acid (PFNA)	ng/L	1.9 U	1.9 U	0.52 J	0.50 J	0.50 J
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	12 J	1.2 J	34 J	37 J	21 J
Perfluorooctanoic acid (PFOA)	ng/L	6.2	4.4	11	11	11
Perfluoropentane sulfonic acid (PFPeS)	ng/L	0.91 J	0.73 J	1.8 J	1.8 J	0.95 J
Perfluoropentanoic acid (PFPeA)	ng/L	2.4 U	2.2	1.8 U	1.9 U	1.7 J
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	1.9 U	1.8 U	1.9 U	1.8 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Results Summary
PFAS Site Characeterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Location ID:		**HA-14**	**TW-OS-14D**	**TW-OS-14S**
Sample Name:		**GW-12607-011921-DA-014**	**GW-12607-011821-DA-011**	**GW-12607-011821-DA-010**
Sample Date:		**01/19/2021**	**01/18/2021**	**01/18/2021**
Depth:		**--**	**21-21 ft BGS**	**14-14 ft BGS**
Parameters	**Unit**			
Per/Polyfluoroalkyl Substances (PFAS)				
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	ng/L	1.9 U	1.9 U	1.9 U
2,2,3-Trifluoro-3-[1,1,2,2,3,3-hexafluoro-3-(trifluoromethoxy)propoxy]-propanoic acid (DONA)	ng/L	1.9 U	1.9 U	1.9 U
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	ng/L	1.9 U	1.9 U	1.9 U
Fluorotelomer sulfonic acid (4:2)	ng/L	1.9 U	1.9 U	1.9 U
Fluorotelomer sulfonic acid (6:2)	ng/L	4.8 U	4.7 U	4.7 U
Fluorotelomer sulfonic acid (8:2)	ng/L	1.9 U	1.9 U	1.9 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ng/L	3.9 U	3.8 U	3.8 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	4.8 U	4.7 U	4.7 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	4.8 U	4.7 U	4.7 U
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.6 J	2.6	3.4
Perfluorobutanoic acid (PFBA)	ng/L	9.2	8.8	13
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	1.9 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	1.9 U	1.9 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	1.9 U	1.9 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.9 U	1.3 J	1.9 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.9 U	3.1	2.3
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.2 J	11 J	3.8 J
Perfluorohexanoic acid (PFHxA)	ng/L	2.1 U	3.5 U	3.8 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.9 U	1.9 U	1.9 U
Perfluorononanoic acid (PFNA)	ng/L	1.9 U	0.40 J	1.9 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 U	1.9 U	1.9 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	12 J	32 J	1.4 J
Perfluorooctanoic acid (PFOA)	ng/L	6.2	18	4.3
Perfluoropentane sulfonic acid (PFPeS)	ng/L	0.91 J	1.6 J	0.86 J+
Perfluoropentanoic acid (PFPeA)	ng/L	2.4 U	2.6 U	3.7 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	1.9 U	1.9 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	1.9 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	1.9 U	1.9 U

Notes:

J - Estimated concentration
J+ - Estimated concentration; the result may be biased high
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 3

Analytical Methods
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

			Holding Time	
Parameter	**Method [1]**	**Matrix**	**Collection to Extraction (Days)**	**Collection or Extraction to Analysis (Days)**
PFAS	EPA 537 modified	water	14	28

Notes:

[1] Method Reference:
EPA - "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)", Version 1.1, September 2009, EPA/600/R-08/092

PFAS - Perfluoroalkyl and Polyfluoroalkyl Substances

Table 4

Qualified Sample Data Due to Outlying IDA Recoveies
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Parameter	Sample ID	IDA	IDA % Recovery	Control Limits % Recovery	Analyte	Qualified Result	Units
PFAS	GW-12607-011321-DA-001	M2-6-2FTS	153	25-150	Fluorotelomer sulfonic acid (6:2)	4.7 UJ	ng/L
PFAS	GW-12607-011421-DA-008	M2-8-2FTS	164	25-150	Fluorotelomer sulfonic acid (8:2)	1.8 UJ	ng/L
PFAS	GW-12607-011421-DA-008	M2-6-2FTS	152	25-150	Fluorotelomer sulfonic acid (6:2)	4.5 UJ	ng/L
PFAS	GW-12607-011421-DA-009	M2-8-2FTS	160	25-150	Fluorotelomer sulfonic acid (8:2)	1.9 UJ	ng/L
PFAS	GW-12607-011921-DA-012	M2-4:2FTS	155	25-150	Fluorotelomer sulfonic acid (4:2)	1.8 UJ	ng/L
PFAS	GW-12607-011921-DA-012	M2-6-2FTS	155	25-150	Fluorotelomer sulfonic acid (6:2)	4.4 UJ	ng/L
PFAS	GW-12607-020321-DA-009	M2-6-2FTS	151	25-150	Fluorotelomer sulfonic acid (6:2)	4.7 UJ	ng/L
PFAS	GW-12607-020321-DA-010	13C3-PFBS	170	25-150	Perfluorobutane sulfonic acid (PFBS)	1.8 J+	ng/L
					Perfluoropentane sulfonic acid (PFPeS)	0.86 J+	ng/L

Notes:

PFAS - Per- and Polyfluoroalkyl Substances
IDA - Isotope Dilution Analytes
J+ - Estimated concentration; the result may be biased high
UJ - Not detected; associated reporting limit is estimated

Table 5

Qualified Sample Results Due to Analyte Concentrations in the Field QC Blanks
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Parameter	Analyte	Blank ID	Blank Result *	DF	Sample ID	Original Result	Qualified Result	Units
PFAS	Perfluoroheptanoic acid (PFHpA)	FB-12607-011921-DA-017	0.30 J	1	GW-12607-011921-DA-012	1.3 J	1.8 U	ng/L
					GW-12607-011921-DA-014	1.7 J	1.9 U	ng/L
					GW-12607-011921-DA-015	1.3 J	1.9 U	ng/L
					GW-12607-011921-DA-016	0.35 J	1.9 U	ng/L
					GW-12607-011921-DA-018	1.7 J	1.9 U	ng/L
PFAS	Perfluorohexanoic acid (PFHxA)	FB-12607-011921-DA-017	6.3	1	GW-12607-011821-DA-010	3.8	3.8 U	ng/L
					GW-12607-011821-DA-011	3.5	3.5 U	ng/L
					GW-12607-011921-DA-012	2.2	2.2 U	ng/L
					GW-12607-011921-DA-013	2.0	2.0 U	ng/L
					GW-12607-011921-DA-014	2.1	2.1 U	ng/L
					GW-12607-011921-DA-015	2.7	2.7 U	ng/L
					GW-12607-011921-DA-016	0.74 J	1.9 U	ng/L
					GW-12607-011921-DA-018	2.5	2.5 U	ng/L
PFAS	Perfluoropentanoic acid (PFPeA)	FB-12607-011921-DA-017	2.6	1	GW-12607-011821-DA-010	3.7	3.7 U	ng/L
					GW-12607-011821-DA-011	2.6	2.6 U	ng/L
					GW-12607-011921-DA-012	1.8	1.8 U	ng/L
					GW-12607-011921-DA-014	2.4	2.4 U	ng/L
					GW-12607-011921-DA-015	2.1	2.1 U	ng/L
					GW-12607-011921-DA-016	0.90 J	1.9 U	ng/L
					GW-12607-011921-DA-018	2.5	2.5 U	ng/L

Notes:

PFAS - Per- and Polyfluoroalkyl Substances
* - Blank result adjusted for sample factors where applicable
DF - Dilution factor
J - Estimated concentration
U - Not detected at the associated reporting limit

Table 6

Qualified Sample Data Due to Potential Analyte Identification Issues
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Parameter	Sample ID	Analyte	Qualified Result	Units
PFAS	GW-12607-011321-DA-001	Perfluorohexane sulfonic acid (PFHxS)	1.8 J	ng/L
	GW-12607-011321-DA-001	Perfluorooctane sulfonic acid (PFOS)	0.92 J	ng/L
	GW-12607-011321-DA-004	Perfluoropentane sulfonic acid (PFPeS)	0.36 J	ng/L
	GW-12607-011321-DA-005	Perfluorooctane sulfonic acid (PFOS)	1.2 J	ng/L
	GW-12607-011421-DA-007	Perfluoroheptane sulfonic acid (PFHpS)	0.89 J	ng/L
	GW-12607-011421-DA-008	Perfluoroheptane sulfonic acid (PFHpS)	1.5 J	ng/L
	GW-12607-011421-DA-009	Perfluoroheptane sulfonic acid (PFHpS)	1.5 J	ng/L
	GW-12607-011421-DA-009	Perfluoropentane sulfonic acid (PFPeS)	1.8 J	ng/L
	GW-12607-011821-DA-010	Perfluorooctane sulfonic acid (PFOS)	1.4 J	ng/L
	GW-12607-011821-DA-011	Perfluoroheptane sulfonic acid (PFHpS)	1.3 J	ng/L
	GW-12607-011821-DA-011	Perfluoropentane sulfonic acid (PFPeS)	1.6 J	ng/L
	GW-12607-011921-DA-018	Perfluoropentane sulfonic acid (PFPeS)	0.85 J	ng/L
	GW-12607-020321-DA-008	Perfluorooctane sulfonic acid (PFOS)	0.55 J	ng/L
	GW-12607-020321-DA-010	Perfluoroheptane sulfonic acid (PFHpS)	0.63 J	ng/L
	GW-12607-020321-DA-010	Perfluoropentane sulfonic acid (PFPeS)	1.6 J	ng/L
	GW-12607-011321-DA-005	Perfluorohexane sulfonic acid (PFHxS)	2.8 J	ng/L
	GW-12607-011421-DA-007	Perfluorohexane sulfonic acid (PFHxS)	6.2 J	ng/L
	GW-12607-011421-DA-007	Perfluorooctane sulfonic acid (PFOS)	21 J	ng/L
	GW-12607-011421-DA-008	Perfluorohexane sulfonic acid (PFHxS)	9.3 J	ng/L
	GW-12607-011421-DA-008	Perfluorooctane sulfonic acid (PFOS)	34 J	ng/L
	GW-12607-011421-DA-008	Perfluoropentane sulfonic acid (PFPeS)	1.8 J	ng/L
	GW-12607-011421-DA-009	Perfluorohexane sulfonic acid (PFHxS)	9.3 J	ng/L
	GW-12607-011421-DA-009	Perfluorooctane sulfonic acid (PFOS)	37 J	ng/L
	GW-12607-011821-DA-010	Perfluorohexane sulfonic acid (PFHxS)	3.8 J	ng/L
	GW-12607-011821-DA-011	Perfluorohexane sulfonic acid (PFHxS)	11 J	ng/L
	GW-12607-011821-DA-011	Perfluorooctane sulfonic acid (PFOS)	32 J	ng/L
	GW-12607-011921-DA-012	Perfluoroheptane sulfonic acid (PFHpS)	2.2 J	ng/L

Table 6

Qualified Sample Data Due to Potential Analyte Identification Issues
PFAS Site Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Parameter	Sample ID	Analyte	Qualified Result	Units
PFAS	GW-12607-011921-DA-012	Perfluorohexane sulfonic acid (PFHxS)	5.9 J	ng/L
	GW-12607-011921-DA-012	Perfluorooctane sulfonic acid (PFOS)	56 J	ng/L
	GW-12607-011921-DA-013	Perfluoroheptane sulfonic acid (PFHpS)	2.9 J	ng/L
	GW-12607-011921-DA-013	Perfluorohexane sulfonic acid (PFHxS)	15 J	ng/L
	GW-12607-011921-DA-013	Perfluorooctane sulfonic acid (PFOS)	120 J	ng/L
	GW-12607-011921-DA-013	Perfluoropentane sulfonic acid (PFPeS)	2.3 J	ng/L
	GW-12607-011921-DA-014	Perfluorohexane sulfonic acid (PFHxS)	4.2 J	ng/L
	GW-12607-011921-DA-014	Perfluorooctane sulfonic acid (PFOS)	12 J	ng/L
	GW-12607-011921-DA-015	Perfluorohexane sulfonic acid (PFHxS)	2.0 J	ng/L
	GW-12607-011921-DA-015	Perfluorooctane sulfonic acid (PFOS)	2.0 J	ng/L
	GW-12607-011921-DA-016	Perfluorohexane sulfonic acid (PFHxS)	2.1 J	ng/L
	GW-12607-011921-DA-016	Perfluorooctane sulfonic acid (PFOS)	2.5 J	ng/L
	GW-12607-011921-DA-018	Perfluorohexane sulfonic acid (PFHxS)	4.1 J	ng/L
	GW-12607-011921-DA-018	Perfluorooctane sulfonic acid (PFOS)	12 J	ng/L
	GW-12607-020321-DA-007	Perfluorohexane sulfonic acid (PFHxS)	3.8 J	ng/L
	GW-12607-020321-DA-009	Perfluorohexane sulfonic acid (PFHxS)	2.7 J	ng/L
	GW-12607-020321-DA-010	Perfluorohexane sulfonic acid (PFHxS)	23 J	ng/L

Notes:

PFAS - Per- and Polyfluoroalkyl Substances
J - Estimated concentration

Memorandum

February 25, 2021

To:	Chris Meincke, GHD	Ref. No.:	012607A-T06Y21
From:	Ruth Mickle/lg/276	Tel:	612-524-6872

Subject: **Analytical Results and Reduced Validation**
Area 1 Metals Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

1. Introduction

This document details a reduced validation of analytical results for groundwater samples collected in support of the Area 1 Metals Characterization Sampling at the 13000 Eckles Road Site during January-February 2021. Samples were submitted to Eurofins TestAmerica, located in North Canton, Ohio. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from laboratory control samples (LCS) and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the document entitled:

i) "National Functional Guidelines for Inorganic Superfund Methods Data Review", United States Environmental Protection Agency (USEPA) 540/R-2017-001, January 2017

Item i) will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and 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. Two hexavalent and trivalent chromium samples were analyzed outside the required holding time. As a result, the associated sample results were qualified estimated, as noted in Table 4.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory 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, indicating that laboratory contamination was not a factor for this investigation.

4. Laboratory Control Sample (LCS) Analyses

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.

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1. The laboratory performed additional site-specific MS/MSD analyses internally.

The MS/MSD samples were spiked with the analytes of interest, and the results were evaluated using the "Guidelines". All percent recoveries and RPD values were within the control limits, demonstrating acceptable analytical accuracy and precision.

6. Field QA/QC Samples

The field QA/QC consisted of two field duplicate sample sets.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate samples were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with the duplicate sample

must be less than 50 percent. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criterion is one times the RL value.

The field duplicate results were within acceptable agreement.

7. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were reported as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

8. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Area 1 Metals Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Sample Identification	Location	Initial Sample Depth (ft. bgs.)	Final Sample Depth (ft. bgs.)	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Select Metals	Hexavalent and/orTrivalent Chromium	Comments
TestAmerica SDG No.: 240-143249-1									
GW-12607-011321-DA-001	TW-OS-11S	11	11	water	01/13/2021	11:45	X		
GW-12607-011321-DA-004	TW-OS-11D	21	21	water	01/13/2021	13:55	X		
GW-12607-011321-DA-005	TW-OS-12S	12	12	water	01/13/2021	15:00	X		
GW-12607-011421-DA-006	TW-OS-12D	21	21	water	01/14/2021	10:05	X		
GW-12607-011421-DA-007	TW-OS-13S	11	11	water	01/14/2021	12:55	X		
GW-12607-011421-DA-008	TW-OS-13D	19	19	water	01/14/2021	13:00	X		
GW-12607-011421-DA-009	TW-OS-13D	19	19	water	01/14/2021	13:00	X		Field Duplicate of -DA-008
TestAmerica SDG No.: 240-143339-1									
GW-12607-011821-DA-010	TW-OS-14S	14	14	water	01/18/2021	12:50	X	X	MS/MSD-p
GW-12607-011821-DA-011	TW-OS-14D	21	21	water	01/18/2021	15:00	X	X	
GW-12607-011921-DA-012	PZ-SW-10	--	--	water	01/19/2021	12:05	X	X	
GW-12607-011921-DA-013	MW-68D-16	--	--	water	01/19/2021	12:25	X	X	
GW-12607-011921-DA-014	HA-14	--	--	water	01/19/2021	14:50	X	X	
GW-12607-011921-DA-015	MW-S-7S	--	--	water	01/19/2021	13:20	X	X	
GW-12607-011921-DA-016	MW-27	--	--	water	01/19/2021	13:40	X	X	
GW-12607-011921-DA-018	HA-14	--	--	water	01/19/2021	14:55	X	X	Field Duplicate of -DA-014
TestAmerica SDG No.: 240-144072-1									
GW-12607-020321-DA-007	MW-77D-16	--	--	water	02/03/2021	12:00	X	X	MS/MSD-p
GW-12607-020321-DA-008	MW-S-8S	--	--	water	02/03/2021	13:10	X	X	
GW-12607-020321-DA-009	MW-S-8D	--	--	water	02/03/2021	14:15	X	X	
GW-12607-020321-DA-010	HA-15	--	--	water	02/03/2021	15:10	X	X	

Notes:

Select Metals -One or more of the following: Total/Dissolved Chromium, Total/Dissolved Nickel, Total/Dissolved Boron
MS/MSD-p - Matrix Spike/Matrix Spike Duplicate-partial parameters
SDG - Sample Delivery Group

Table 2

Validated Analytical Summary Results
Area 1 Metals Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Location ID:		HA-14	HA-14	HA-15	MW-27	MW-68D-16
Sample Name:		GW-12607-011921-DA-014	GW-12607-011921-DA-018	GW-12607-020321-DA-010	GW-12607-011921-DA-016	GW-12607-011921-DA-013
Sample Date:		01/19/2021	01/19/2021 Duplicate	02/03/2021	01/19/2021	01/19/2021
Parameters	**Unit**					
Metals						
Chromium III (trivalent)	mg/L	0.010 U	0.010 U	--	0.010 U	0.031
Chromium VI (hexavalent)	mg/L	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Boron	µg/L	5100	5700	13000	1900	9700
Boron (dissolved)	µg/L	--	--	--	--	--
Chromium	µg/L	1.2 J	1.2 J	1.1 J	0.95 J	31
Chromium (dissolved)	µg/L	--	--	--	--	--
Nickel	µg/L	1100	1300	12000	1400	31
Nickel (dissolved)	µg/L	--	--	--	--	--

Notes:

J- - Estimated concentration; the result may be biased low
J - Estimated concentration
U - Not detected at the associated reporting limit
UJ - Not detected; associated reporting limit is estimated

Table 2

Validated Analytical Summary Results
Area 1 Metals Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Location ID:	MW-77D-16	MW-S-7S	MW-S-8D	MW-S-8S	PZ-SW-10
Sample Name:	GW-12607-020321-DA-007	GW-12607-011921-DA-015	GW-12607-020321-DA-009	GW-12607-020321-DA-008	GW-12607-011921-DA-012
Sample Date:	02/03/2021	01/19/2021	02/03/2021	02/03/2021	01/19/2021
Parameters	**Unit**				
Metals					
Chromium III (trivalent)	mg/L	--	0.010 U	--	--	0.010 U
Chromium VI (hexavalent)	mg/L	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Boron	µg/L	650	510	5200	67 J	3200
Boron (dissolved)	µg/L	--	--	--	--	--
Chromium	µg/L	1.1 J	1.1 J	1.0 J	1.3 J	1.6 J
Chromium (dissolved)	µg/L	--	--	--	--	--
Nickel	µg/L	19 J	350	2500	20 U	14 J
Nickel (dissolved)	µg/L	--	--	--	--	--

Notes:

J- - Estimated concentration; the result r
J - Estimated concentration
U - Not detected at the associated repor
UJ - Not detected; associated reporting

Table 2

Validated Analytical Summary Results
Area 1 Metals Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Location ID:	TW-OS-11D	TW-OS-11S	TW-OS-12D	TW-OS-12S	TW-OS-13D
Sample Name:	GW-12607-011321-DA-004	GW-12607-011321-DA-001	GW-12607-011421-DA-006	GW-12607-011321-DA-005	GW-12607-011421-DA-008
Sample Date:	01/13/2021	01/13/2021	01/14/2021	01/13/2021	01/14/2021
Parameters	**Unit**				
Metals					
Chromium III (trivalent)	mg/L	--	--	--	--	--
Chromium VI (hexavalent)	mg/L	--	--	--	--	--
Boron	µg/L	330	1400	2400	1100	4600
Boron (dissolved)	µg/L	330	--	2400	1100	--
Chromium	µg/L	26	2.4 J	2.3 J	2.7 J	2.3 J
Chromium (dissolved)	µg/L	13	--	1.8 J	1.5 J	--
Nickel	µg/L	36	6.5 J	3.1 J	3.7 J	6.3 J
Nickel (dissolved)	µg/L	14 J	--	3.8 J	3.8 J	--

Notes:

J- - Estimated concentration; the result r
J - Estimated concentration
U - Not detected at the associated repor
UJ - Not detected; associated reporting

Table 2

Validated Analytical Summary Results
Area 1 Metals Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Location ID:		TW-OS-13D	TW-OS-13S	TW-OS-14D	TW-OS-14S
Sample Name:		GW-12607-011421-DA-009	GW-12607-011421-DA-007	GW-12607-011821-DA-011	GW-12607-011821-DA-010
Sample Date:		01/14/2021 Duplicate	01/14/2021	01/18/2021	01/18/2021
Parameters	**Unit**				
Metals					
Chromium III (trivalent)	mg/L	--	--	--	0.0020 J-
Chromium VI (hexavalent)	mg/L	--	--	0.010 UJ	0.010 UJ
Boron	µg/L	4700	970	--	410
Boron (dissolved)	µg/L	--	990	3200	--
Chromium	µg/L	2.3 J	2.0 J	--	2.0 J
Chromium (dissolved)	µg/L	--	1.8 J	2.8 J	--
Nickel	µg/L	6.7 J	3.3 J	--	3.8 J
Nickel (dissolved)	µg/L	--	3.9 J	13 J	--

Notes:

J- - Estimated concentration; the result r
J - Estimated concentration
U - Not detected at the associated repor
UJ - Not detected; associated reporting

Table 3

Analytical Methods
Area 1 Metals Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
Boron, Nickel and Chromium (total & dissolved)	SW-846 6010B	Water	-	180
Hexavalent/Trivalent Chromium	SW 7196A	Water	-	24 hours

Notes:

Method Reference:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Results Due to Holding Time Exceedance
Area 1 Metals Characterization Sampling
13000 Eckles Road Site
Livonia, Michigan
January-February 2021

Parameter	Sample ID	Holding Time (hours)	Holding Time Criteria (hours)	Analyte	Qualified Sample Results	Units
Metals	GW-12607-011821-DA-010	46.5	24	Chromium VI (hexavalent)	0.010 UJ	mg/L
	GW-12607-011821-DA-011	44.5	24	Chromium VI (hexavalent)	0.010 UJ	mg/L
Metals	GW-12607-011821-DA-010	46.5	24	Chromium III (trivalent)	0.0020 J-	mg/L

Notes:

J- - Estimated concentration; the result may be biased low
UJ - Not detected; associated reporting limit is estimated

Attachment E

City of Livonia “Amrhein Road Reconstruction” plans, dated March 2017

INDEX OF SHEETS

1 – COVER
2 – PROJECT NOTES
3 – LEGEND
4 – TYPICAL CROSS SECTIONS
5 – PROJECT DETAILS
6–10 – MAINTENANCE OF TRAFFIC
11 – ALIGNMENT
12 – SOIL EROSION & SEDIMENTATION CONTROL
13–27 – ROAD REMOVAL, CONSTRUCTION AND PROFILE PLANS
28–31 – PERMANENT PAVEMENT MARKINGS AND SIGNING
32–35 – SOIL BORING LOGS
36–42 – AMRHEIN ROAD AND ECKLES ROAD INTERSECTION IMPROVEMENTS

CITY OF LIVONIA

IN COOPERATION WITH

MICHIGAN DEPARTMENT OF TRANSPORTATION

AND

FEDERAL HIGHWAY ADMINISTRATION

AMRHEIN ROAD RECONSTRUCTION

ECKLES ROAD TO 2,900 FT EAST OF ECKLES ROAD

CONTROL SECTION:	STU82163
MDOT JOB NO.	132286A
FEDERAL NO.	STP1782(015)
FEDERAL ITEM NO.	HK1318

GENERAL PROVISIONS

THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE PROPOSAL AND ACCOMPANYING SPECIFICATIONS FOR THIS PROJECT INCLUDING THE 2012 MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND AASHTO; A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 6TH EDITION, 2011.

PAVEMENT MARKING AND PLACING OF TRAFFIC CONTROL SIGNS SHALL BE DONE IN ACCORDANCE WITH THE 2011 EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, AS AMENDED. THIS WORK WILL BE DONE PRIOR TO THE FINAL ACCEPTANCE OF THIS PROJECT.

THE LOCATION OF ALL PUBLIC UTILITIES SHOWN ON THESE PLANS IS TAKEN FROM THE BEST AVAILABLE DATA. THE CITY OF LIVONIA AND WAYNE COUNTY WILL NOT BE RESPONSIBLE FOR ANY OMISSION OR VARIATIONS FROM THE LOCATIONS SHOWN. PURSUANT TO PUBLIC ACT 174 OF 2013 AS A CONDITION OF THIS CONTRACT NOTICE SHALL BE GIVEN TO MISS DIG PRIOR TO UNDERGROUND WORK TO BE PERFORMED IN ACCORDANCE WITH THIS CONTRACT. PHONE (800) 482-7171, (248) 647-7344, OR 811. UTILITY SERVICE CONNECTIONS ARE NOT SHOWN ON THE PLANS AND ARE NOT THE RESPONSIBILITY OF THE CITY OR THE COUNTY.

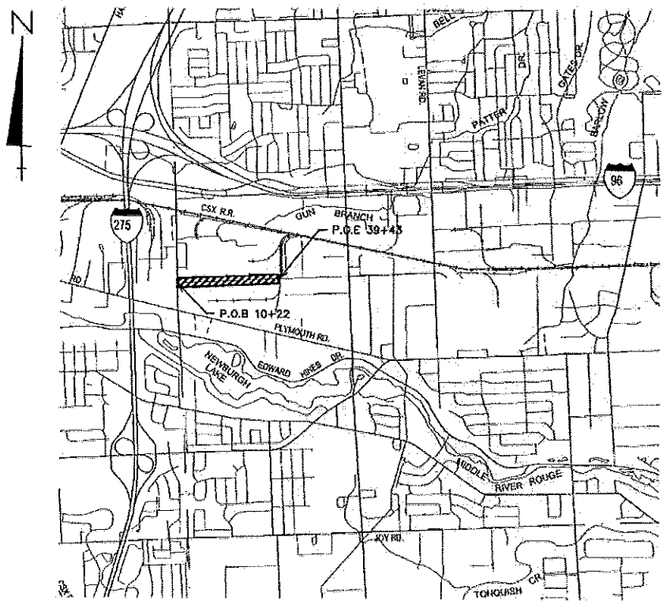
THE ELEVATIONS ARE BASED ON NAVD 88, GEOID03.THE COORDINATES ARE BASED ON NAD 1983, US STATE PLANE 1983, MICHIGAN SOUTH 2113.

STANDARD PLANS

CONSTRUCTION OF THE FOLLOWING ITEMS, WHERE CALLED FOR ON THE PLANS, WILL BE CONSTRUCTED ACCORDING TO MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD PLANS AS INDICATED.

ITEM OF WORK	STANDARD PLAN NUMBERS
DRAINAGE STRUCTURES	R-1-G*
COVER R	R-20-D
DRIVEWAY OPENING & APPROACHES AND CONCRETE SIDEWALKS	R-29-I
CONCRETE CURB AND CONCRETE CURB & GUTTER	R-30-G
INTEGRAL CURB AND CONCRETE CURB & GUTTER	R-31-F
TRANSVERSE PAVEMENT JOINTS (PLAIN CONCRETE PAVEMENT)	R-39-J*
LOAD TRANSFER ASSEMBLIES FOR TRANSVERSE JOINTS	R-40-H
LONGITUDINAL PAVEMENT JOINTS	R-41-H
TICAL JOINT LAYOUTS FOR CONCRETE PAVEMENT	R-42-F
LOCATION OF TRANSVERSE JOINTS IN PLAIN CONCRETE PAVEMENT	R-43-I
CONCRETE PAVEMENT REPAIR	R-44-F
BEDDING AND FILLING AROUND PIPE CULVERTS	R-82-D
UTILITY TRENCHES	R-83-C*
SOIL EROSION & SEDIMENTATION CONTROL MEASURES	R-96-E
TRAFFIC AND SAFETY STANDARD PLANS	
GROUND DRIVEN SIGN SUPPORTS FOR TEMP. SIGNS	WZD-100-A*
TEMPORARY TRAFFIC CONTROL DEVICES	WZD-125-E*

*SEE MDOT SPECIAL DETAIL



PROJECT LIMITS

P.O.B.	10+22
P.O.E.	39+43

TRAFFIC VOLUME (AADT)

ROAD NAME	2017	2037
AMRHEIN RD – EAST	5,500	6,100
COMMERCIAL	10%	10%

DESIGN SPEED

POSTED SPEED (EXISTING)	35 MPH
DESIGN SPEED	40 MPH

STATE OF MICHIGAN
CITY OF LIVONIA

CONTRACT FOR:

0.6 MILES RECONSTRUCTION OF AMRHEIN ROAD. INCLUDES REMOVAL OF 8"–9" REINFORCED CONCRETE WITH INTEGRAL CURB, PAVING 9" NON–REINFORCED CONCRETE WITH INTEGRAL CURB AND MINOR DRAINAGE IMPROVEMENTS.

PLANS PREPARED BY

STATE OF MICHIGAN
BRADLEY WARREN SHEPLER
PROFESSIONAL ENGINEER
No. 52448
LICENSED PROFESSIONAL ENGINEER

BRAD SHEPLER, P.E.
PROJECT MANAGER — DATE 12-22-16

CITY OF LIVONIA APPROVAL

STATE OF MICHIGAN
TODD J. ZILINCIK
ENGINEER
No. 45185
LICENSED PROFESSIONAL ENGINEER

TODD J. ZILINCIK, P.E.
CITY ENGINEER — DATE 12-22-16

REVISIONS	RECOMMENDED FOR APPROVAL		APPROVED	
DESCRIPTION	BY	DATE	BY	DATE
G.I. SUBMITTAL		9/12/16		
G.I. RESUBMISSION		9/29/16		
FINAL PLANS SUBMITTAL		11/15/16		

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HRC_CLW.ctb

GENERAL

THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) 2012 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION EXCEPT AS NOTED HEREIN AND IN THE PROPOSAL BOOK.

DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL NOT PERFORM WORK BY PRIVATE AGREEMENT WITH PROPERTY OWNERS ADJACENT TO THE PROJECT. WORK MAY BE ALLOWED WHEN REQUESTED BY LOCAL MUNICIPALITIES, BUT ONLY WITH THE WRITTEN CONSENT OF THE ENGINEER.

THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN SUCH A MANNER TO COMPLY WITH ALL FEDERAL, STATE, AND LOCAL CODES FOR NOISE LEVELS, VIBRATIONS, OR ANY OTHER RESTRICTIONS WHILE REMOVING PAVEMENT OR FOR ANY OTHER CONSTRUCTION OPERATIONS WITHIN THIS CONTRACT TO BE INCLUDED IN THE RESPECTIVE ITEM OF WORK.

THE CONTRACTOR AND/OR HIS SUBCONTRACTOR SHALL NOTIFY "MISS DIG", THE CITY OF LIVONIA ENGINEERING DEPT. AND THE CITY'S, FIRE, POLICE, AND PUBLIC WORKS DEPARTMENTS 3 WORKING DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. IN ADDITION, 48 HOURS ADVANCED NOTIFICATION IS REQUIRED FOR ANY ROAD CLOSURES OR CHANGES IN CONSTRUCTION STAGING.

NO USE OF PRIVATE PROPERTY BY THE CONTRACTOR OR ANY SUBCONTRACTORS SHALL OCCUR BEFORE THE PROJECT ENGINEER HAS WRITTEN AGREEMENT BETWEEN THE PROPERTY OWNER AND THE CONTRACTOR. THIS AGREEMENT MUST BE PROVIDED BY THE CONTRACTOR AND MUST BE NOTARIZED BY A PUBLIC NOTARY. IF SUCH USE DOES OCCUR BEFORE THE PROJECT ENGINEER HAS POSSESSION OF THE NOTARIZED AGREEMENT, THE PROJECT ENGINEER WILL ISSUE A NOTICE OF NON-COMPLIANCE SUSPENDING ALL WORK IMMEDIATELY UNTIL SUCH TIME AS A COPY OF THE WRITTEN, NOTARIZED PERMISSION IS SUBMITTED OR THE PROPERTY IN QUESTION HAS BEEN VACATED BY THE CONTRACTOR, OR ANY SUBCONTRACTORS, AND RESTORED TO ITS ORIGINAL CONDITION, WITH NO EXTENSION OF TIME OR ADDITIONAL COST FOR IDLE EQUIPMENT, DOWNTIME, ETC. TO THE CITY OF LIVONIA OR MOOT.

PROPERTY CORNERS

ANY PROPERTY CORNERS WITHIN THE FRONT OR BACK SLOPE SHALL BE STAKED AND PROTECTED BY RIBBON. THE REPLACEMENT OF ANY PROPERTY CORNERS DESTROYED DURING CONSTRUCTION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. PROPERTY CORNERS SHALL BE A LICENSED PROFESSIONAL SURVEYOR IN THE STATE OF MICHIGAN.

BENCHMARK ELEVATIONS

BENCHMARK ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON NAVD88 DATUM.

WAYNE COUNTY BENCHMARKS

A MINIMUM OF 48 HOURS BEFORE REMOVAL OF THE MONUMENT, CONTRACTOR IS TO CONTACT THE WAYNE COUNTY SURVEY OFFICE [CSABA SZABO (734-595-6504 X 2076)] FOR COUNTY PROCEDURE FOR MONUMENT PRESERVATION.

PRIVATE UTILITY STRUCTURES

ADJUSTING TO GRADE ALL PRIVATE UTILITY STRUCTURES WILL BE DONE BY THE OWNER OF THE FACILITY UNLESS OTHERWISE SPECIFIED ON THE PLANS.

UNDERGROUND CONFLICTS

THE CONTRACTOR SHALL EXPOSE EXISTING PUBLIC AND PRIVATE UTILITIES TO VERIFY EXISTING ELEVATION BEFORE COMMENCING WORK ON A PROPOSED STORM SEWER OR ANY UNDERGROUND WORK THAT IS TO CROSS OTHER UTILITIES. THIS WORK SHALL BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE INSTALLED UTILITY.

STRUCTURES

"POINTING UP" OF STRUCTURES AS INDICATED ON THE PLANS SHALL NOT BE PAID FOR SEPARATELY BUT WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT UNIT PRICE BID FOR AFFECTED STRUCTURES.

UTILITY CROSSINGS AT DRIVEWAYS

ALL UTILITY CROSSINGS AT DRIVEWAYS SHALL BE BACKFILLED IMMEDIATELY FOLLOWING PIPE INSTALLATION TO MAKE THESE DRIVEWAYS ACCESSIBLE. THIS WORK SHALL BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE INSTALLED UTILITY.

OPEN EXCAVATION

THE PLACING OF PROTECTIVE FENCING AROUND ALL OPEN EXCAVATIONS IS REQUIRED AND WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE PROJECT.

SAWCUTS

THE CONTRACTOR SHALL SAWCUT THE EXISTING CONCRETE AND/OR HMA PAVEMENT AND DRIVEWAYS TO THE LIMITS OF PROPOSED CONSTRUCTION, TO MAKE A NEAT AND SMOOTH CONNECTION TO THE EXISTING PAVEMENT OR DRIVEWAY AS REQUIRED OR DIRECTED. THIS WILL NOT BE PAID FOR SEPARATELY.

REMOVING PAVEMENT

THE CONTRACTOR SHALL CONDUCT PAVEMENT REMOVAL OPERATIONS SO THAT THE STREETS AND DRIVEWAYS ARE REMOVED IMMEDIATELY AHEAD OF THE GRADING OPERATIONS IN ORDER THAT THE STREETS AND DRIVEWAYS MAY BE OPENED TO TRAFFIC IN A TIMELY FASHION.

CLEANING EXISTING PAVEMENT

THE EDGE OF EXISTING PAVEMENT SHALL BE CLEANED OF EARTH OR OTHER FOREIGN MATERIAL WITH A WIRE BROOM BEFORE ADJACENT HMA OR CONCRETE PAVEMENT IS PLACED AND SHALL BE INCLUDED IN THE UNIT BID COST OF PAVEMENT ITEMS.

CLASS "A" SLOPES

CLASS "A" SLOPES WILL BE REQUIRED WITH 4 FOOT VERTICAL CURVES AT TOP AND TOE OF SLOPES.

HYDRANT USE

IF THE CONTRACTOR DESIRES TO USE CITY OF LIVONIA WATER FOR CONSTRUCTION, HE SHALL EITHER MAKE ARRANGEMENTS WITH THE DPW DIRECTOR TO USE THE CITY'S DPW FACILITY (FARMINGTON ROAD, SOUTH OF I-96) AND FILL TANKER TRUCKS, OR INSTALL A METER AND A CERTIFIED BACKFLOW PREVENTER TO CONNECT TO A CORPORATION WITHIN A GATE WELL. A TEMPORARY WATER USE PERMIT FROM THE CITY MUST BE GRANTED PRIOR TO CONNECTION. HYDRANTS MAY NOT BE USED.

CONSTRUCTION AND SOIL EROSION WORK SCHEDULE

PLACE SILT FENCE AND INLET PROTECTION AS INDICATED ON THE PLANS OR DIRECTED BY THE ENGINEER.

REMOVE EXISTING PAVEMENT AND GRADE CONSTRUCTION AREAS IMMEDIATELY AFTER CONSTRUCTION. FINISH GRADE CONSTRUCTION AREAS TO PROVIDE POSITIVE DRAINAGE, THEN INSTALL TOPSOIL AND SEED ON ALL DISTURBED GRASS AREAS.

REMOVE STONE FILTERS AS PAVEMENT IS INSTALLED. AFTER PAVING, REINSTALL STONE FILTERS AT ALL PERMANENT STORM INLET STRUCTURES, AND CLEAN STORM SEWER OF ALL ACCUMULATED DEBRIS AND SEDIMENT.

REMOVE TEMPORARY EROSION CONTROL AFTER THE SITE IS APPROVED BY THE ENGINEER.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT TEMPORARY EROSION CONTROLS ARE MAINTAINED THROUGHOUT CONSTRUCTION AND THAT THE ROADWAYS ARE KEPT FREE OF MUD AND CONSTRUCTION DEBRIS.

SOIL AND SEDIMENTATION CONTROL

THE CONTRACTOR SHALL CONFORM TO PART 91 OF ACT 451 OF 1994 OF THE STATE OF MICHIGAN SOIL EROSION AND SEDIMENTATION CONTROL, AND ALL LOCAL ORDINANCES FOR SOIL EROSION AND SEDIMENTATION CONTROL.

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES (MDOT STANDARD PLANS R-96)

MEASURES FOR TEMPORARY AND PERMANENT SOIL EROSION AND SEDIMENTATION CONTROL SHALL BE PLACED AS DIRECTED BY THE ENGINEER. EXACT LOCATIONS FOR TEMPORARY AND PERMANENT SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE DETERMINED BY THE FIELD ENGINEER.

SOIL BORINGS

THE SOIL BORINGS IN THE PROPOSAL REPRESENT POINT INFORMATION. PRESENTATION OF THE INFORMATION IN NO WAY INFERS THAT SUBSURFACE CONDITIONS ARE THE SAME AT THE LOCATIONS OTHER THAN THE EXACT LOCATIONS OF THE BORING.

MISCELLANEOUS ESTIMATED QUANTITIES

THE FOLLWOING ITEMS OF WORK SHALL BE DONE AS THEY APPLY THROUGHOUT THE PROJECT AND AS DIRECTED BY THE ENGINEER. THESE ITEMS ARE NOT DETAILED OR INCLUDED ON THE PLAN AND PROFILE SHEET.

AS-DIRECTED QUANTITIES - PARTICIPATING

PAY ITEM	QTY	UNIT
Mobilization	1	Lsum
Subgrade Undercutting, Type II	525	Cyd
1" x 3" Crushed Concrete, Special	25	Ton
Geogrid Subgrade Stabilization, Special	65	Syd
Dr Structure, Adj, Add Depth	10	Ft
Project Cleanup	1	Lsum
Maintenance Gravel	180	Ton
Dr Structure Cover, Adj, Case 2	8	Ea
HMA, Temp Pavt (3E3)	30	Ton
Cold Patching, Misc	10	Ton
Pavt Gapping	100	Ft
Barricade, Type III, High Intensity, Lighted, Furn	2	Ea
Barricade, Type III, High Intensity, Lighted, Oper	2	Ea
Channelizing Device, 42 inch, Furn	25	Ea
Channelizing Device, 42 inch, Oper	25	Ea
Dust Palliative, Applied	3	Ton
Minor Traf Devices	1	Lsum
Pavt Mrkg, Wet Reflective, Type R, 4 inch, White, Temp	3200	Ft
Plastic Drum, High Intensity, Furn	65	Ea
Plastic Drum, High Intensity, Oper	65	Ea
Sign Cover	5	Ea
Traffic Regulator Control	1	Lsum
Water, Sodding/Seeding	116	Unit
Surface Restoration, Hydroseeding	115	Syd
Reimbursed Permit Fees	3485	Dlr

AS-DIRECTED QUANTITIES - NON PARTICIPATING

PAY ITEM	QTY	UNIT
Sprinkler Head, Relocate	25	Ea
Sprinkler Head, Replace	25	Ea
Sprinkler Line	100	Ft

UTILITIES

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CORRESPONDENCE WITH PUBLIC ACT 53, THE CONTRACTOR SHALL DIAL 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS. PRIOR TO BEGINNING EACH EXCAVATION IN THE AREA WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED, MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY BE A PART OF THE "MISS DIG" ALERT SYSTEM. UTILITY LOCATIONS SHOWN ON THE PLANS ARE ONLY APPROXIMATE AND UTILITIES SHOULD BE LOCATED IN THE FIELD BEFORE EXCAVATING THE AREA.

THE FOLLOWING UTILITY COMPANIES HAVE FACILITIES WITHIN THE PROJECT LIMITS AND MAY BE RELOCATING OR REPLACING FACILITIES, WHICH MAY OR MAY NOT BE SHOWN ON THE PLANS IN CONJUNCTION WITH THE PROPOSED ROADWORK. THE CONTRACTOR OR SUBCONTRACTOR MAY BE REQUIRED TO COORDINATE THEIR OPERATIONS WITH THESE AND/OR OTHER UTILITIES AS DIRECTED BY THE ENGINEER. NO ADDITIONAL PAYMENT OF COMPENSATION WILL BE ALLOWED FOR THIS ACTIVITY.

CITY OF LIVONIA
DEPARTMENT OF PUBLIC WORKS
WATER AND SANITARY SEWER
CONTACT: TOM WILSON
12973 FARMINGTON RD.
LIVONIA, MI 48150-4202
PHONE: 734.466.2632
EMAIL: twilson@ci.livonia.mi.us

BRIGHT HOUSE NETWORKS
CABLE
CONTACT: BOB HENDZELL
31889 INDUSTRIAL RD.
LIVONIA, MI 48150
PHONE: 734.2936.1258
EMAIL: bob.hendzell@mybrighthouse.com

CONSUMERS ENERGY
GAS
CONACT: CHRIS SCHNEIDER
11801 FARMINGTON RD.
LIVONIA, MI 48150
PHONE: 734.513.6277
FAX: 734.513.6266
EMAIL: christopher.schneider@cmsenergy.com

DTE ENERGY
ELECTRIC
CONTACT: COLLEEN KNIGHT
SW PLANNING AND DESIGN
8001 HAGGERTY RD. (SOUTH)
BELLEVILLE, MI 48111
PHONE: 734.397.4095
EMAIL: colleen.knight@dteenergy.com

AT&T
TELEPHONE
CONTACT: ATHONY HOOVER
METRO SOUTH ENGINEERING
17651 MICHIGAN AVENUE, ROOM 201
DEARBORN, MI 48126
PHONE: 313.240.5447
REPAIR SERVICE: 313.221.2121

AT&T-(R.O.W./ CONSTRUCTION CONCERNS)
TELEPHONE
CONTACT: PETER WLOTKOWSKI
17651 MICHIGAN AVENUE
DEARBORN, MI 48126
PHONE: 313.240.5465
EMAIL: pw1678@att.com

CITY OF LIVONIA
ENGINEERING
CONTACT: TODD ZILINCIK, P.E.
33000 CIVIC CENTER DRIVE
LIVONIA, MI 48154
PHONE: 734.466.2676
EMAIL: tzilincik@ci.livonia.mi.us

WAYNE COUNTY DPS
ALI ALJAWAD, P.E.
PERMIT ENGINEER
33809 MICHIGAN AVENUE
WAYNE, MI 48184
PHONE: 734.595.6504, EXT. 2079
FAX: 734.595.8627
EMAIL: aaljwad@waynecounty.com

MDOT TAYLOR TCS
CONTACT: ANDREA L. JONES
UTILITY AND PERMIT TECHINICAN
6510 TELEGRAPH ROAD
TAYLOR, MI 48180
PHONE: 313.375.2402, EXT. 2008
FAX: 313.295.0822
EMAIL: joneson@michigan.gov

TRAFFIC OPERATIONS SECTION
DIVISION OF ROADS
WAYNE COUNTY TRAFFIC SIGNALS
CONTACT: PETE MILENKOVICH
DETROIT, MI 48242
PHONE: 734.955.2346
FAX: 734.955.2338
EMAIL: PMILENKO@waynecounty.com

CITY OF LIVONIA FIRE DEPARTMENT
FIRE
CONTACT: SHADD WHITEHEAD
DISPATCH FOR FIRE/POLICE
14910 FARMINGTON RD.
LIVONIA, MI 48154
PHONE: 734.466.2444
AFTER 5:00 PM: 734.466.2470

LIVONIA PUBLIC SCHOOL
SCHOOL
CONTACT: HARRY LAU
PHONE: 734.744.2511

CITY OF LIVONIA

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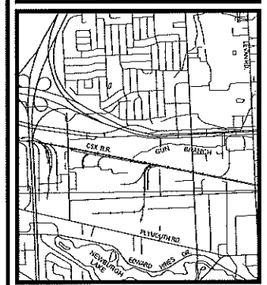
WEB SITE: http:// www.hrc-engr.com

3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PROJECT NOTES

HRC JOB NO. 20160103	SCALE NO SCALE
DATE MARCH 2017	SHEET NO. 2

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ABBREVIATIONS

HORIZONTAL CURVES

D	DEGREE OF CURVATURE
R	RADIUS
Δ	CENTRAL ANGLE
T	TANGENT
L	ARC LENGTH
CH. BRG.	CHORD BEARING (LONG CHORD)
L.C.	CHORD LENGTH
P.C.	POINT OF CURVATURE
P.C.C.	POINT OF COMPOUND CURVATURE
P.I.	POINT OF INTERSECTION
P.T.	POINT OF TANGENCY
P.O.C.	POINT ON CURVE
P.R.C.	POINT OF REVERSE CURVATURE

VERTICAL CURVES

P.V.C.	POINT OF VERTICAL CURVE
P.V.I.	POINT OF VERTICAL INTERSECTION
P.V.T.	POINT OF VERTICAL TANGENCY

GENERAL

E/M	EDGE OF METAL
EX./EXIST.	EXISTING
P.O.R.	POINT OF ROTATION
P.O.B.	POINT OF BEGINNING
P.O.E.	POINT OF ENDING
H.C.P.	HORIZONTAL CONTROL POINT
B.M.	BENCH MARK
M.S.E.	MECHANICALLY STABILIZED EMBANKMENT
STM.	STORM SEWER
SAN.	SANITARY SEWER
W.M.	WATERMAIN
R.O.W.	RIGHT-OF-WAY
T/C	TOP OF CURB
T.C.	TOP OF DRAINAGE STRUCTURE COVER
F.J.	HYDRANT FROST JACKET ELEVATION
S.S.L.	SLOPE STAKE LINE
C.I.P.	COMPACTED IN PLACE
C.S.B.	COMPLETE SAND BACKFILL
S.H.A.	SCHLEEDE HAMPTAON ASSOCIATES, INC. (SOIL BORINGS)
OCWRC	OAKLAND COUNTY WATER RESOURCES COMMISSION

LEGEND

ITEM	SYMBOL EXISTING	SYMBOL PROPOSED
BUILDING		
STORM SEWER	EX. 12" STM. SWR. ST	ST
STORM UNDERDRAIN	EX. 12" CMP	
SANITARY SEWER	EX. 12" SAN. SWR. SA SA	SA SA
WATER MAIN	EX. 12" D.I. W.M. WM GV	WM GV
GAS MAIN	EX. 6" S-MP GAS MAIN G	G
U.G. TELEPHONE	T	T
U.G. ELECTRIC	E	E
U.G. ELEC. & TELE.	ET	ET
U.G. CABLE TV	CTV	CTV
FENCE		
REMOVE CURB & GUTTER		
TRAVERSE LINE & TRAVERSE POINT		
BENCH MARK SYMBOL		
DECIDUOUS TREE		
DECIDUOUS SHRUB		
CONIFEROUS TREE		
CONIFEROUS SHRUB		
STUMP		
SQUARE/ROUND CATCHBASINS & INLETS IN PAVEMENT	I-P ST-P IN-P	
STORM MANHOLE & PIPE END	ST ST	ST
UNSPECIFIED MANHOLE	UN	
RISER & DOWN SPOUT	ST DS	
PUMP STATION	LIFT PS	
FIRE HYDRANT		
GATE VALVE, GATE WELL & WELL	GV GV WELL	GV GV
WATER STOP BOX & SPRINKLER HEAD	W.B. S.H.	
METER PIT	M.P.	
UTILITY POLE		
LIGHT POLE	LT	
GUY WIRE ANCHOR / POLE	GUY	
UNDERGROUND MARKER		
GAS VALVE / PIPE END	GV	
GAS BOX & BLOW OFF	GB	
SOIL BORING/PAVEMENT CORE	SB P	
DRAINAGE FLOW		
COMBINED PROPERTY		
RIGHT-OF-WAY		
PROPERTY LINE		
DRAINAGE EASEMENT		
TEMPORARY GRADING PERMIT		
SLOPE STAKE LINE		
DITCH CENTERLINE		
MANHOLE, CATCH BASIN, INLET, & END SECTION SYMBOLS		MH CB INL FS
ABANDON & REMOVAL SYMBOLS		A R
ADJUSTMENT		ADJ
RELOCATE		REL
RELOCATE BY OTHERS		REL B/O

CITY OF LIVONIA
IN GOD WE TRUST
1835

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WEB SITE: http:// www.hrc-engr.com

DATE	ADDITIONS AND/OR REVISIONS
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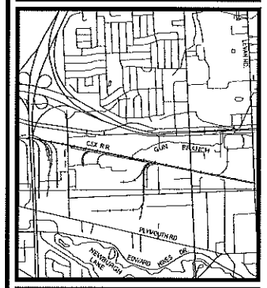
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

LEGEND

HRC JOB NO. 20160103	SCALE NO SCALE
DATE MARCH 2017	SHEET NO. 3

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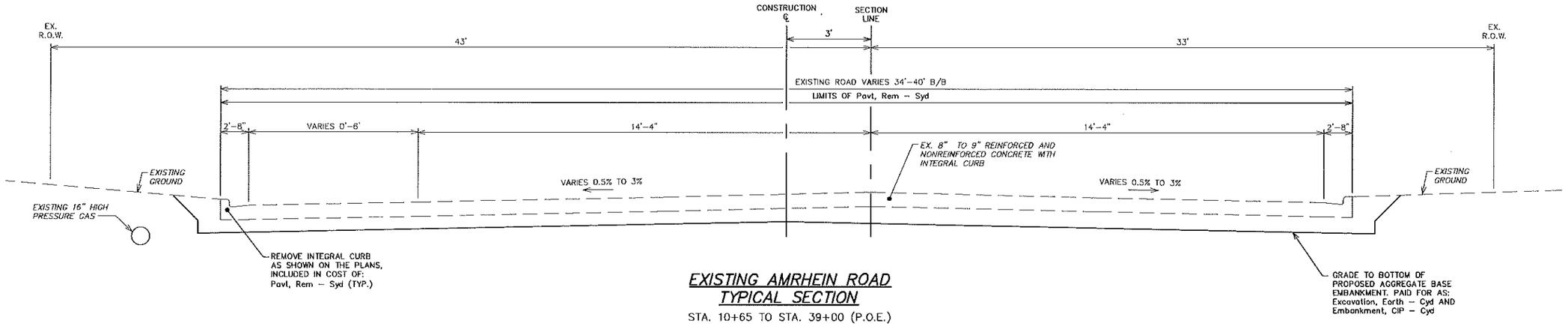
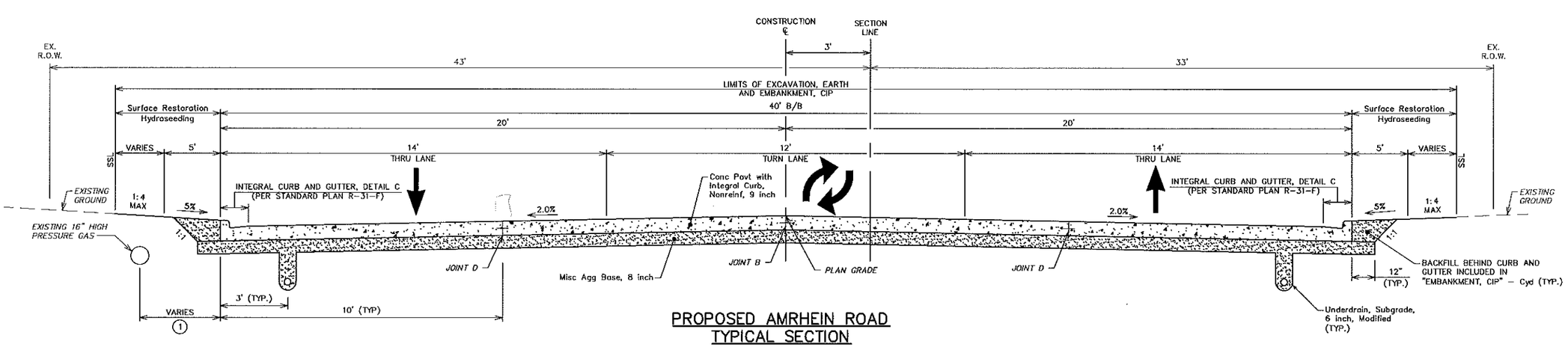


EXISTING AMRHEIN ROAD TYPICAL SECTION

STA. 10+65 TO STA. 39+00 (P.O.E.)



PROPOSED AMRHEIN ROAD TYPICAL SECTION

STA. 10+65 TO STA. 39+00 (P.O.E.)

NOTES:

(1) EXCAVATION WITHIN 6 FEET OF THE EXISTING 16" HP GAS MAIN REQUIRES COORDINATION WITH CONSUMERS ENERGY AND INSPECTION FROM THEIR OFFICE. REFER TO UTILITY CONTACTS ON SHEET NO. 2 FOR CONTACT INFORMATION.

CITY OF LIVONIA

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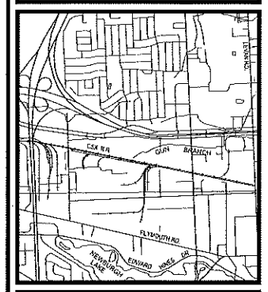

CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

TYPICAL SECTION

HRC JOB NO. 20160103	SCALE NO SCALE
DATE MARCH 2017	SHEET NO. 4

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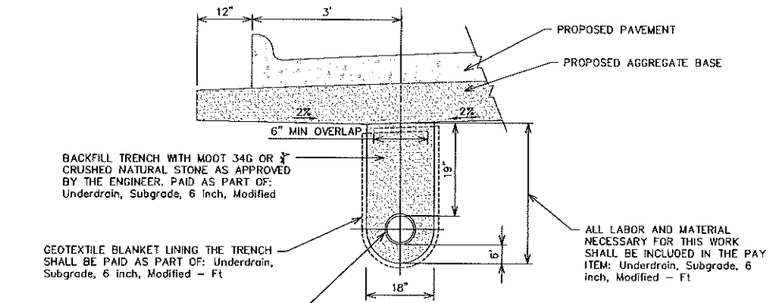
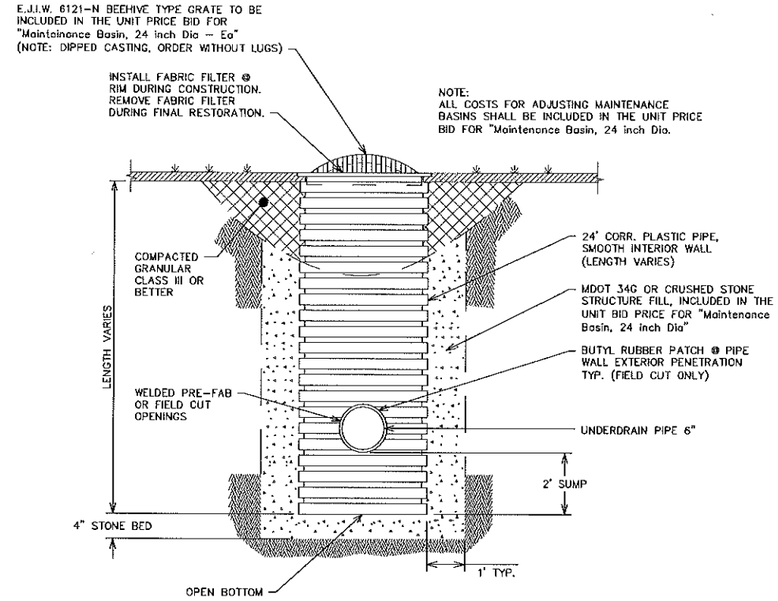
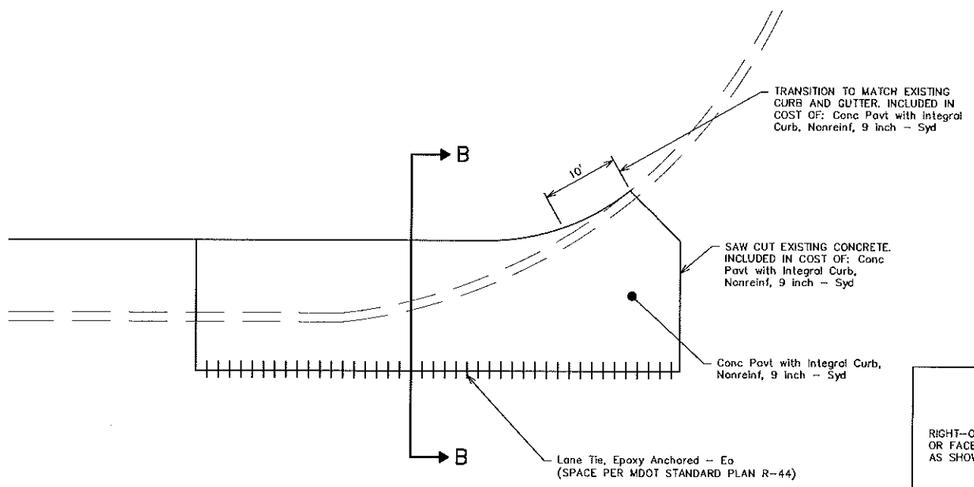
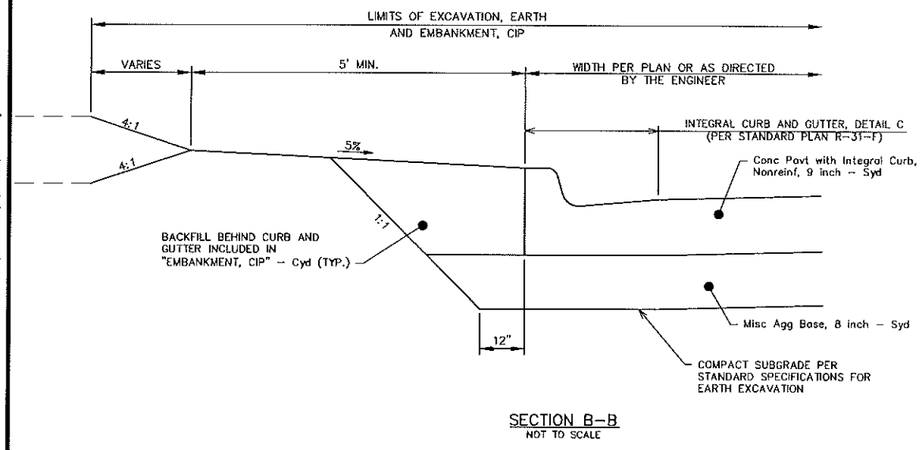


UNDERDRAIN DETAIL
NOT TO SCALE



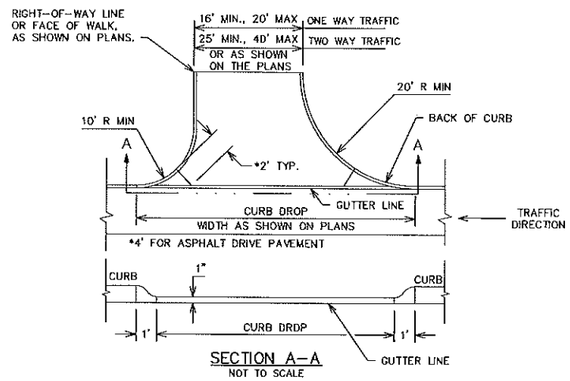
MAINTENANCE BASIN, 24 INCH DIA.
NOT TO SCALE





SECTION B–B
NOT TO SCALE

DRIVEWAY TRANSITION
NOT TO SCALE
TO APPLY: STA 39+00 TO 39+43

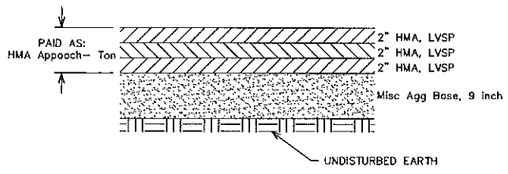


SECTION A–A
NOT TO SCALE

NOTES:

1. CONSTRUCT THE DRIVE APPROACH WITH 8" NON–REINFORCED CONCRETE ON 6" OF 21AA AGGREGATE BASE COURSE COMPACTED IN PLACE (CIP) OR 6" HMA ON 9" OF 21AA AGGREGATE BASE COURSE. (CIP)
2. CURBS SHALL BE CONSTRUCTED WITH HEIGHT VARYING FROM 8" AT BACK OF CURB TO 0" HEIGHT AT FACE OF SIDEWALK OR RIGHT–OF–WAY LINE.
3. CURB FOR CONCRETE DRIVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "Driveway, Nonreinf Conc, 8 inch"
4. CURB FOR HMA DRIVES WILL BE PAID FOR SEPARATELY.
5. AT ALL CONCRETE DRIVES, PLACE A 1" EXPANSION JOINT AT BACK OF CURB AND 1/2" EXPANSION JOINT AT FACE OF SIDEWALK OR RIGHT–OF–WAY LINE.
6. DRIVE APPROACH SHALL NOT ENCROACH ACROSS PROPERTY LINE EXTENDED WITHOUT WRITTEN APPROVAL FROM THE ADJOINING PROPERTY OWNER.
7. ALL DRIVEWAYS SHALL BE CONSTRUCTED HALF–WIDTH TO MAINTAIN TRAFFIC TO ALL BUSINESSES.

COMMERCIAL DRIVE APPROACH
NOT TO SCALE



TYPICAL HMA DRIVEWAY SECTION
NOT TO SCALE

HMA APPLICATION ESTIMATE

COURSE	ITEM	RATE (Lb/Syd)	PERFORMANCE GRADE	REMARKS
TOP	HMA APPROACH	220	64–22	HMA, LVSP 1 – 2" LIFTS @220 Lb/Syd INCLUDED IN: HMA APPROACH
LEVELING	HMA APPROACH	220	64–22	HMA, LVSP 1 – 2" LIFTS @220 Lb/Syd INCLUDED IN: HMA APPROACH
BASE	HMA APPROACH	220	64–22	HMA, LVSP 1 – 2" LIFTS @220 Lb/Syd INCLUDED IN: HMA APPROACH
TEMPORARY	HMA, TEMP PAVT (3E3)	410	64–22	HMA, 3E3 1–4" LIFT @410 Lb/Syd
	BOND COAT	0.05 TO 0.15 gal	N/A	N/A

CITY OF LIVONIA

HRC
HUBBELL, ROTH & CLARK, INC
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555 HULET DRIVE, BLOOMFIELD HILLS, MICH. P.O. BOX 824, 48303 - 0824
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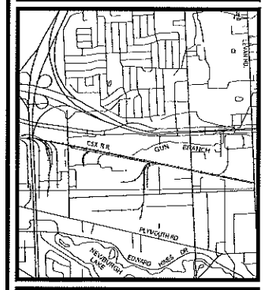
FAX (2nd. Floor): (248) 338-2592
WEB SITE: http:// www.hrc-engr.com

DATE	ADDITIONS AND/OR REVISIONS
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL

DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PROJECT DETAILS

HRC JOB NO.	SCALE
20160103	NO SCALE
DATE: MARCH 2017	SHEET NO. 5

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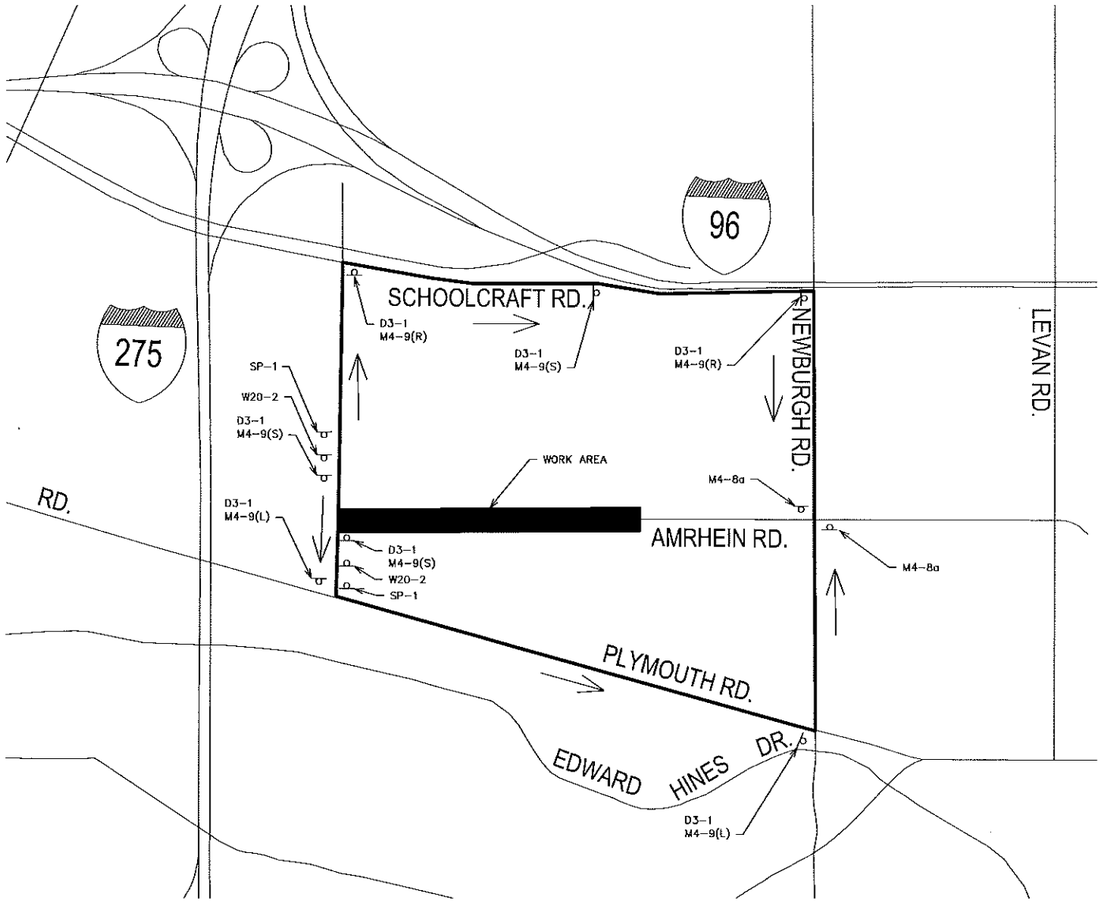

N

EB AMRHEIN RD CLOSED ECKLES TO NEWBURGH STARTING XX-XX-XXXX FOLLOW DETOUR	SP-1 90" X 42"
EB AMRHEIN RD	D3-1 54" X 12"
DETOUR	M4-9(L) 30" X 24"
DETOUR	M4-9(R) 30" X 24"
DETOUR	M4-9(S) 30" X 24"
ROAD WORK AHEAD	W20-1 48" X 48"
DETOUR AHEAD	W20-2 48" X 48"
ROAD CLOSED AHEAD	W20-3 48" X 48"
END DETOUR	M4-8a 24" X 18"

NOTE:
LEAD-IN/DETOUR SIGNS SHALL BE SPACED AT 350' PER MDOT TRAFFIC AND SAFETY TYPICALS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

LEGEND

- DETOUR ROUTE
- TRAFFIC FLOW
- TRAFFIC SIGN

CONSTRUCTION QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Sign, Type B, Temp, Prismatic, Furn	78	Sft
Sign, Type B, Temp, Prismatic, Oper	78	Sft
Sign, Type B, Temp, Prismatic, Special, Furn	80	Sft
Sign, Type B, Temp, Prismatic, Special, Oper	80	Sft

CITY OF LIVONIA

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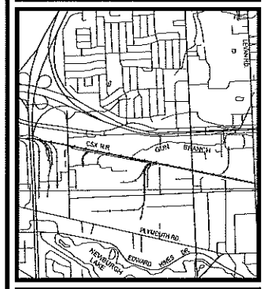
DATE	ADDITIONS AND/OR REVISIONS
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DESIGNED	COB
DRAWN	KMK
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

DETOUR PLAN

HRC JOB NO. 20160103	SCALE NTS
DATE MARCH 2017	SHEET NO. 6

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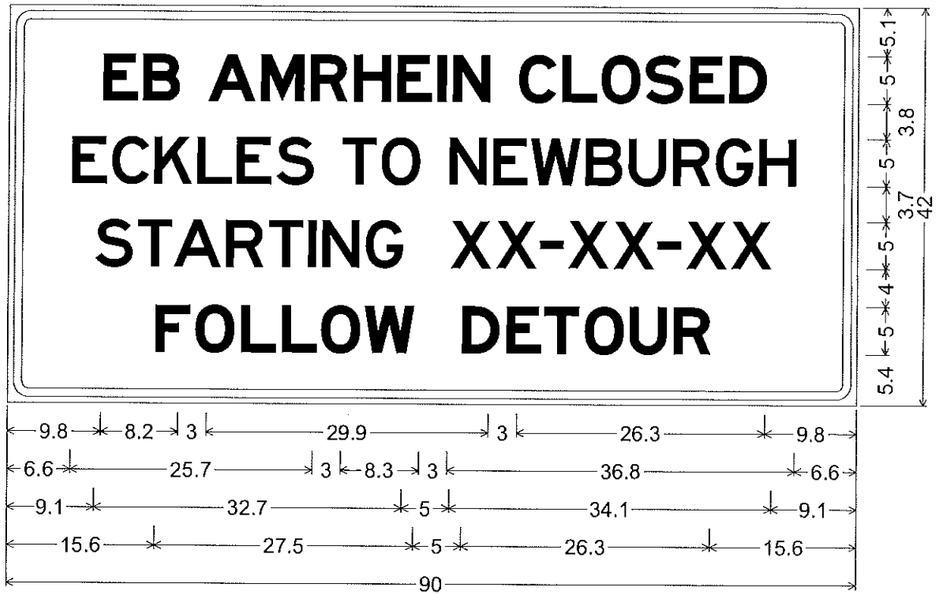

SP 1; 2.3" Radius, 0.9" Border, 0.6" Indent, Black on Orange;
[EB AMRHEIN CLOSED] E Mod 50% spacing;
[ECKLES TO NEWBURGH] E 50% spacing;
[STARTING XX-XX-XX] E 50% spacing;
[FOLLOW DETOUR] E Mod 50% spacing;
Table of widths and spaces.

9.8	E 3.7	0.6	B 3.9	3.0	A 5.0	0.6	M 4.6	0.6	R 4.0	0.6	H 4.0	0.7	E 3.7	0.5	I 1.0	0.6	N 4.0			
	3.0	C 4.0	0.5	L 3.7	0.5	O 4.2	0.5	S 4.0	0.7	E 3.7	0.5	D 4.0	9.8							
6.6	E 3.7	0.5	C 4.0	0.5	K 4.1	0.5	L 3.7	0.5	E 3.7	0.5	S 4.0	3.0	T 3.6	0.6	O 4.1					
	3.0	N 4.0	0.6	E 3.7	0.3	W 5.3	0.5	B 4.0	0.6	U 4.0	0.6	R 4.0	0.5	G 4.0	0.7	H 4.0	6.6			
9.1	S 4.0	0.5	T 3.7	0.2	A 5.0	0.5	R 4.0	0.5	T 3.7	0.5	I 0.9	0.6	N 4.0	0.6	G 4.0					
	5.0	X 4.3	0.5	X 4.3	0.4	- 2.5	0.5	X 4.3	0.5	X 4.3	0.3	- 2.5	0.5	X 4.3	0.6	X 4.3	9.1			
15.6	F 3.7	0.5	O 4.2	0.6	L 3.8	0.5	L 3.7	0.5	O 4.2	0.5	W 5.3									
	5.0	D 4.0	0.6	E 3.7	0.3	T 3.8	0.5	O 4.2	0.6	U 4.0	0.6	R 4.0	15.6							

D3-1;
1.50" Radius, 0.50" Border, Black on Orange;
[EB AMRHEIN RD] C 84% spacing;

CITY OF LIVONIA

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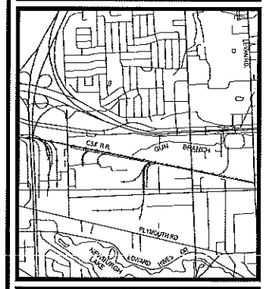
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL

DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

DETOUR PLAN
SPECIAL DETAIL SIGNS

HRC JOB NO.	SCALE
20160103	NTS
DATE	SHEET NO.
MARCH 2017	7

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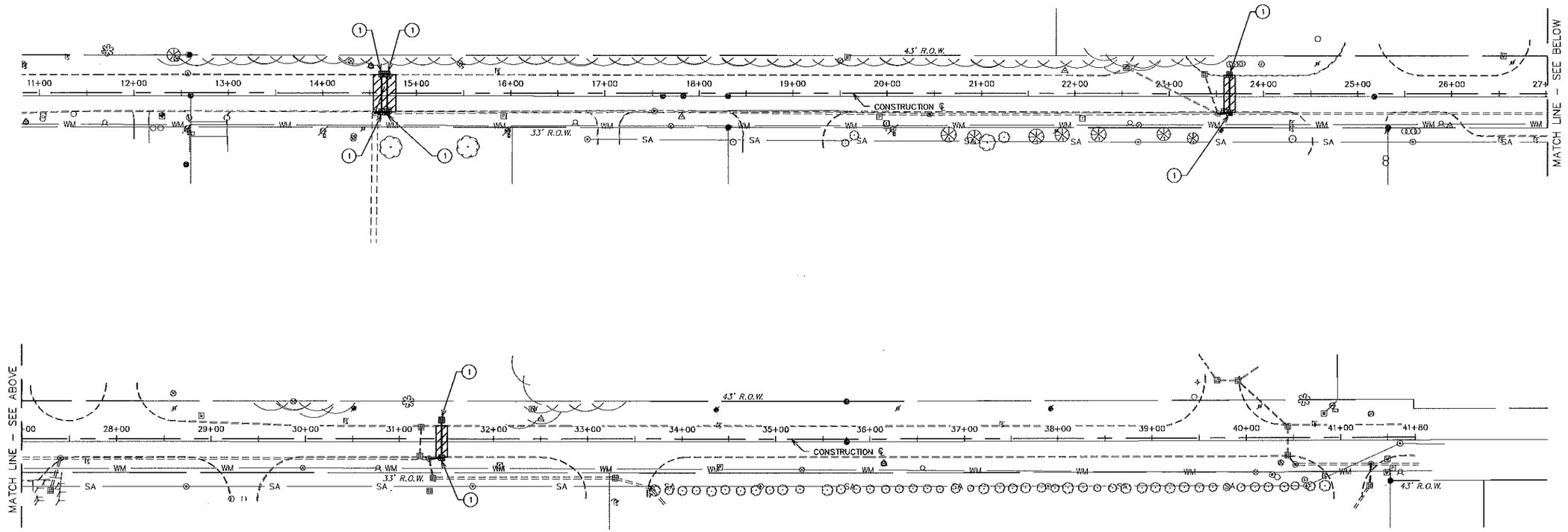
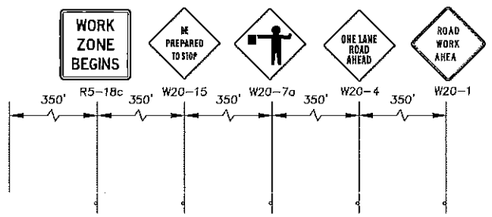


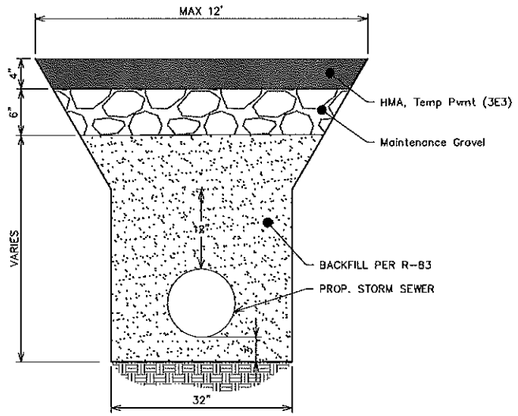
LEGEND

WORK ZONE



CONSTRUCTION CONTROL LAYOUT

(TRAFFIC REGULATOR CONTROL PER MDOT TRAFFIC TYPICAL M0140a)



STORM SEWER CROSSING DETAIL

NOTE:
STORM CROSSING TO BE CONSTRUCTED PART WIDTH UNDER TRAFFIC REGULATOR CONTROL.

MOT QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Maintenance Gravel	70	Ton
HMA, Temp Pavt (3E3)	70	Ton
Barricade, Type III, High Intensity, Lighted, Furn	2	Ea
Barricade, Type III, High Intensity, Lighted, Oper	2	Ea
Plastic Drum, High Intensity, Furn	40	Ea
Plastic Drum, High Intensity, Oper	40	Ea
Sign, Type B, Temp, Prismatic, Furn	80	Sft
Sign, Type B, Temp, Prismatic, Oper	80	Sft

NOTE:
1. CATCH BASINS SET TO GRADE TO MAINTAIN DRAINAGE DURING CONSTRUCTION. THE ADJUSTMENT OF NEW CATCH BASINS TO FINAL GRADE TO BE AS DIRECTED BY THE ENGINEER AND PAID FOR AS: Dr Structure Cover, Adj, Case 2 – EA.

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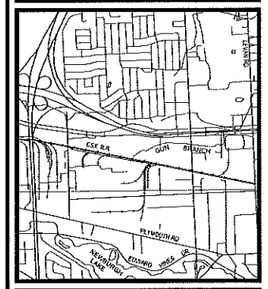
9-12-16	G.I. SUBMITTAL

DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

MAINTENANCE OF TRAFFIC
PROPOSED STORM
PRE STAGE I

HRC JOB NO. 20160103	SCALE NO SCALE
DATE MARCH 2017	SHEET NO. 8

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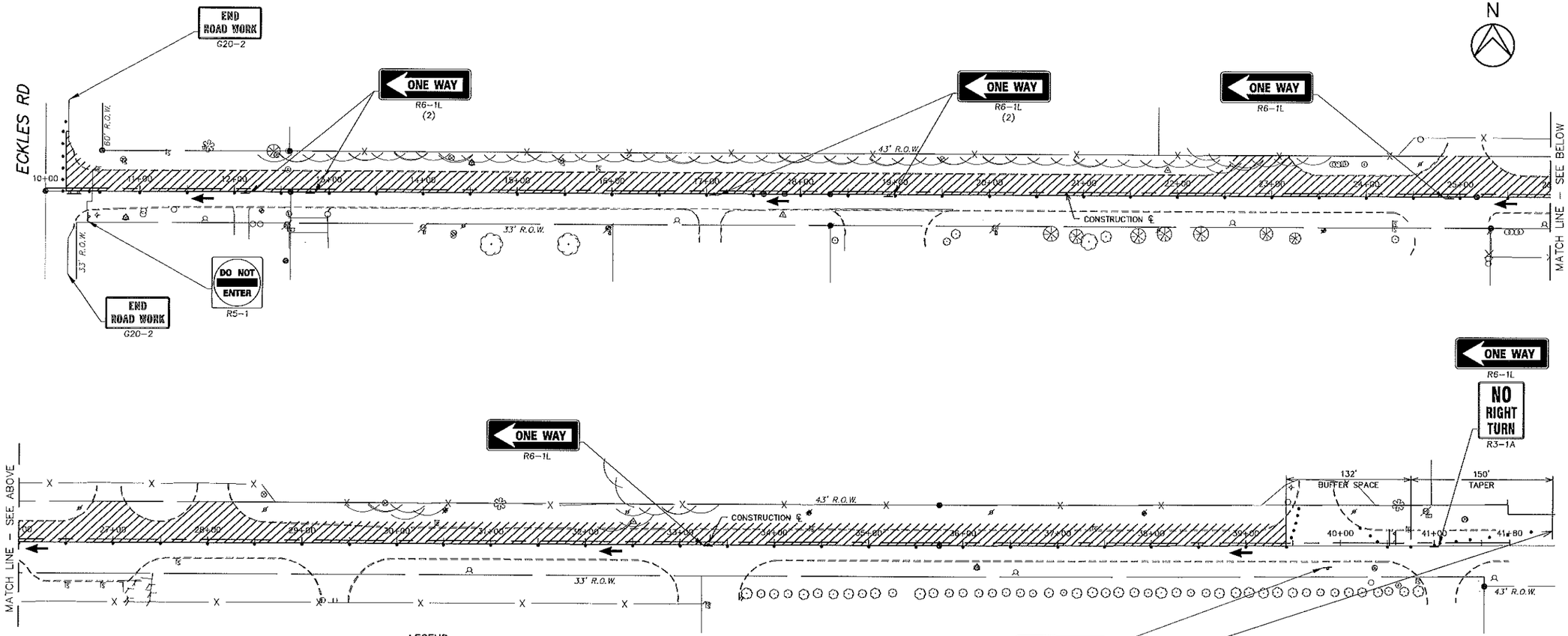
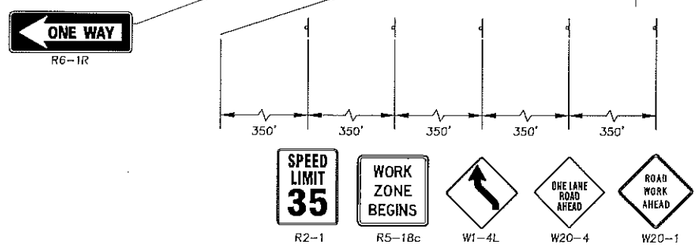


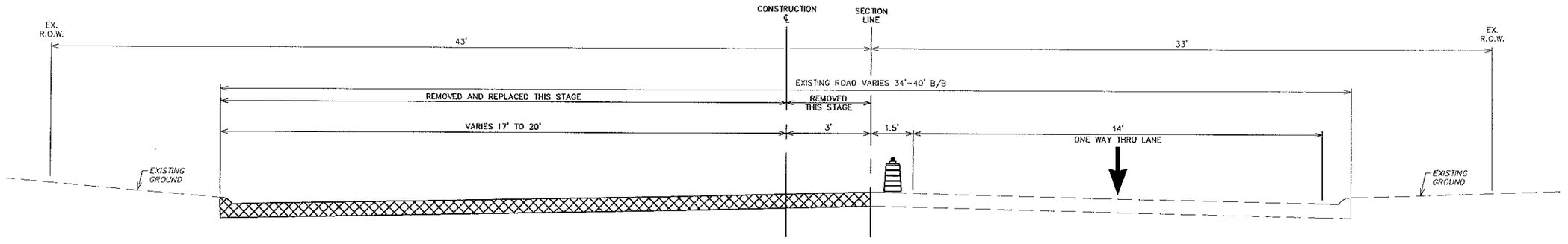
MOT QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Barricade, Type III, High Intensity, Lighted, Furn	2	Ea
Barricade, Type III, High Intensity, Lighted, Oper	2	Ea
Pavt Mrkg, Wet Reflective, Type R, 4 inch, White, Temp	3200	Ft
Plastic Drum, High Intensity, Furn	82	Ea
Plastic Drum, High Intensity, Oper	82	Ea
Sign, Type B, Temp, Prismatic, Furn	272	Sft
Sign, Type B, Temp, Prismatic, Oper	272	Sft

LEGEND

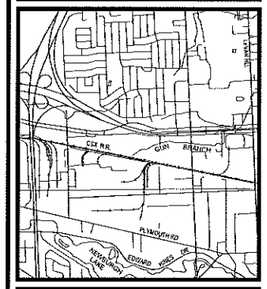
- WORK ZONE
- Plastic Drum, High Intensity
- Barricade, Type III, High Intensity, Lighted

NOTE:
1. MAINTENANCE OF THE "ONE WAY THRU LANE" DURING THIS STAGE OF THE PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR. AN AS DIRECTED QUANTITIES FOR "Cold Patching, Misc" HAS BEEN PROVIDED TO MAINTAIN THE CONDITIONS OF THE THRU LANE AND SHALL BE USED APPROVAL FROM ENGINEER.





MAINTENANCE OF TRAFFIC TYPICAL SECTION STAGE I



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DATE	ADDITIONS AND/OR REVISIONS
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS

CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

MAINTENANCE OF TRAFFIC STAGE I

HRC JOB NO.	SCALE
20160103	NO SCALE
DATE	SHEET NO.
MARCH 2017	9

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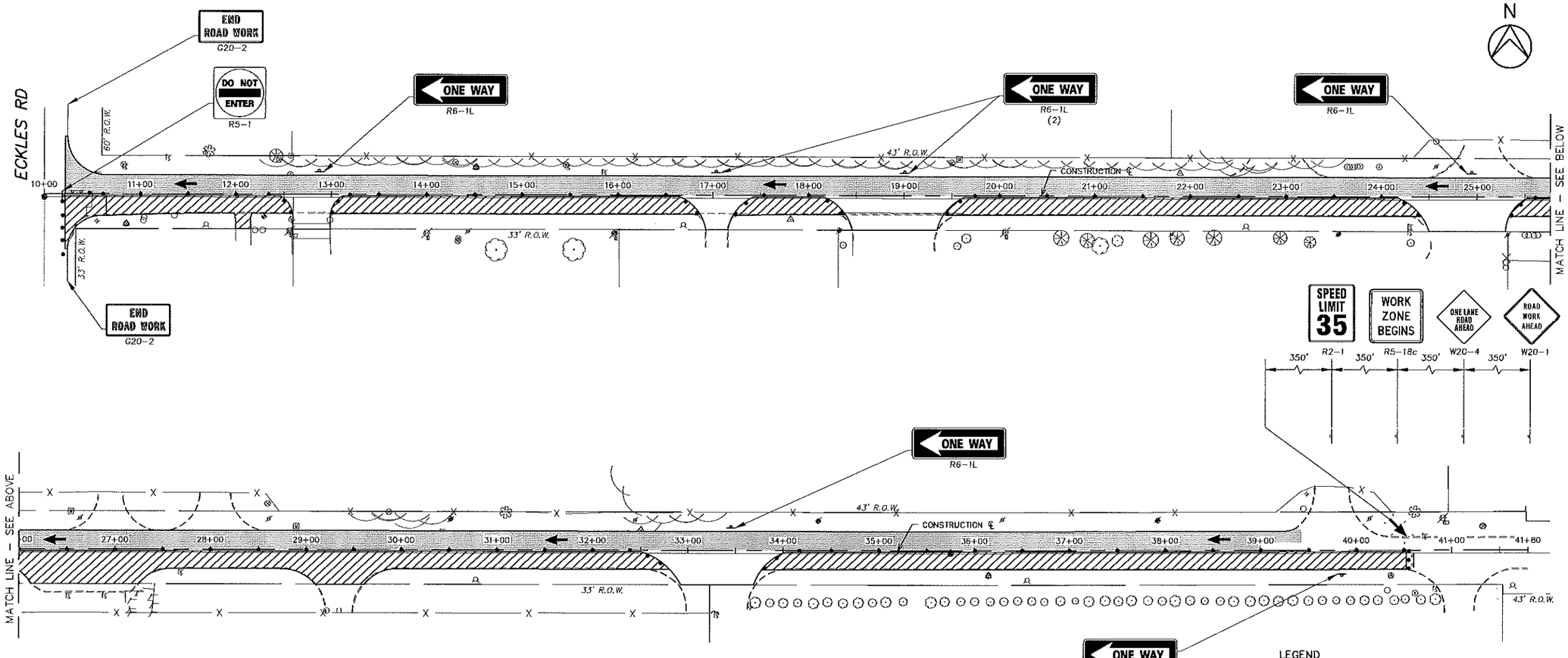
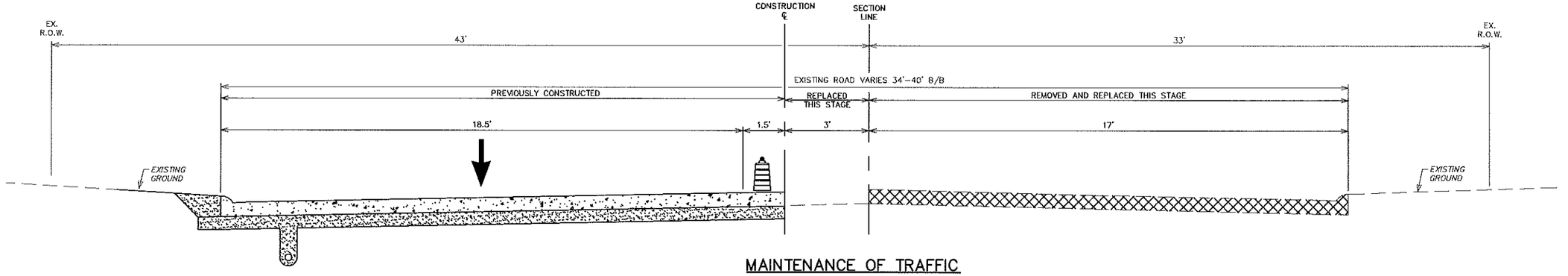


MOT QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Pavt Gapping	300	Ft
Barricade, Type III, High Intensity, Lighted, Furn	2	Ea
Barricade, Type III, High Intensity, Lighted, Oper	2	Ea
Plastic Drum, High Intensity, Furn	82	Ea
Plastic Drum, High Intensity, Oper	82	Ea
Sign, Type B, Temp, Prismatic, Furn	208	Sft
Sign, Type B, Temp, Prismatic, Oper	208	Sft

NOTE:
1. MAINTENANCE GRAVEL TO BE USED AS DIRECTED BY THE ENGINEER TO ACCOMMODATE TURNING RADIUS OF COMMERCIAL VEHICLES.
2. DRIVEWAYS ARE TO BE CONSTRUCTED HALF-WIDTH TO MAINTAIN TRAFFIC TO EVERY BUSINESS.

LEGEND

- PREVIOUS CONSTRUCTED STAGE
- WORK ZONE
- Plastic Drum, High Intensity
- Barricade, Type III, High Intensity, Lighted



MAINTENANCE OF TRAFFIC TYPICAL SECTION STAGE II

CITY OF LIVONIA

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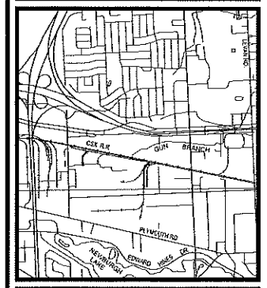
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL

DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

MAINTENANCE OF TRAFFIC STAGE II

HRC JOB NO. 20160103	SCALE NO SCALE
DATE MARCH 2017	SHEET NO. 10

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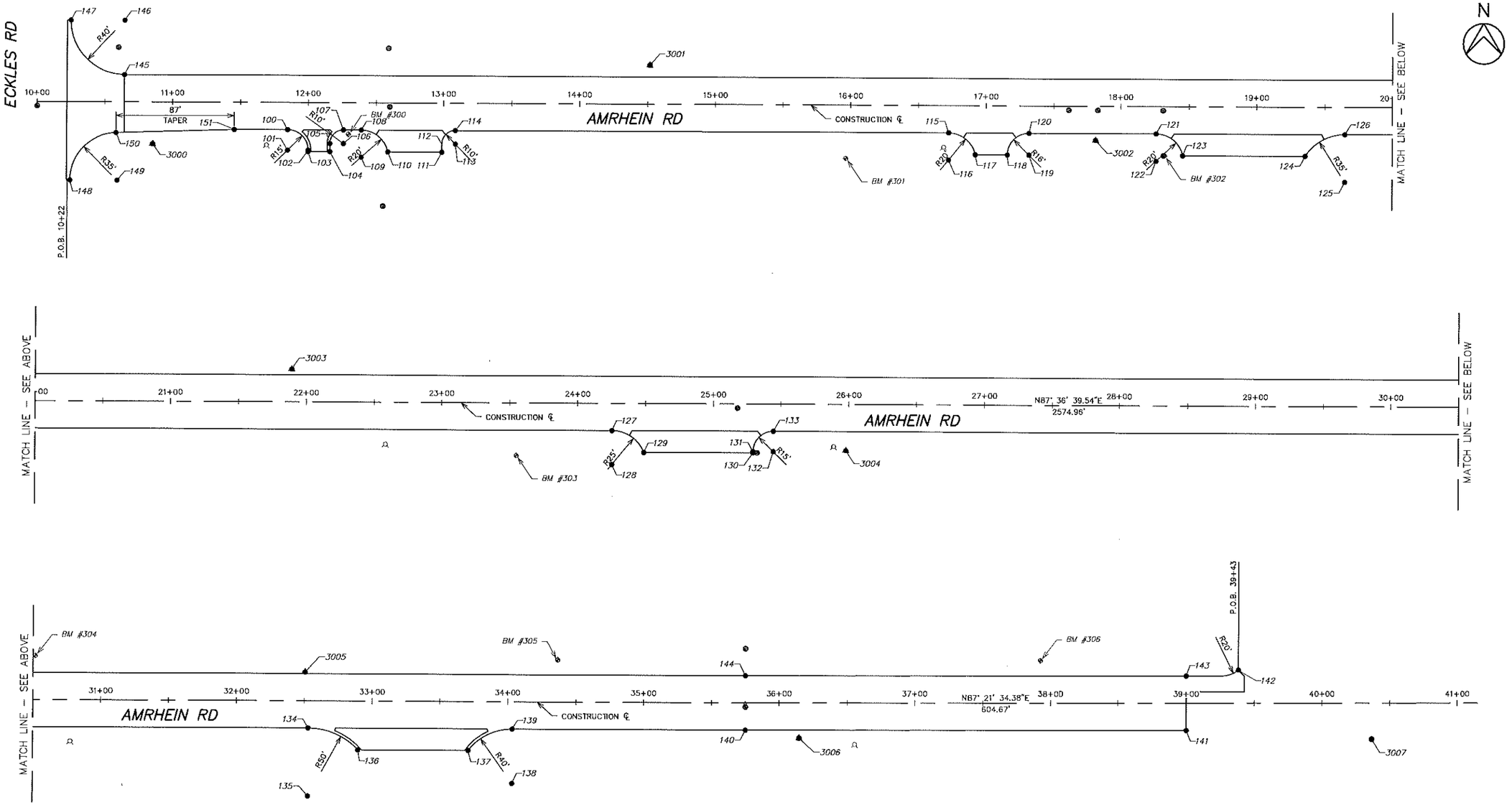

BENCHMARK		
BM. #	DESCRIPTION	ELEV.
300	NORTH RIM TELE. MH, SOUTH SIDE AMRHEIN RD 12'± EAST OF ENTRANCE TO WHITE EAGLE PLAY. POST #166	703.72
301	BENCH TIE IN NORTH FACE UTILITY POLE, SOUTH SIDE OF AMRHEIN RD 75'± WEST OF EASTERLY ENTRANCE TO R+E TRANS. SERV.	704.36
302	BENCH TIE NORTH FACE UTILITY POLE, SOUTH SIDE OF AMRHEIN RD @ WETERLY ENTRANCE TO BLDG #38901	704.19
303	BENCH TIE NORTH FACE UTILITY POLE, SOUTH SIDE OF AMRHEIN RD 50± WEST OF EASTERLY DR TO BLDG #38901	703.09
304	BENCH TIE NORTH FACE UTILITY POLE, NORTH SIDE OF AMRHEIN RD 200± WEST OF WESTERLY DR TO BLDG #38401	701.29
305	BENCH TIE SOUTH FACE UTILITY POLE, NORTH SIDE OF AMRHEIN RD 50± EAST OF WESTERLY DR TO BLDG #38401	703.14
306	BENCH TIE SOUTH FACE UTILITY POLE, NORTH AMRHEIN RD 150± WEST OF EASTERLY DR TO BLDG #38401	702.11

TRAVERSE POINTS		
Point #	Northing	Easting
3000	319967.9250	13376284.8990
3001	320042.4980	13376648.0980
3002	320002.7580	13376979.8280
3003	320068.7060	13377385.4500
3004	320027.7520	13377796.1740
3005	320110.0120	13378445.8500
3006	320078.3700	13378811.7590
3007	320097.2390	13379233.2210

BACK OF CURB		
Point #	Northing	Easting
100	319982.8078	13376383.8839
101	319967.8208	13376384.5092
102	319968.4458	13376399.4962
103	319967.4469	13376399.5378
104	319968.1089	13376415.4040
105	319974.1036	13376415.1539
106	319974.5205	13376425.1452
107	319984.5118	13376424.7284
108	319985.0559	13376437.7703
109	319965.0733	13376438.6040
110	319969.8867	13376458.0161
111	319971.5623	13376498.1797
112	319977.5571	13376497.9298
113	319977.9739	13376507.9209
114	319987.9652	13376507.5041
115	320003.1252	13376870.8754

BACK OF CURB		
Point #	Northing	Easting
116	319983.1426	13376871.7091
117	319987.9560	13376891.1213
118	319988.9433	13376914.7864
119	319989.6102	13376930.7725
120	320005.5963	13376930.1056
121	320009.5205	13377024.1651
122	319989.5213	13377024.9655
123	319994.3499	13377044.3771
124	319998.1072	13377134.4359
125	319980.3420	13377164.5922
126	320015.3186	13377163.1397
127	320034.5200	13377623.3802
128	320009.5418	13377624.4223
129	320019.5062	13377647.3507
130	320022.8658	13377727.8776
131	320023.8649	13377727.8359

BACK OF CURB		
Point #	Northing	Easting
132	320024.4902	13377742.8229
133	320039.4772	13377742.1976
134	320069.0060	13378449.9779
135	320019.0495	13378452.0621
136	320054.5481	13378487.2736
137	320057.9562	13378568.9621
138	320035.3109	13378601.9347
139	320075.2762	13378600.2673
140	320082.4321	13378771.7891
141	320097.4071	13379096.5047
142	320143.5582	13379132.7447
143	320137.3646	13379094.6620
144	320122.3927	13378770.0129
145	320017.7491	13376261.7991
146	320057.7144	13376260.1317
147	320056.0470	13376220.1665

BACK OF CURB		
Point #	Northing	Easting
148	319938.6039	13376224.8773
149	319940.0628	13376259.8469
150	319974.9779	13376257.4104
151	319981.1612	13376344.3831

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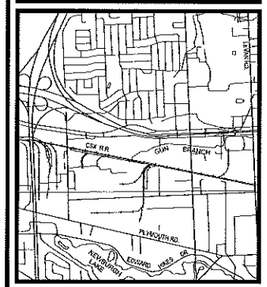
WEB SITE: http:// www.hrc-engr.com

3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

ALGINMENT PLAN

HRC JOB NO. 20160103	SCALE 1" = 40'
DATE MARCH 2017	SHEET NO. 11

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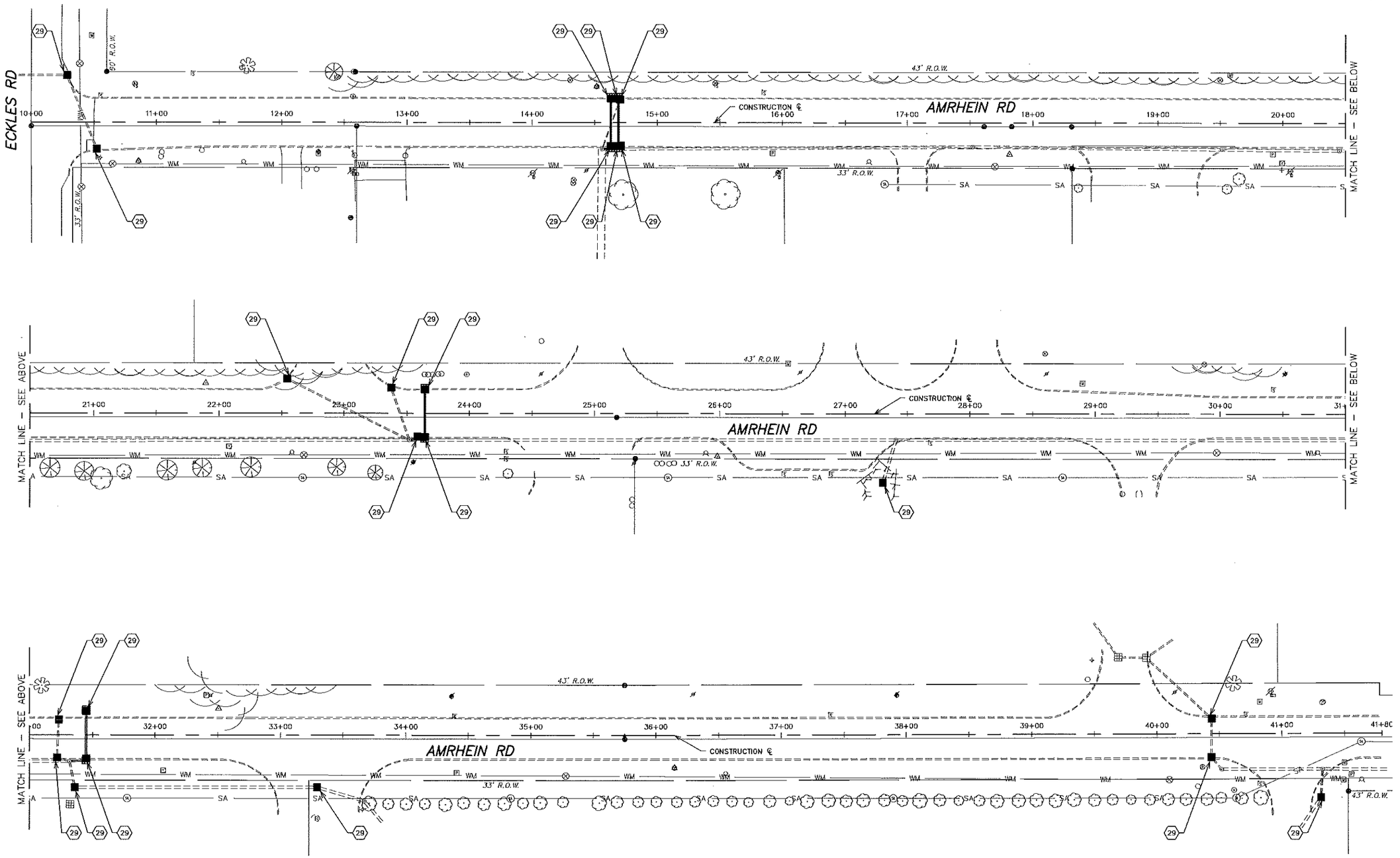

SOIL EROSION QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Erosion Control, Inlet Protection, Fabric Drop	24	Ea

LEGEND

29 ■ Erosion Control, Inlet Protection, Siltsack

CITY OF LIVONIA

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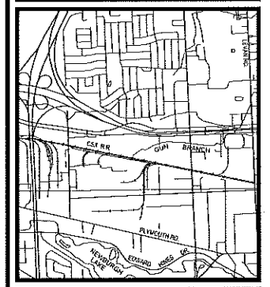
DATE	ADDITIONS AND/OR REVISIONS
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

SOIL EROSION AND SEDIMENTATION CONTROL PLAN

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE	SHEET NO.
MARCH 2017	12

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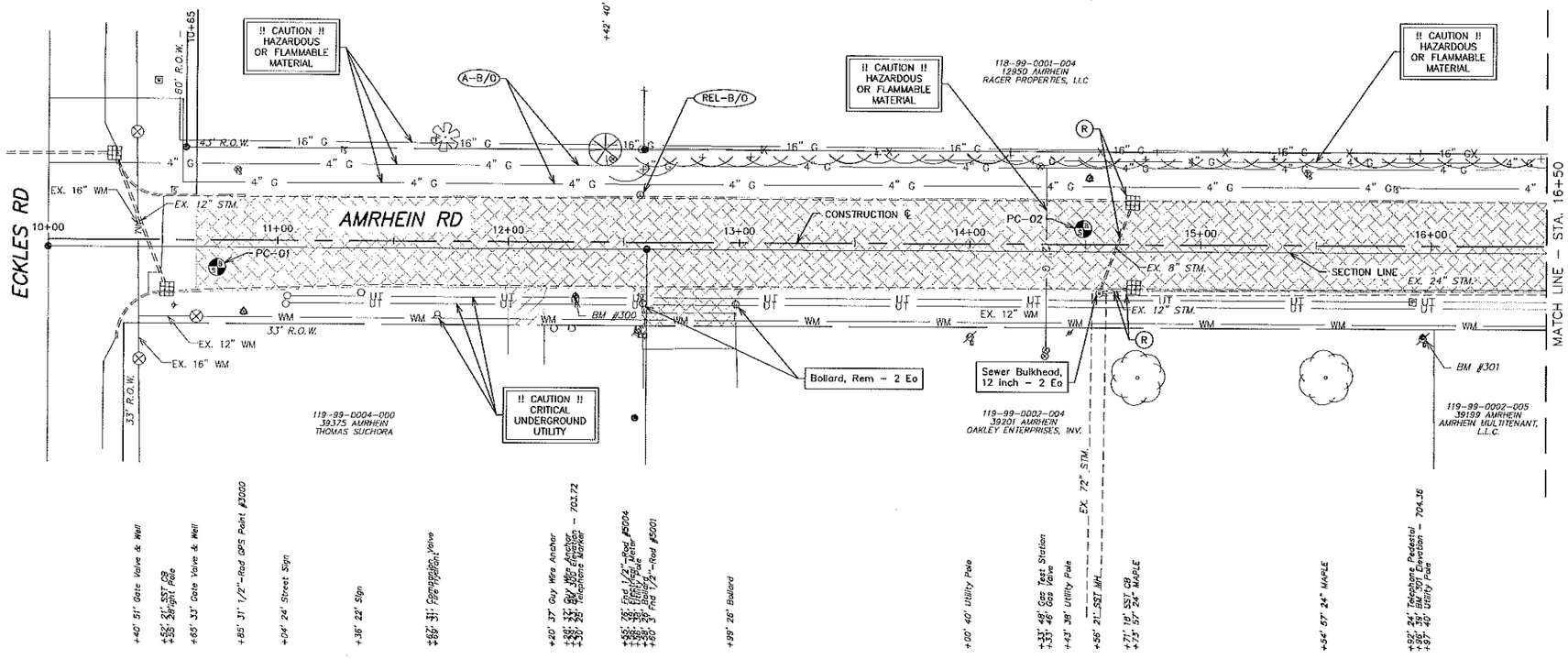

DRIVEWAY REMOVAL QUANTITIES - THIS SHEET (FOR INFORMATION ONLY)				
DRIVE/ APPROACH	GRADING LIMITS*	Pavt. Rem	HMA Surface, Rem	Excavation, Earth
STATION		Syd	Syd	Cyd
12+08	36' R		30	11
12+76	36' R	75		15

* GRADING LIMITS MEASURED FROM CONSTRUCTION CENTERLINE.

REMOVAL QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Dr Structure, Rem	2	Ea
Sewer, Rem, Less than 24 inch	57	Ft
Pavt, Rem	2730	Syd
Bollard, Rem	2	Ea
Excavation, Earth	1375	Cyd
Sewer Bulkhead, 12 inch	2	Ea
HMA Surface, Rem	30	Syd

BENCHMARK		
BM. #	DESCRIPTION	ELEV.
300	NORTH RIM TELE. MH, SOUTH SIDE AMRHEIN RD 12'± EAST OF ENTRANCE TO WHITE EAGLE PLAY. POST #165	703.72
301	BENCH TIE IN NORTH FACE UTILITY POLE, SOUTH SIDE OF AMRHEIN RD 75'± WEST OF EASTERLY ENTRANCE TO R+E TRANS. SERV.	704.36

LEGEND

- HMA Surface, Rem
- Pavt, Rem
- (R) REMOVE (I.E.; STRUCTURE, PIPES, ETC.)
- REL-B/O RELOCATE BY OTHERS
- A-B/O ABANDON BY OTHERS

811

THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM AT 800-482-7171 OR 811.

NOTICE:
ALL EXISTING UTILITIES SHOWN ON THIS TOPOGRAPHIC SURVEY HAVE BEEN TAKEN FROM VISUAL OBSERVATION, AND RECORD MAPPING WHERE AVAILABLE. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO CONSTRUCTION ACTIVITIES.

CITY OF LIVONIA

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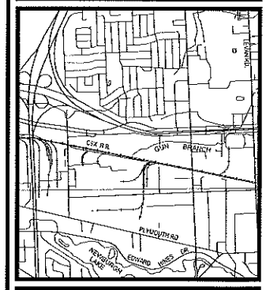
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

REMOVAL PLAN
10+65 TO 16+50

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE	SHEET NO.
MARCH 2017	13

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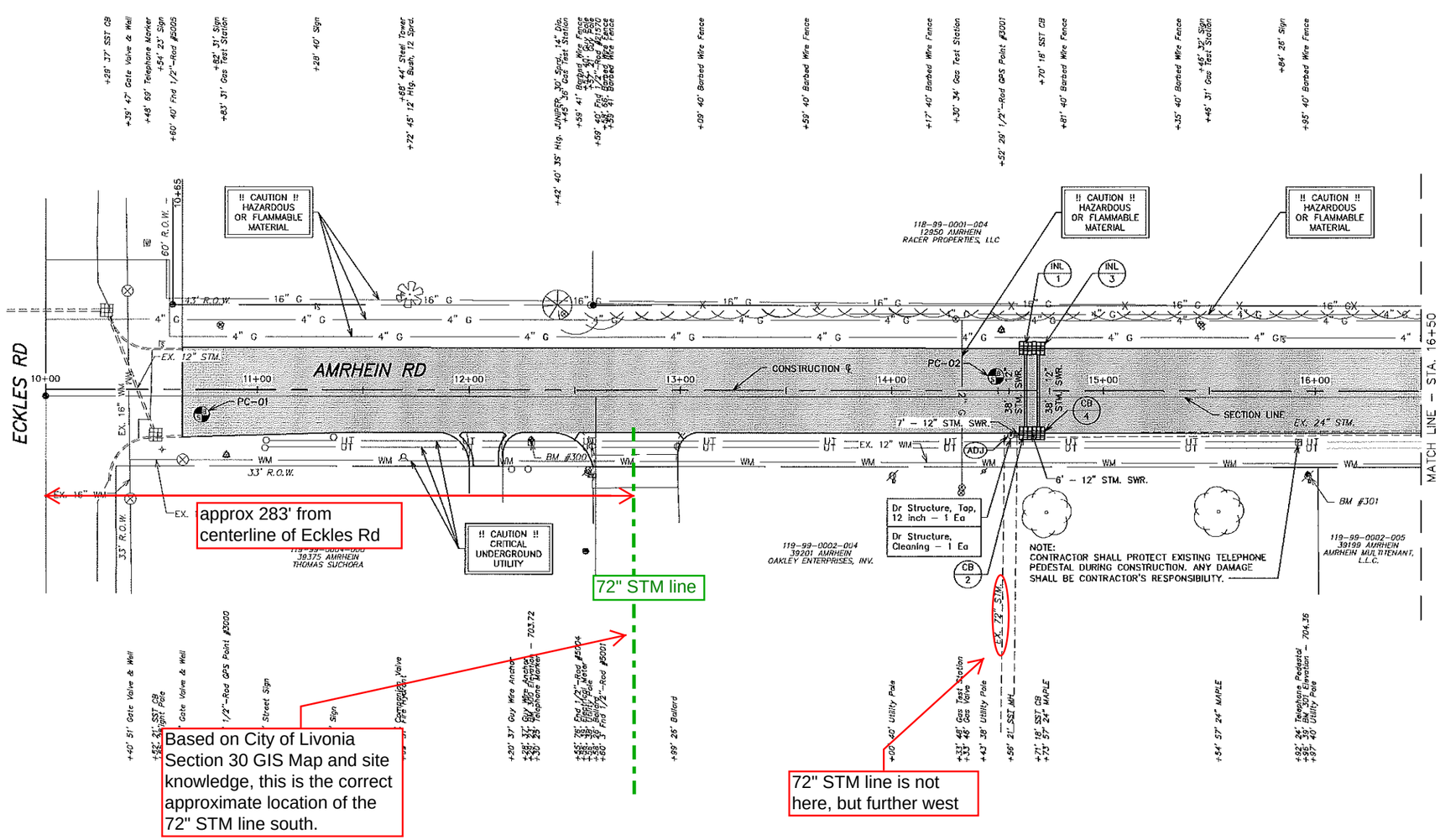

DRIVEWAY CONSTRUCTION QUANTITIES - THIS SHEET
(FOR INFORMATION ONLY)

DRIVE/ APPROACH	GRADING LIMITS*	EXISTING GRADE	PROPOSED GRADE	Driveway, Nonreinf Conc, 8 inch	HMA, Approach	Misc Agg Base, 6 inch	Misc Agg Base, 9 inch
STATION				Syd	Ton	Syd	Syd
12+08	36' R	1.9%	2.6%		10		46
12+76	36' R	2.8%	2.5%	83		93	

* GRADING LIMITS MEASURED FROM CONSTRUCTION CENTERLINE.

CONSTRUCTION QUANTITIES - THIS SHEET

PAY ITEM	QTY	UNIT
Embankment, CIP	322	Cyd
Misc Agg Base, 6 inch	95	Syd
Misc Agg Base, 8 inch	2875	Syd
Misc Agg Base, 9 inch	46	Syd
Sewer, Cl IV, 12 inch, Tr Det B	89	Ft
Dr Structure Cover, Adj, Case 2	1	Ea
Dr Structure Cover, Type R	4	Ea
Dr Structure, 24 inch dia	2	Ea
Dr Structure, 48 inch dia	2	Ea
Dr Structure, Tap, 12 inch	1	Ea
Dr Structure, Cleaning	1	Ea
Underdrain, Subgrade, 6 inch, Modified	1174	Ft
HMA Approach	10	Ton
Conc Pavt with Integral Curb, Nonreinf, 9 inch	2615	Syd
Joint, Contraction, Cp	2492	Ft
Joint, Expansion, E2	40	Ft
Joint, Contraction, Crg	42	Ft
Driveway, Nonreinf Conc, 8 inch	83	Syd
Driveway Opening, Conc, Det M	70	Ft
Curb and Gutter, Conc, Det C5	50	Ft
Surface Restoration, Hydroseeding	975	Syd

STRUCTURE SCHEDULE

STR. NO.	STATION/ OFFSET	STR. DIA.	STR. TYPE	COVER TYPE
1	14+63, 20' L	2'	IN	R
2	14+63, 20' R	4'	CB	R
3	14+69, 20' L	2'	IN	R
4	14+69, 20' R	4'	CB	R

** OFFSET SHOWN TO BACK OF CURB
REFER TO MDOT STD PLAN R-31-F FOR CASTING PLACEMENT

BENCHMARK

BM. #	DESCRIPTION	ELEV.
300	NORTH RIM TELE. MH, SOUTH SIDE AMRHEIN RD 12'± EAST OF ENTRANCE TO WHITE EAGLE PLAV. POST #166	703.72
301	BENCH TIE IN NORTH FACE UTILITY POLE, SOUTH SIDE OF AMRHEIN RD 75'± WEST OF EASTERLY ENTRANCE TO R+E TRANS. SERV.	704.36

811
THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM AT 800-482-7171 OR 811.

LEGEND

Conc Pavt with Integral Curb, Nonreinf, 9 inch

(ADJ) STRUCTURE ADJUST

NOTICE:
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CITY OF LIVONIA

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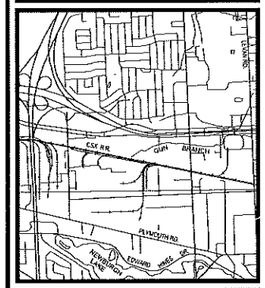
WEB SITE: http:// www.hrc-engr.com

3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

CONSTRUCTION PLAN
10+65 TO 16+50

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE	SHEET NO.
MARCH 2017	14

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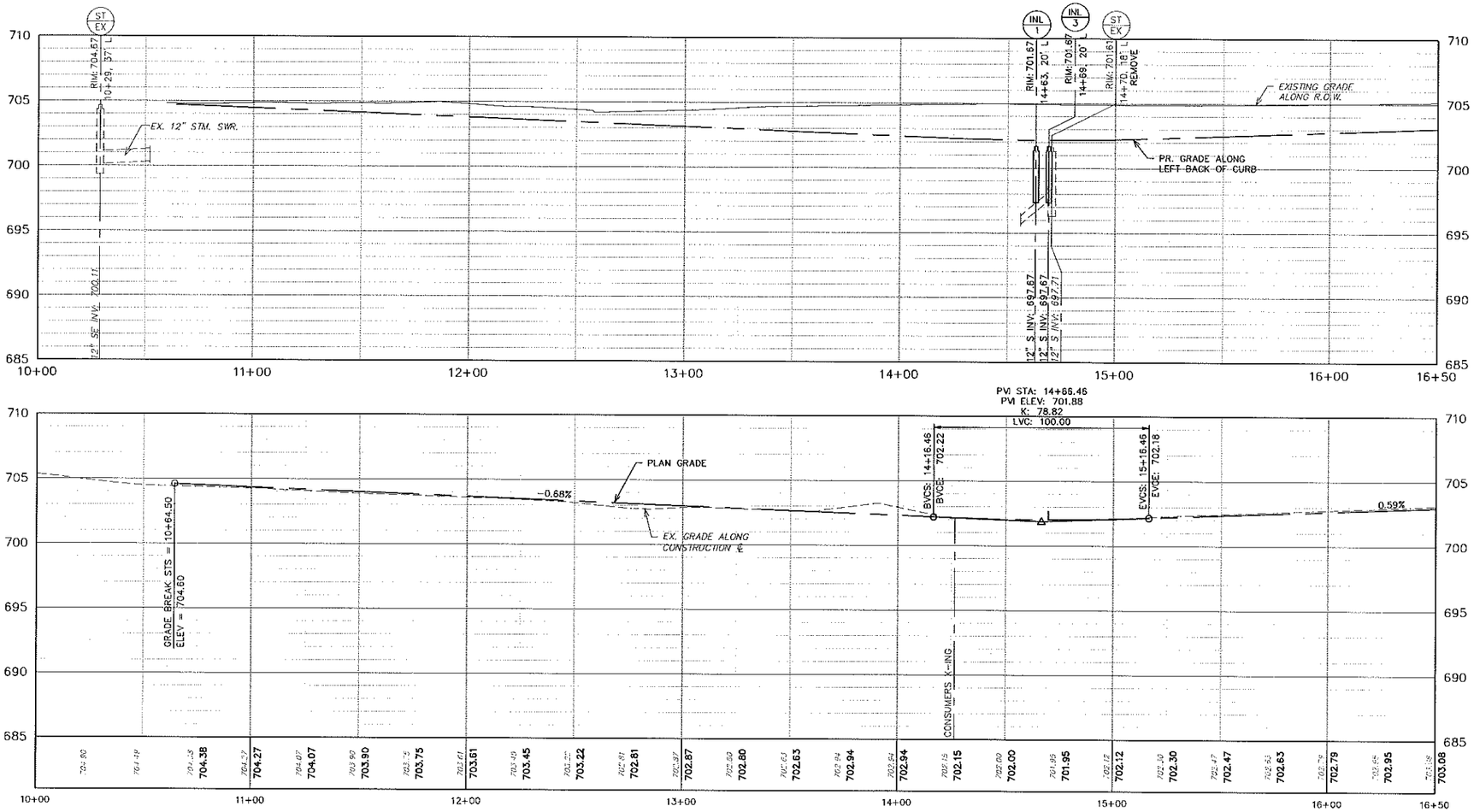
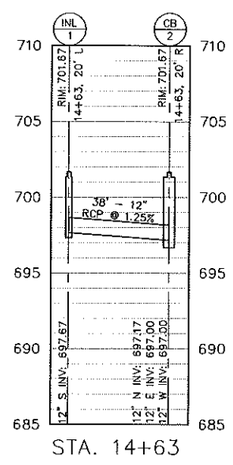
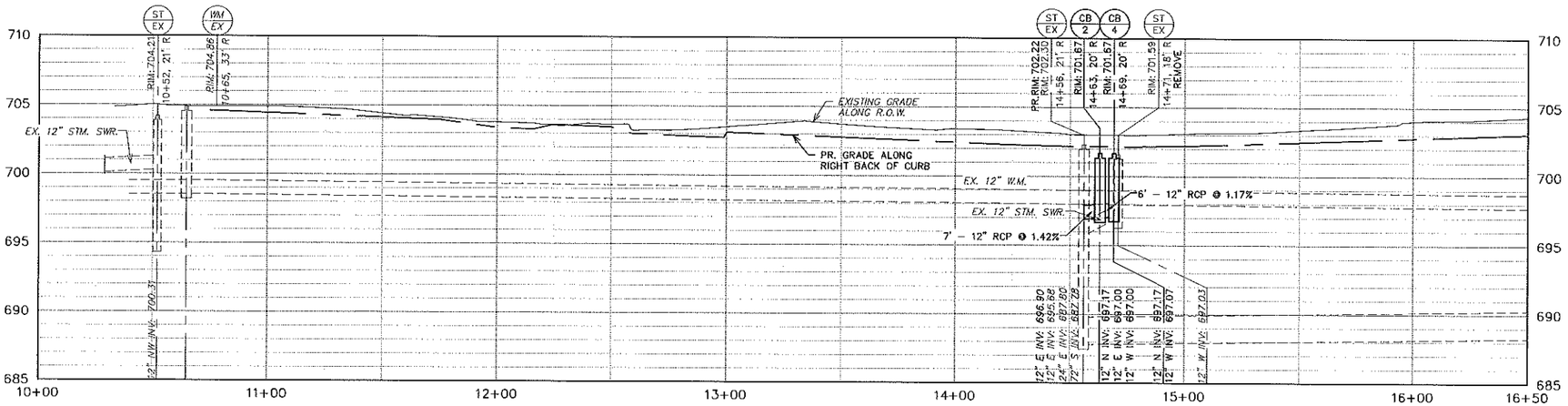
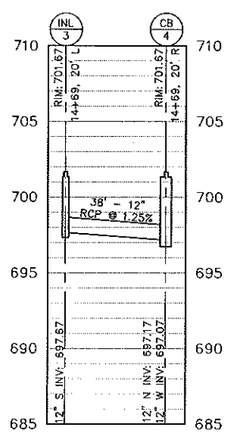




STA. 14+63





STA. 14+69

CITY OF LIVONIA

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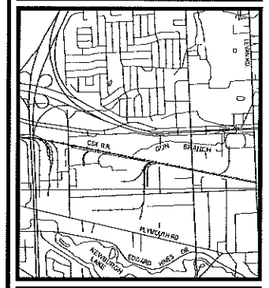
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PROFILE
10+65 TO 16+50

HRC JOB NO. 20160103	SCALE 1" = 30'
DATE MARCH 2017	SHEET NO. 15

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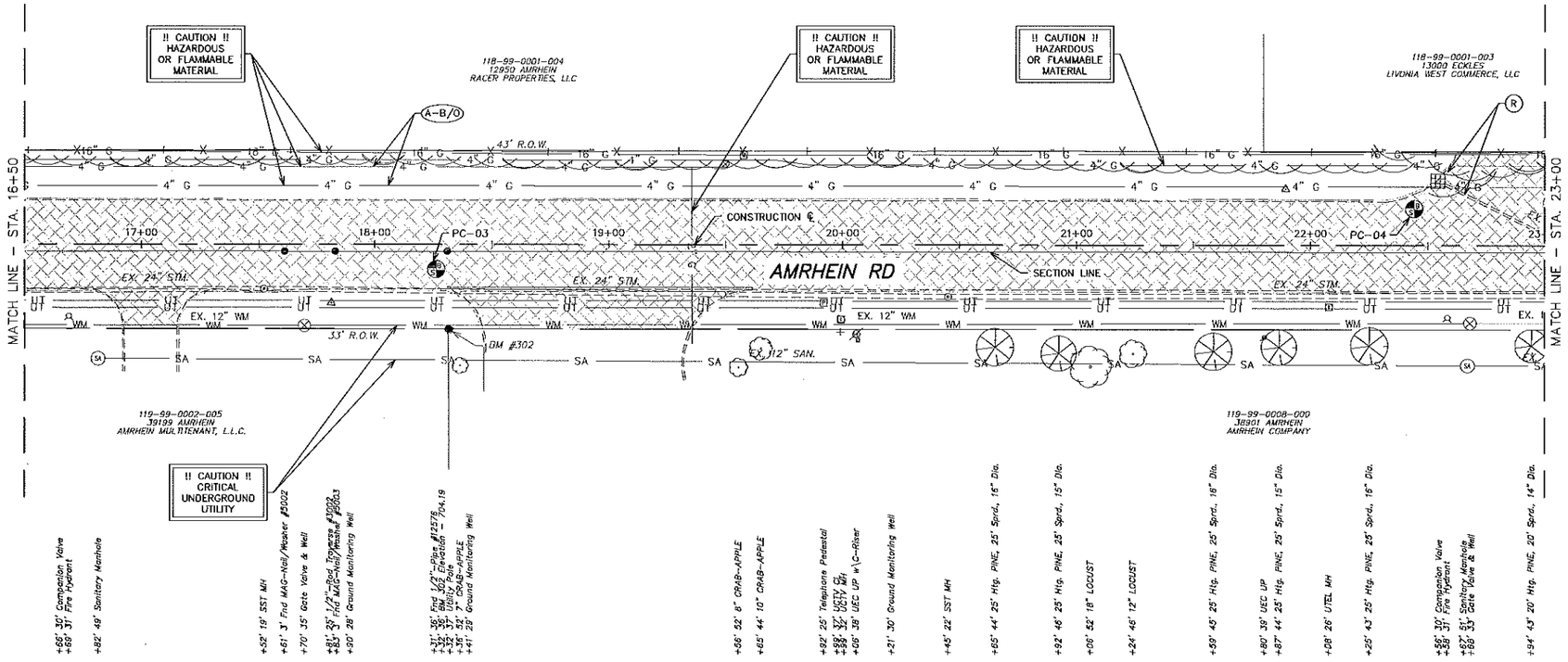

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DRIVEWAY REMOVAL QUANTITIES - THIS SHEET (FOR INFORMATION ONLY)			
DRIVE/ APPROACH	GRADING LIMITS*	Pavt. Rem	Excavation, Earth
STATION		Syd	Cyd
17+03	36' R	60	12
18+93	36' R	208	33
22+92	40' L	183	

REMOVAL QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Dr Structure, Rem	1	Ea
Sewer, Rem, Less than 24 inch	48	Ft
Pavt, Rem	3203	Syd
Excavation, Earth	1325	Cyd

BENCHMARK		
BM. #	DESCRIPTION	ELEV.
302	BENCH TIE NORTH FACE UTILITY POLE, SOUTH SIDE OF AMRHEIN RD @ WETERLY ENTRANCE TO BLDG #38901	704.19

LEGEND

- HMA Surface, Rem
- Pavt, Rem
- (R) REMOVE (I.E.; STRUCTURE, PIPES, ETC.)
- (A-B/O) ABANDON BY OTHERS

811

THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM AT 800-482-7171 OR 811.

NOTICE:
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CITY OF LIVONIA

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DATE	ADDITIONS AND/OR REVISIONS
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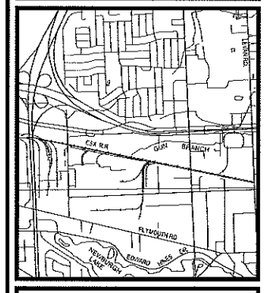
9-12-16	G.I. SUBMITTAL

DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

REMOVAL PLAN
16+50 TO 23+00

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE	SHEET NO.
MARCH 2017	16

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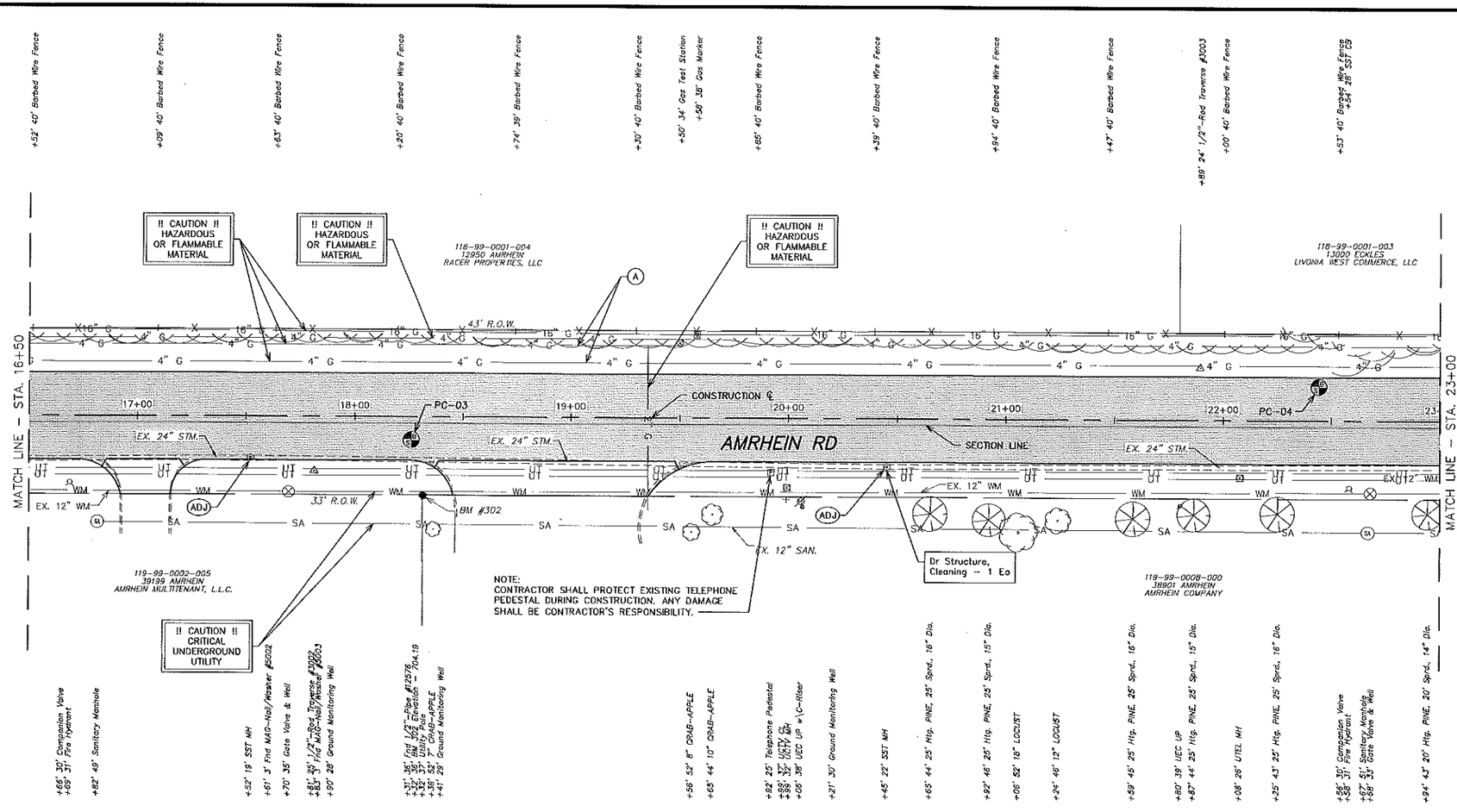

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DRIVEWAY CONSTRUCTION QUANTITIES - THIS SHEET (FOR INFORMATION ONLY)					
DRIVE/ APPROACH	GRADING LIMITS*	EXISTING GRADE	PROPOSED GRADE	Driveway, Nonreinf Conc, 8 inch	Misc Agg Base, 6 inch
STATION				Syd	Syd
17+03	36' R	2.6%	3.1%	57	68
18+93	36' R	1.3%	1.0%	185	197

* GRADING LIMITS MEASURED FROM CONSTRUCTION CENTERLINE.

CONSTRUCTION QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Embankment, CIP	308	Cyd
Misc Agg Base, 6 inch	265	Syd
Misc Agg Base, 8 inch	3180	Syd
Dr Structure, Cleaning	1	Ea
Underdrain, Subgrade, 6 inch, Modified	1300	Ft
Conc Pavt with Integral Curb, Nonreinf, 9 inch	2895	Syd
Joint, Contraction, Cp	2600	Ft
Joint, Expansion, E2	40	Ft
Driveway, Nonreinf Conc, 8 inch	242	Syd
Driveway Opening, Conc, Det M	198	Ft
Surface Restoration, Hydroseeding	900	Syd

BENCHMARK		
BM. #	DESCRIPTION	ELEV.
302	BENCH TIE NORTH FACE UTILITY POLE, SOUTH SIDE OF AMRHEIN RD @ WETERLY ENTRANCE TO BLDG #38901	704.19

LEGEND

Conc Pavt with Integral Curb, Nonreinf, 9 inch

(ADJ) STRUCTURE ADJUST

811 THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM AT 800-482-7171 OR 811.

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DATE	ADDITIONS AND/OR REVISIONS
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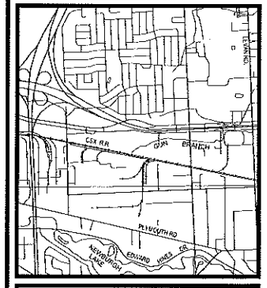
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL

DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



AMRHEIN ROAD RECONSTRUCTION

CONSTRUCTION PLAN
16+50 TO 23+00

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE	SHEET NO.
MARCH 2017	17

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D'Agostini, Robert

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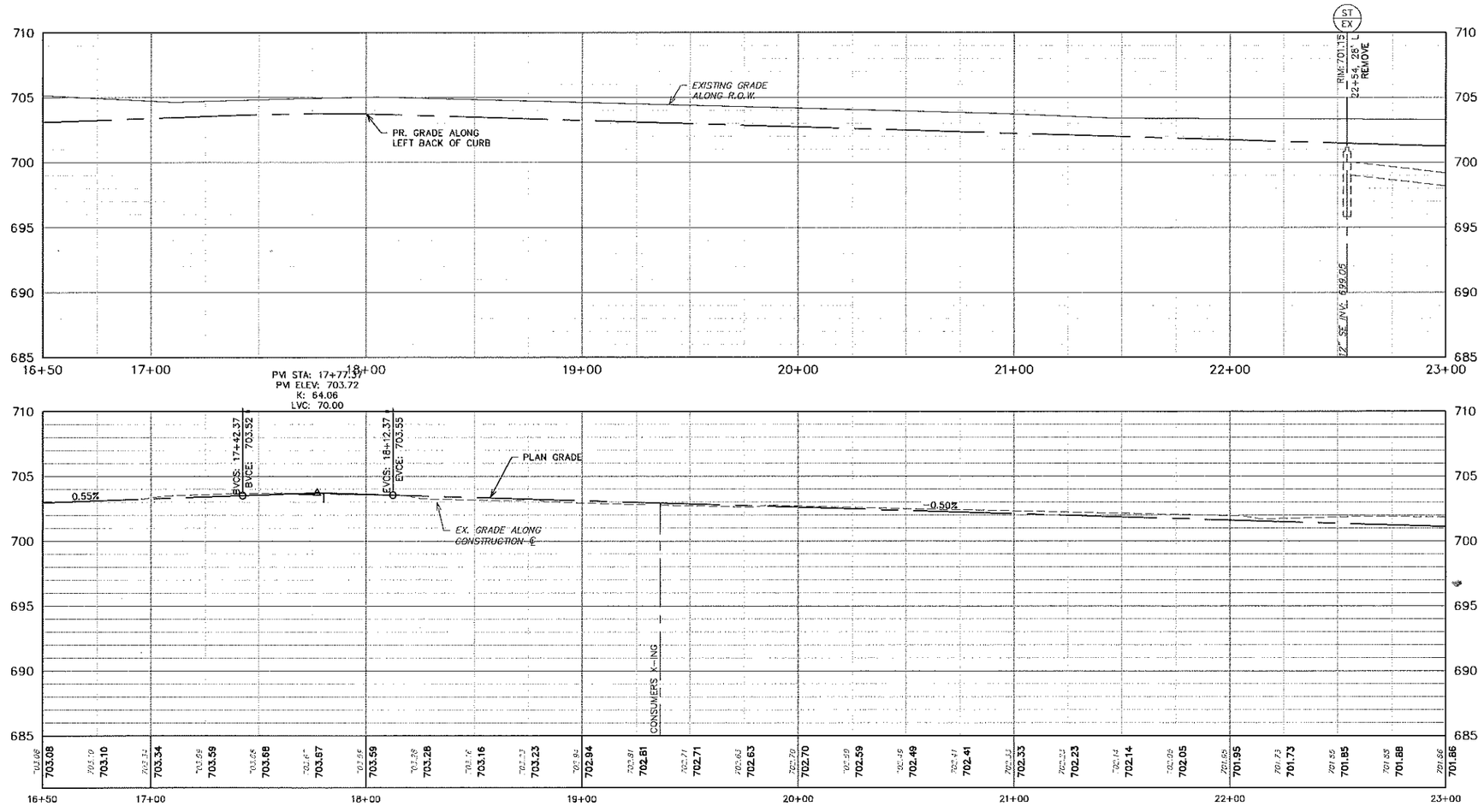

CITY OF LIVONIA

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE, BLOOMFIELD HILLS, MICH. 48303 - 0824
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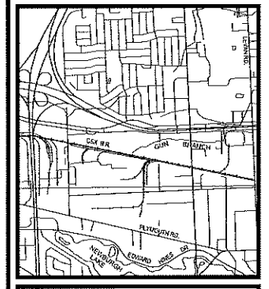
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 338-2592
WEB SITE: http:// www.hrc-engr.com

3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PROFILE
16+50 TO 23+00

HRC JOB NO. 20160103	SCALE 1" = 30'
DATE MARCH 2017	SHEET NO. 18

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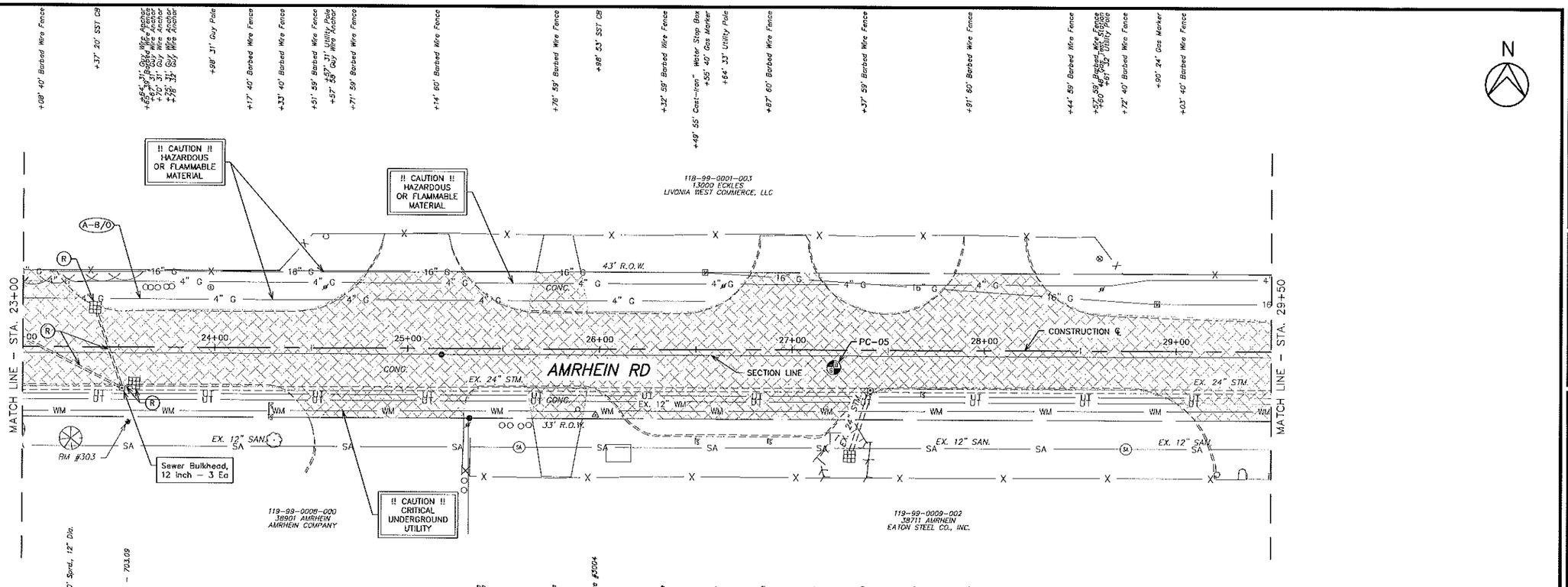

DRIVEWAY REMOVAL QUANTITIES - THIS SHEET (FOR INFORMATION ONLY)			
DRIVE/ APPROACH	GRADING LIMITS*	Pavt, Rem	Excavation, Earth
STATION		Syd	Cyd
24+87	36' R	168	29
25+03	40' L	182	
25+79	40' L	62	
25+79	36' R	50	
26+97	40' L	135	
28+04	40' L	154	
29+37	36' R	144	

* GRADING LIMITS MEASURED FROM CONSTRUCTION CENTERLINE.

REMOVAL QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Dr Structure, Rem	2	Ea
Sewer, Rem, Less than 24 inch	112	Ft
Pavt, Rem	3931	Syd
Excavation, Earth	1000	Cyd
Sewer Bulkhead, 12 inch	3	Ea

BENCHMARK		
BM. #	DESCRIPTION	ELEV.
303	BENCH TIE NORTH FACE UTILITY POLE, SOUTH SIDE OF AMRHEIN RD 50± WEST OF EASTERLY DR TO BLDG #38901	703.09

LEGEND

- HMA Surface, Rem
- Pavt, Rem
- (R) REMOVE (I.E.; STRUCTURE, PIPES, ETC.)
- (A-B/O) ABANDON BY OTHERS

811

THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM AT 800-482-7171 OR 811.

NOTICE:
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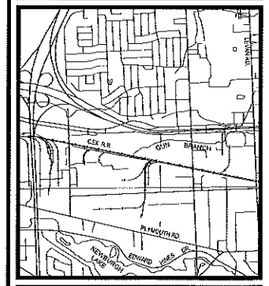

CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

REMOVAL PLAN
23+00 TO 29+50

HRC JOB NO.	SCALE
2016D103	1" = 30'
DATE	SHEET NO.
MARCH 2017	19

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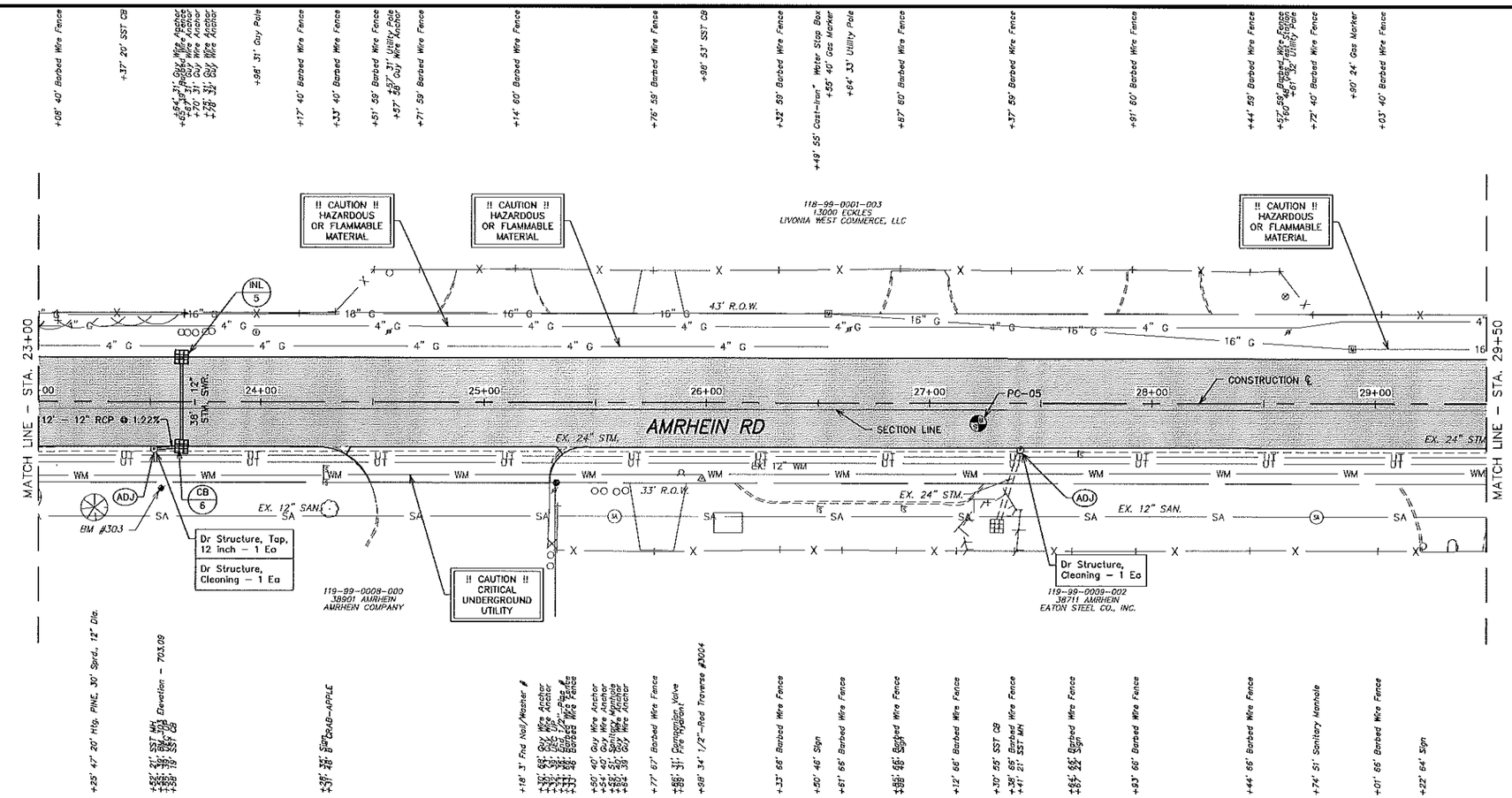

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DRIVEWAY CONSTRUCTION QUANTITIES - THIS SHEET (FOR INFORMATION ONLY)					
DRIVE/ APPROACH	GRADING LIMITS*	EXISTING GRADE	PROPOSED GRADE	Driveway, Nonreinf Conc, 8 inch	Misc Agg Base, 6 inch
STATION				Syd	Syd
24+87	35' R	2.6%	5.0%	160	171

* GRADING LIMITS MEASURED FROM CONSTRUCTION CENTERLINE.

CONSTRUCTION QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Embankment, CIP	337	Cyd
Misc Agg Base, 6 inch	171	Syd
Misc Agg Base, 8 inch	3180	Syd
Sewer, Cl IV, 12 inch, Tr Det B	50	Ft
Dr Structure Cover, Adj, Case 2	2	Ea
Dr Structure Cover, Type R	2	Ea
Dr Structure, 24 inch dia	1	Ea
Dr Structure, 48 inch dia	1	Ea
Dr Structure, Tap, 12 inch	1	Ea
Dr Structure, Adj, Add Depth	4	Ft
Dr Structure, Cleaning	2	Ea
Underdrain, Subgrade, 6 inch, Modified	1300	Ft
Conc Pavt with Integral Curb, Nonreinf, 9 inch	2895	Syd
Joint, Contraction, Cp	2560	Ft
Joint, Expansion, E2	40	Ft
Driveway, Nonreinf Conc, 8 inch	160	Syd
Driveway Opening, Conc, Det M	120	Ft
Surface Restoration, Hydroseeding	920	Syd

STRUCTURE SCHEDULE				
STR. NO.	STATION/ OFFSET	STR. DIA.	STR. TYPE	COVER TYPE
5	23+64, 20' L	2'	IN	R
6	23+64, 20' R	4'	CB	R

** OFFSET SHOWN TO BACK OF CURB
REFER TO MDOT STD PLAN R-31-F FOR CASTING PLACEMENT

BENCHMARK		
BM. #	DESCRIPTION	ELEV.
303	BENCH TIE NORTH FACE UTILITY POLE, SOUTH SIDE OF AMRHEIN RD 50± WEST OF EASTERLY DR TO BLDG #38901	703.09

NOTE:
EXCAVATION WITHIN 6 FEET OF THE EXISTING 16" HP GAS MAIN REQUIRES COORDINATION WITH CONSUMERS ENERGY AND INSPECTION FROM THEIR DFFICE. REFER TO UTILITY CONTACTS ON SHEET NO. 2 FOR CONTACT INFORMATION.

LEGEND

Conc Pavt with Integral Curb, Nonreinf, 9 inch

(ADJ) STRUCTURE ADJUST

811
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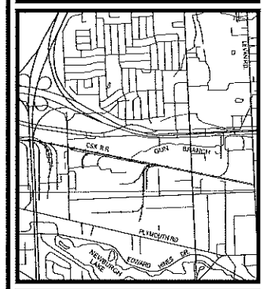
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

CONSTRUCTION PLAN
23+00 TO 29+50

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE	SHEET NO.
MARCH 2017	20

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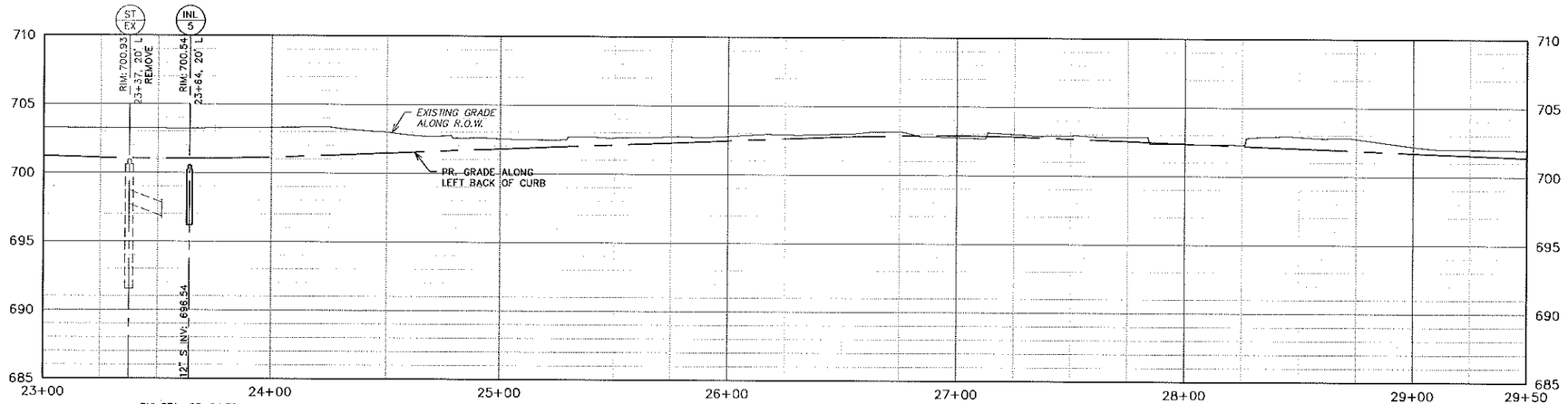

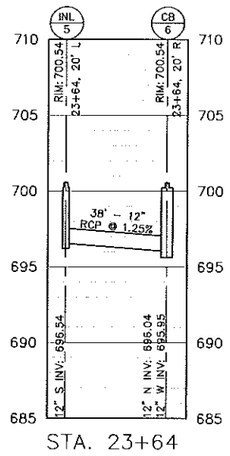

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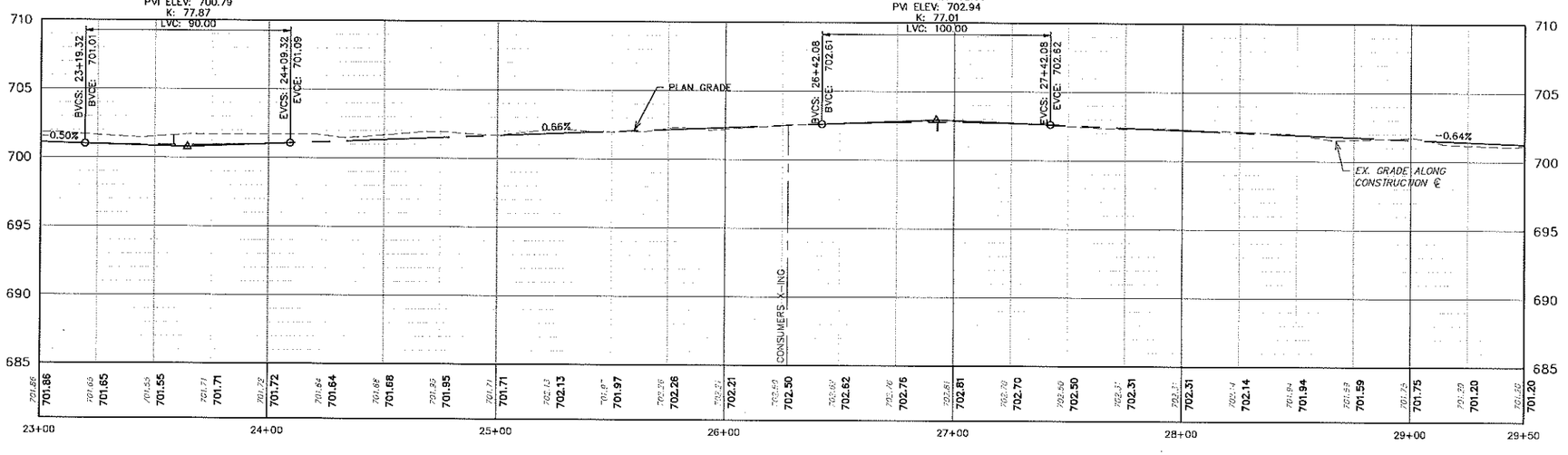

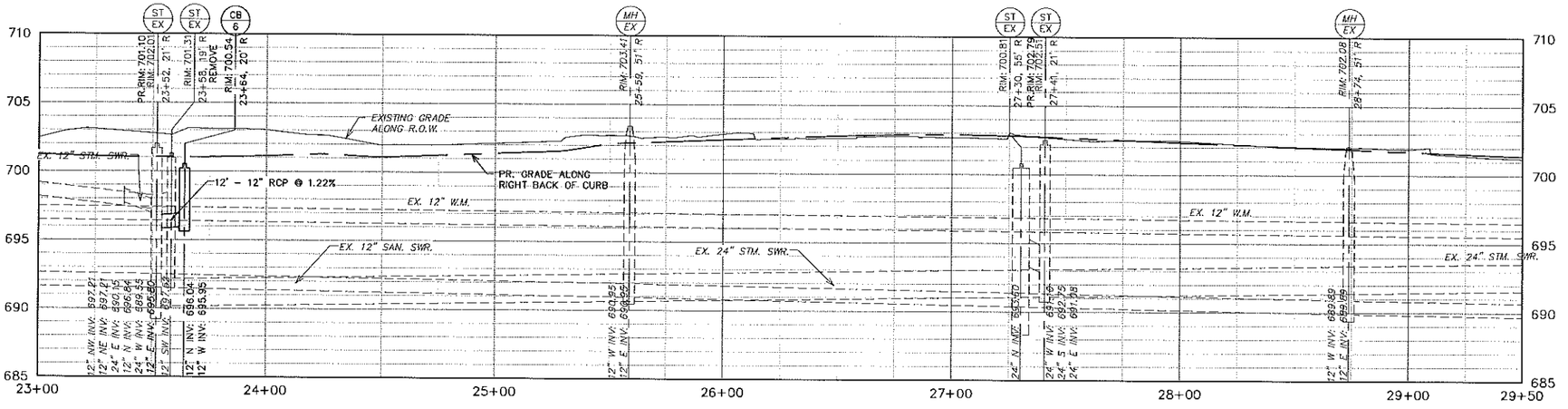

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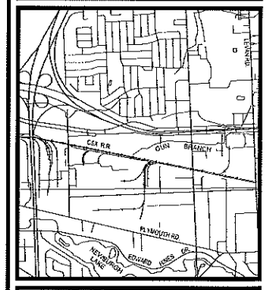
9-12-16	G.I. SUBMITTAL

DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PROFILE
23+00 TO 29+50

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE: MARCH 2017	SHEET NO. 21

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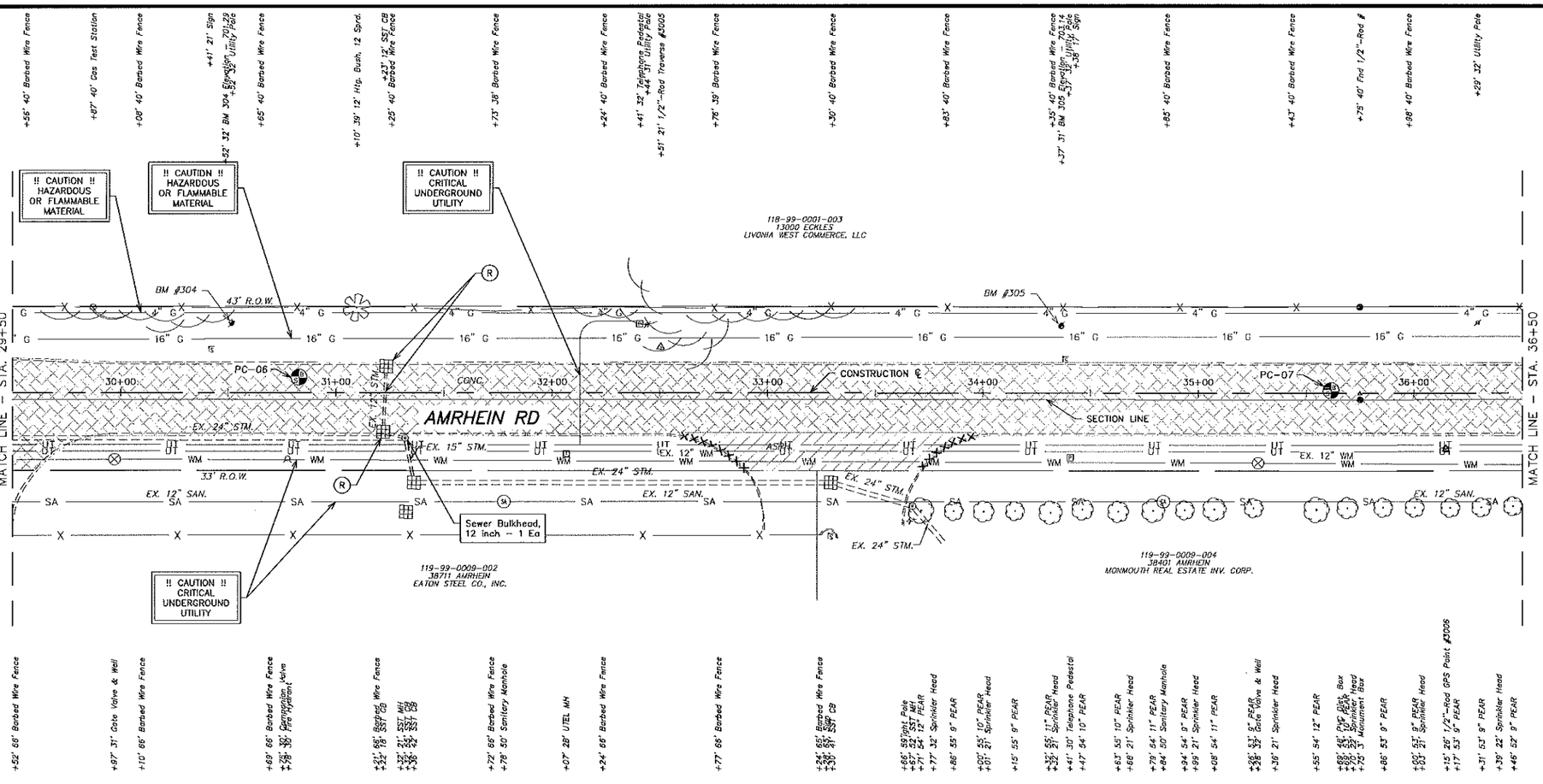

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DRIVEWAY REMOVAL QUANTITIES - THIS SHEET (FOR INFORMATION ONLY)			
DRIVE/ APPROACH	GRADING LIMITS*	HMA Surface, Rem	Excavation, Earth
STATION		Syd	Cyd
33+29	36' R	198	50

* GRADING LIMITS MEASURED FROM CONSTRUCTION CENTERLINE.

REMOVAL QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Dr Structure, Rem	2	Ea
Sewer, Rem, Less than 24 inch	42	Ft
Curb and Gutter, Rem	84	Ft
Pavt, Rem	2432	Syd
Excavation, Earth	1392	Cyd
Sewer Bulkhead, 12 inch	1	Ea
HMA Surface, Rem	200	Syd

BENCHMARK		
BM. #	DESCRIPTION	ELEV.
304	BENCH TIE NORTH FACE UTILITY POLE, NORTH SIDE OF AMRHEIN RD 200± WEST OF WESTERLY DR TO BLDG #38401	701.29
305	BENCH TIE SOUTH FACE UTILITY POLE, NORTH SIDE OF AMRHEIN RD 50± EAST OF WESTERLY DR TO BLDG #38401	703.14

LEGEND

- HMA Surface, Rem
- Pavt, Rem
- Curb & Gutter, Rem
- (R) REMOVE (I.E.; STRUCTURE, PIPES, ETC.)

811

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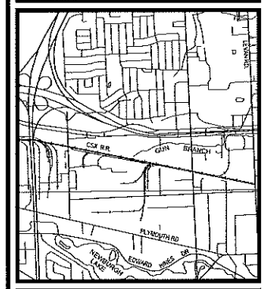

CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

REMOVAL PLAN
29+50 TO 36+50

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE	SHEET NO.
MARCH 2017	22

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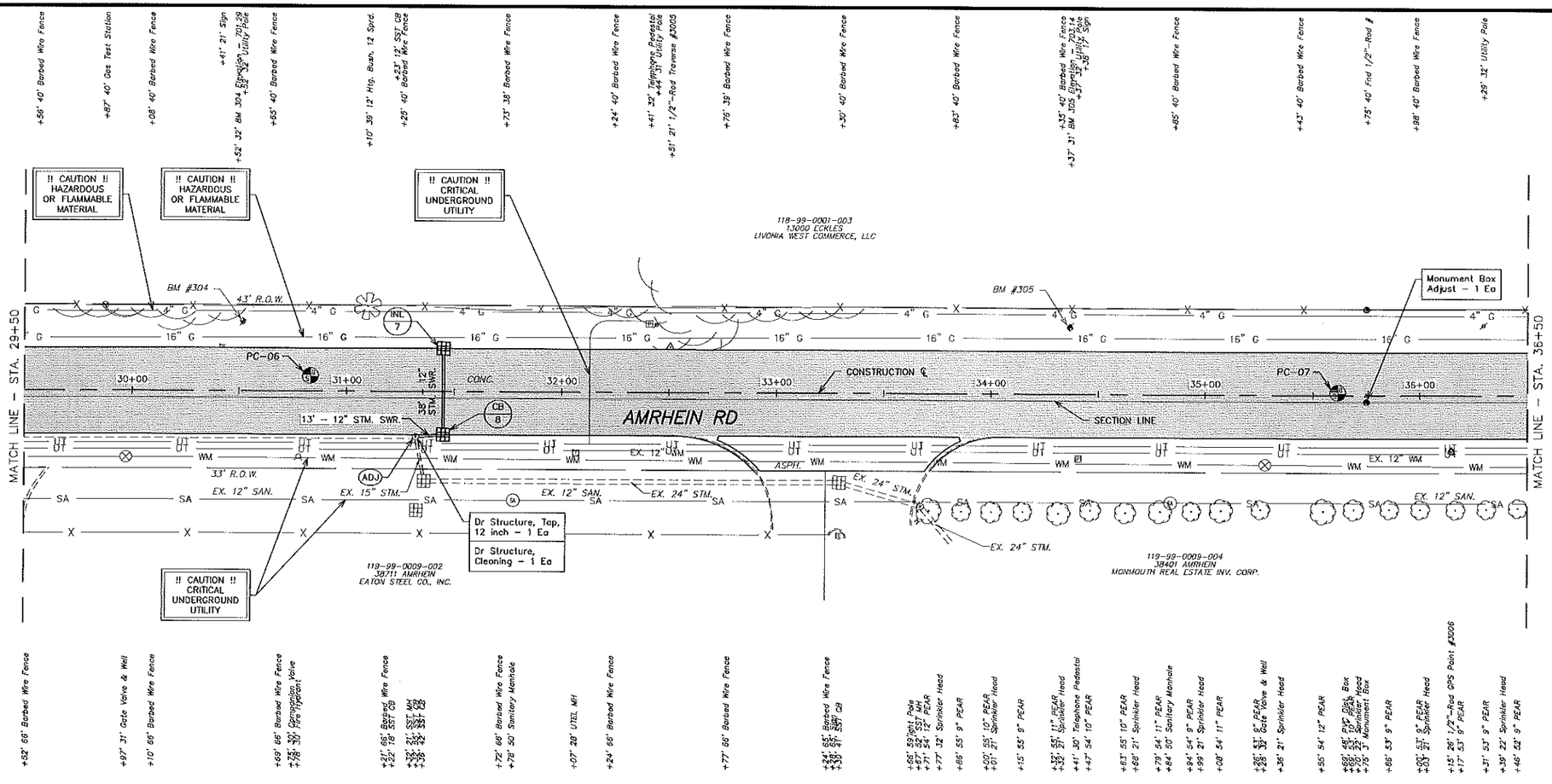

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D'Agostini, Robert

DRIVEWAY CONSTRUCTION QUANTITIES - THIS SHEET (FOR INFORMATION ONLY)					
DRIVE/ APPROACH	GRADING LIMITS*	EXISTING GRADE	PROPOSED GRADE	HMA, Approach	Misc Agg Base, 9 inch
STATION				Ton	Syd
33+29	36' R	1.9%	2.7%	60	200

* GRADING LIMITS MEASURED FROM CONSTRUCTION CENTERLINE.

CONSTRUCTION QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Embankment, CIP	346	Cyd
Misc Agg Base, 8 inch	3435	Syd
Misc Agg Base, 9 inch	200	Syd
Sewer, Cl IV, 12 inch, Tr Det B	51	Ft
Dr Structure Cover, Adj, Case 2	1	Ea
Dr Structure Cover, Type R	2	Ea
Dr Structure, 24 inch dia	1	Ea
Dr Structure, Tap, 12 inch	1	Ea
Dr Structure, Cleaning	1	Ea
Underdrain, Subgrade, 6 inch, Modified	1400	Ft
HMA Approach	60	Ton
Conc Pavt with Integral Curb, Nonreinf, 9 inch	3115	Syd
Joint, Contraction, Cp	2720	Ft
Joint, Expansion, E2	80	Ft
Driveway, Nonreinf Conc, 8 inch	18	Syd
Curb and Gutter, Conc, Det C5	215	Ft
Surface Restoration, Hydroseeding	980	Syd
Monument Box Adjust	1	Ea

STRUCTURE SCHEDULE				
STR. NO.	STATION/ OFFSET	STR. DIA.	STR. TYPE	COVER TYPE
7	31+45, 20' L	2'	IN	R
8	31+45, 20' R	4'	CB	R

** OFFSET SHOWN TO BACK OF CURB REFER TO MDOT STD PLAN R-31-F FOR CASTING PLACEMENT

BENCHMARK		
BM. #	DESCRIPTION	ELEV.
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LEGEND

Conc Pavt with Integral Curb, Nonreinf, 9 inch

(ADJ) STRUCTURE ADJUST

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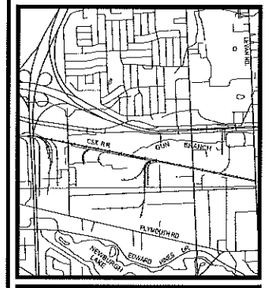

CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

CONSTRUCTION PLAN
29+50 TO 36+50

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE	SHEET NO.
MARCH 2017	23

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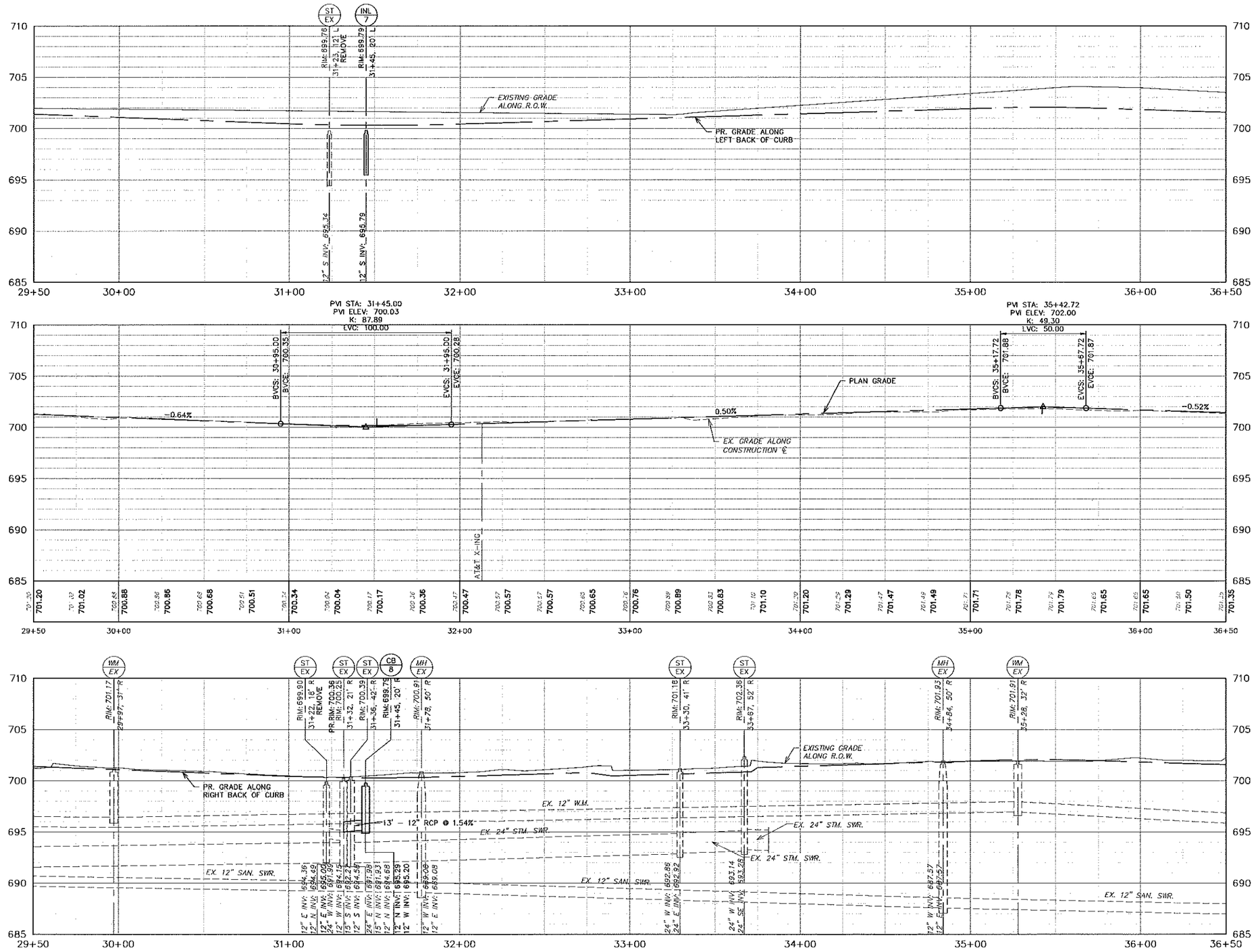

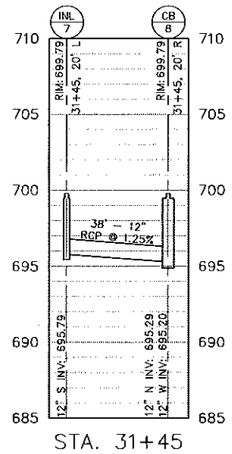

STA. 31+45

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11-18-16	FINAL PLANS SUBMITTAL
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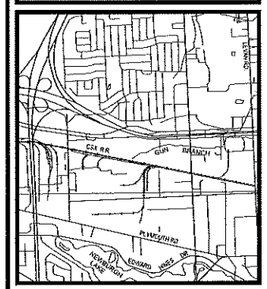

CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PROFILE
29+50 TO 36+50

HRC JOB NO. 20160103	SCALE 1" = 30'
DATE MARCH 2017	SHEET NO. 24

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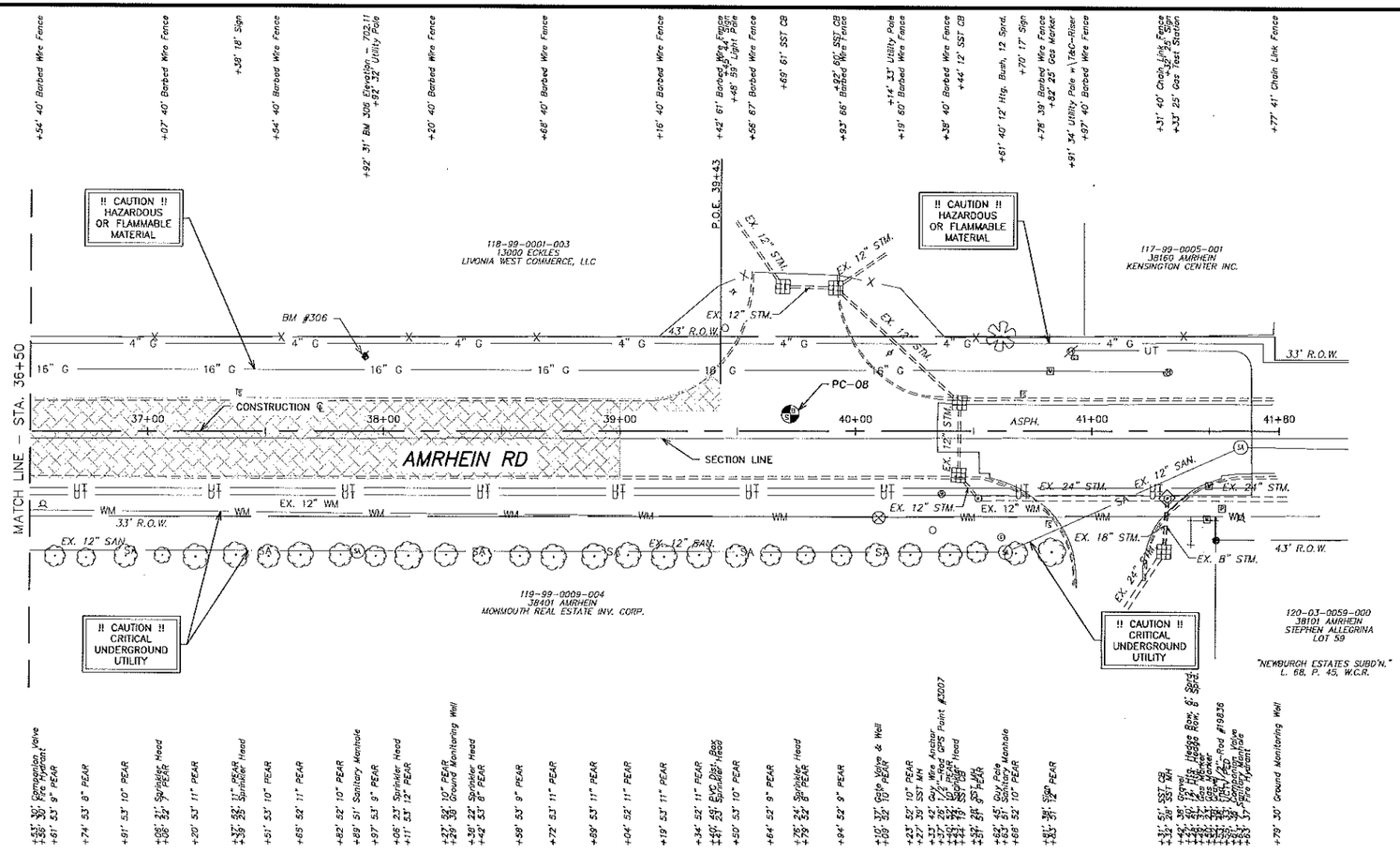
+54' 40" Barbed Wire Fence
+07' 40" Barbed Wire Fence
+58' 18" Sign
+54' 40" Barbed Wire Fence
+92' 31' BM 306 Elevation = 702.11
+92' 32" Utility Pole
+20' 40" Barbed Wire Fence
+68' 40" Barbed Wire Fence
+16' 40" Barbed Wire Fence
+42' 61' Barbed Wire Fence
+54' 24" Sign
+48' 59" Light Pole
+56' 67' Barbed Wire Fence
+69' 61' SST CB
+82' 66' SST CB
+82' 66' Barbed Wire Fence
+14' 33' Utility Pole
+19' 69' Barbed Wire Fence
+38' 40' Barbed Wire Fence
+44' 12' SST CB
+61' 40' 12" Hdg. Bush, 12 Sprd.
+70' 17' Sign
+78' 39' Barbed Wire Fence
+82' 25' Gas Marker
+91' 34' Utility Pole w\ TeleRiser
+97' 40' Barbed Wire Fence
+31' 40' Chain Link Fence
+33' 25' Gas Test Station
+77' 41' Chain Link Fence
!! CAUTION !! HAZARDOUS OR FLAMMABLE MATERIAL
!! CAUTION !! HAZARDOUS OR FLAMMABLE MATERIAL
118-99-0001-003
13000 ECKLES
LIVONIA WEST COMMERCE, LLC
117-99-0005-001
38150 AMRHEIN
KENSINGTON CENTER INC.
P.O.E. 39+43
EX. 12" STM.
EX. 12" STM.
EX. 12" STM.
BM #306
43' R.O.W.
4" G
16" G
18" G
6" G
UT
33' R.O.W.
PC-08
MATCH LINE - STA. 36+50
37+00
38+00
39+00
40+00
ASPH.
41+00
41+80
CONSTRUCTION ℄
AMRHEIN RD
SECTION LINE
EX. 12" STM.
EX. 24" STM.
EX. 12" SAN.
EX. 24" STM.
EX. 12" WM
EX. 12" STM.
EX. 12" WM
33' R.O.W.
EX. 12" SAN.
EX. 12" SAN.
EX. 18" STM.
EX. 8" STM.
43' R.O.W.
EX. 24" STM.
119-99-0009-004
38401 AMRHEIN
MONMOUTH REAL ESTATE INV. CORP.
120-03-0059-000
38101 AMRHEIN
STEPHEN ALLEGRINA
LOT 59
"NEWBURGH ESTATES SUBD'N."
L. 68, P. 45, W.C.R.
!! CAUTION !! CRITICAL UNDERGROUND UTILITY
!! CAUTION !! CRITICAL UNDERGROUND UTILITY
+53' 30" Companion Valve
+56' 30" Fire Hydrant
+61' 53" 9" PEAR
+74' 53" 8" PEAR
+91' 53" 10" PEAR
+08' 23" Sprinkler Head
+08' 53" 9" PEAR
+20' 53" 11" PEAR
+37' 52" 11" PEAR
+39' 23" Sprinkler Head
+51' 53" 10" PEAR
+65' 52" 11" PEAR
+82' 52" 10" PEAR
+89' 51" Sanitary Manhole
+97' 53" 9" PEAR
+06' 23" Sprinkler Head
+11' 53" 12" PEAR
+27' 52" 10" PEAR
+39' 30" Ground Monitoring Well
+39' 53" 9" PEAR
+42' 53" 8" PEAR
+58' 53" 9" PEAR
+72' 53" 11" PEAR
+89' 53" 11" PEAR
+04' 52" 11" PEAR
+19' 53" 11" PEAR
+34' 52" 11" PEAR
+47' 23" EVC Dist. Box
+50' 53" 10" PEAR
+64' 52" 9" PEAR
+75' 24" Sprinkler Head
+79' 52" 8" PEAR
+94' 54" 9" PEAR
+05' 37" Gate Valve & Well
+05' 30" 10" PEAR
+23' 52" 10" PEAR
+27' 39" SST MH
+33' 42" Gas Marker
+35' 25" Gas Test Station
+42' 19" SST CB
+42' 19" Gas Marker
+47' 28" SST CB
+52' 45" Gas Marker
+62' 45" Gas Valve
+68' 52" 10" PEAR
+81' 36" Sign
+85' 31" 12" PEAR
+31' 51" SST CB
+32' 28" SST MH
+42' 36" Gravel
+46' 51" Hedge Row, 6' Spread
+48' 51" Hedge Row, 8' Spread
+48' 51" Gas Marker
+50' 51" Gas Marker
+51' 38" Utility Pole w\ TeleRiser
+53' 38" Gas Marker
+53' 37" Gas Test Station
+53' 37" Gas Valve
+53' 37" Gas Marker
+53' 37" Gas Marker
+53' 37" Gas Marker

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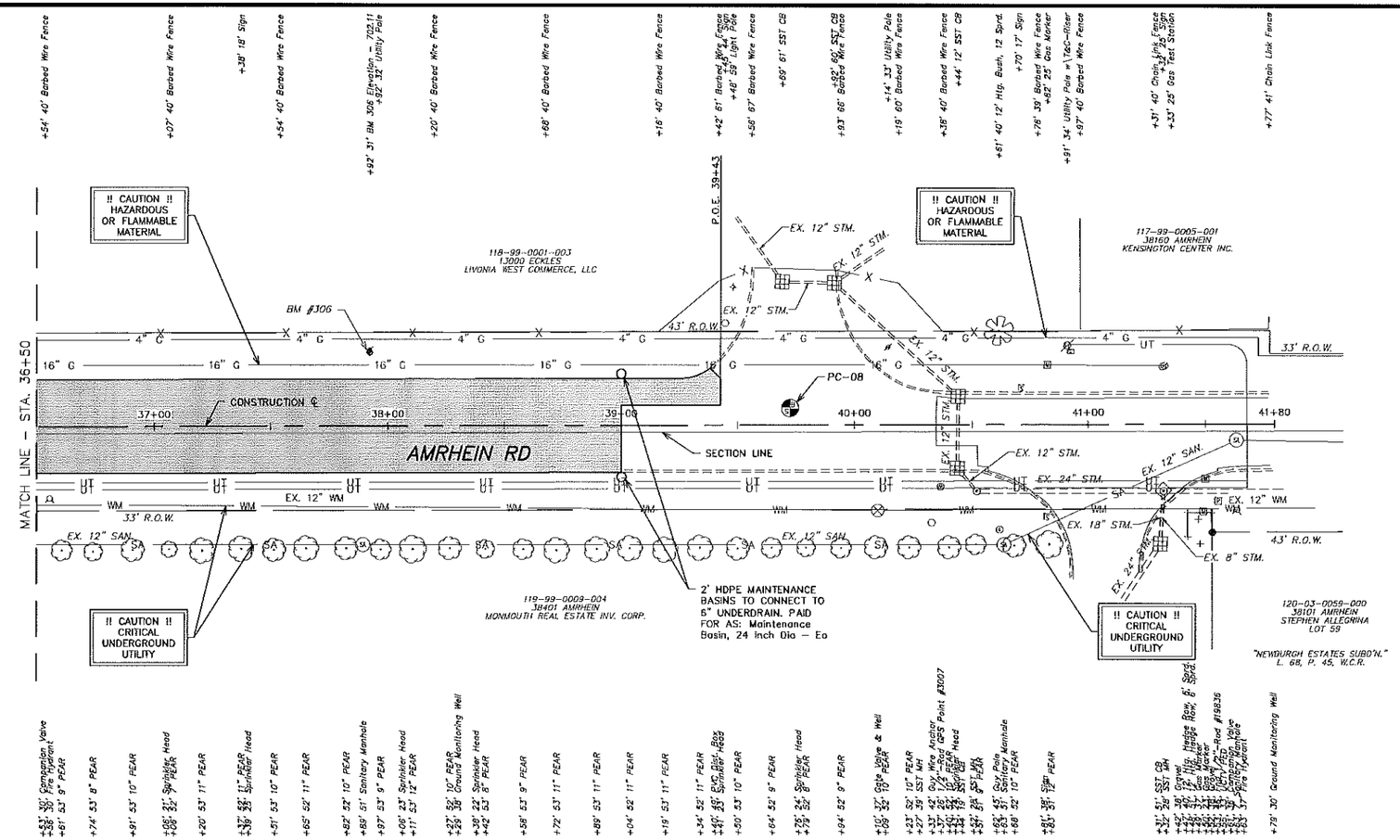


CONSTRUCTION QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Embankment, CIP	85	Cyd
Misc Agg Base, 8 inch	1290	Syd
Dr Structure, Cleaning	2	Ea
Maintenance Basin, 24 inch Dia	2	Ea
Underdrain, Subgrade, 6 inch, Modified	510	Ft
Conc Pavt with Integral Curb, Nonreinf, 9 inch	1170	Syd
Joint, Contraction, Cp	1015	Ft
Joint, Contraction, Crg	50	Ft
Lane Tie, Epoxy Anchored	44	Ea
Surface Restoration, Hydroseeding	680	Syd

BENCHMARK		
BM. #	DESCRIPTION	ELEV.
306	BENCH TIE SOUTH FACE UTILITY POLE, NORTH AMRHEIN RD 150± WEST OF EASTERLY DR TO BLDG #38401	702.11

NOTE:
EXCAVATION WITHIN 6 FEET OF THE EXISTING 16" HP GAS MAIN REQUIRES COORDINATION WITH CONSUMERS ENERGY AND INSPECTION FROM THEIR OFFICE. REFER TO UTILITY CONTACTS ON SHEET NO. 2 FOR CONTACT INFORMATION.

LEGEND

Conc Pavt with Integral Curb, Nonreinf, 9 inch

811

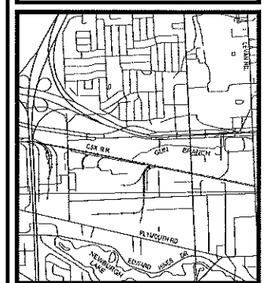
THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM AT 800-482-7171 OR 811.

NOTICE:
ALL EXISTING UTILITIES SHOWN ON THIS TOPOGRAPHIC SURVEY HAVE BEEN TAKEN FROM VISUAL OBSERVATION, AND RECORD MAPPING WHERE AVAILABLE. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO CONSTRUCTION ACTIVITIES.

CITY OF LIVONIA

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HULET DRIVE
BLOOMFIELD HILLS, MICH.
P.O. BOX 824
48303 - 0824
PHONE: (248) 454-6300
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 338-2592
WEB SITE: http:// www.hrc-engr.com

3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

CONSTRUCTION PLAN
36+50 TO P.O.E.

HRC JOB NO.	SCALE
20150103	1" = 30'
DATE	SHEET NO.
MARCH 2017	26

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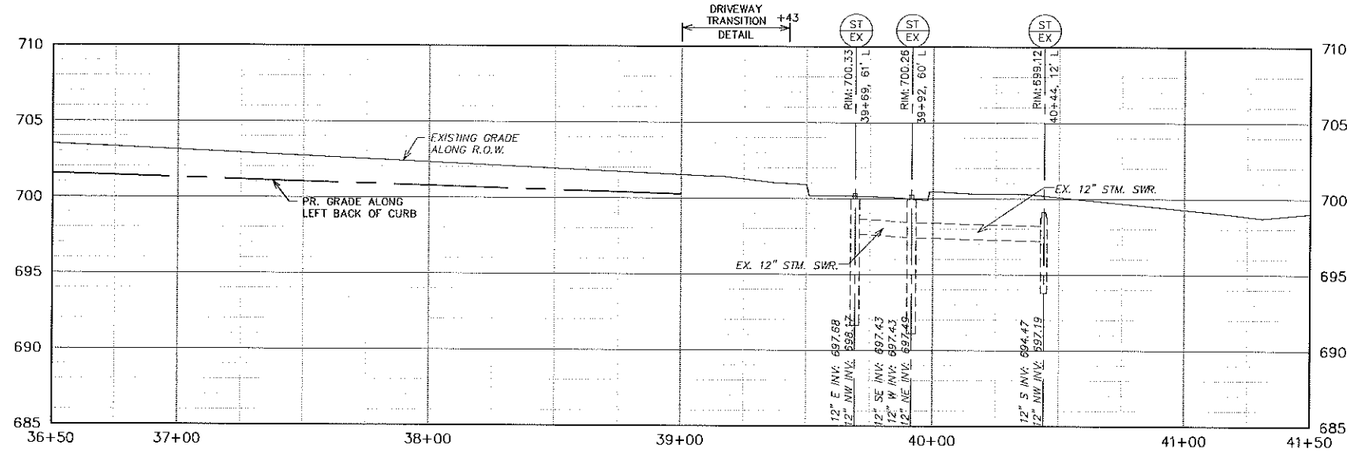

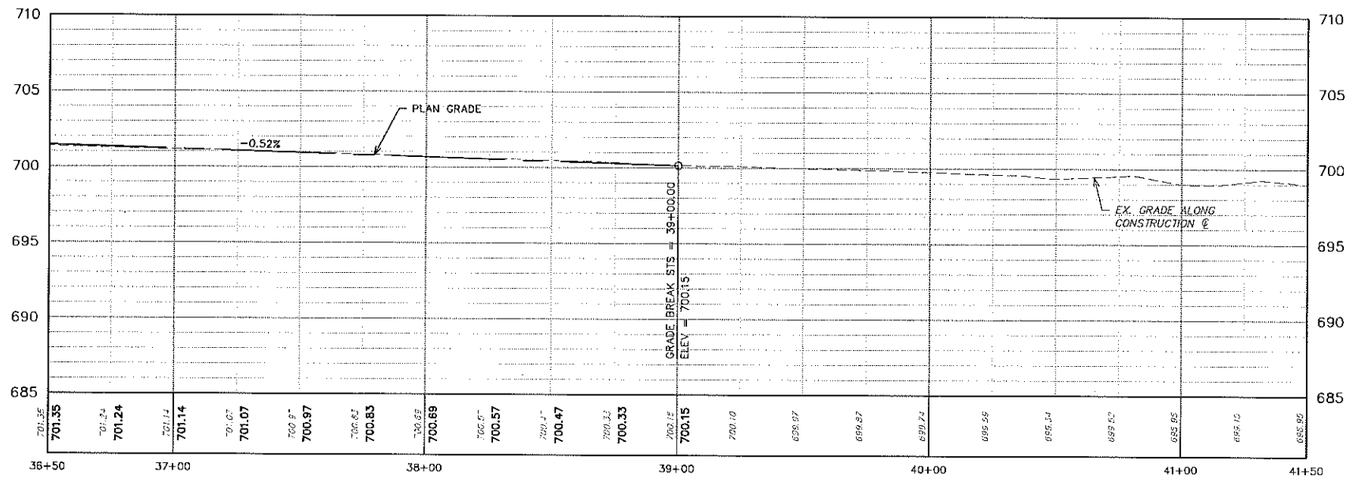

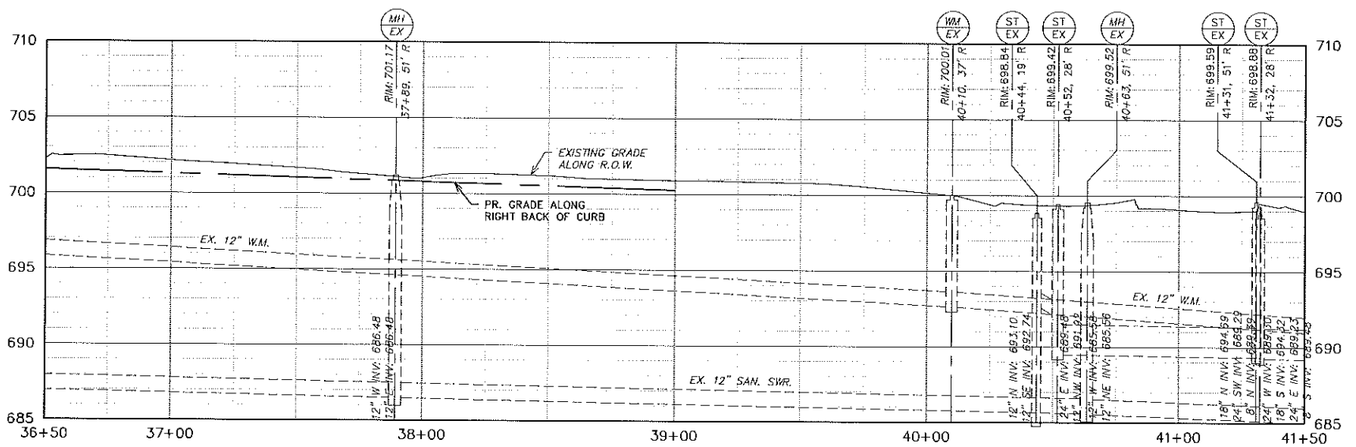

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FAX (2nd. Floor): (248) 338-2592
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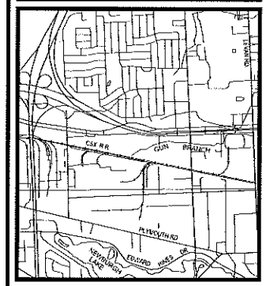
DATE	ADDITIONS AND/OR REVISIONS
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-28-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL

DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	SWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PROFILE
36+50 TO P.O.E.

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE: MARCH 2017	SHEET NO. 27

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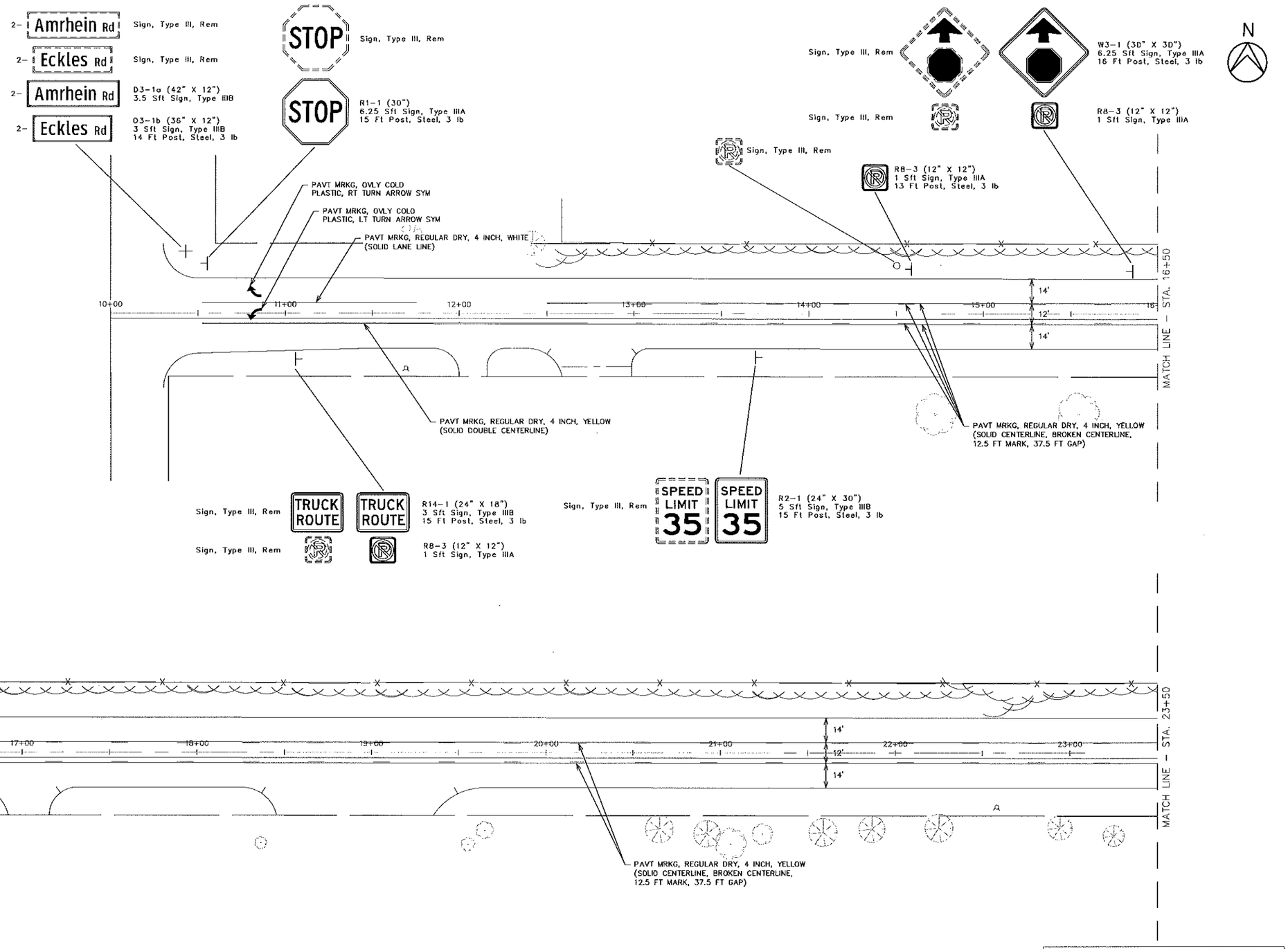

NOTES:

1. THE LOCATION OF THE PERMANENT SIGNS SHALL BE MARKED IN THE FIELD BY THE ENGINEER. THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF TWO WEEKS IN ADVANCE.
2. THE LOCATION OF THE PERMANENT PAVEMENT MARKINGS SHALL BE LAID OUT IN THE FIELD BY THE ENGINEER. THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF ONE WEEK IN ADVANCE. BEFORE DOING SO, THE CONTRACTOR SHALL BROOM AND CLEAN THE PAVEMENT TO BE STRIPED

CONSTRUCTION QUANTITIES - THIS SHEET

PAY ITEM	QTY	UNIT
Post, Steel, 3 lb	88	Ft
Sign, Type III, Rem	11	Ea
Sign, Type IIIA	16	Sft
Sign, Type IIIB	21	Sft
Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym	1	Ea
Pavt Mrkg, Ovly Cold Plastic, Rt Turn Arrow Sym	1	Ea
Pavt Mrkg, Regular Dry, 4 inch, White	125	Ft
Pavt Mrkg, Regular Dry, 4 inch, Yellow	3180	Ft
Rem Curing Compound, for Longit Mrkg, 4 inch	3305	Ft

CITY OF LIVONIA

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HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

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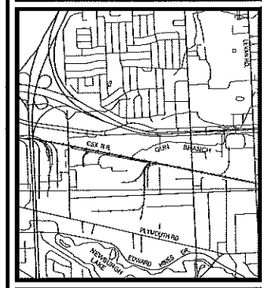
WEB SITE: http:// www.hrc-engr.com

DATE	ADDITIONS AND/OR REVISIONS
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL

DESIGNED	KMK
DRAWN	KMK
CHECKED	AEM/LFM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PERMANENT SIGNING PLAN
P.O.B. TO 23+50

HRC JOB NO.	SCALE
20160103	1" = 30'
DATE	SHEET NO.
MARCH 2017	28

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D'Agostini, Robert

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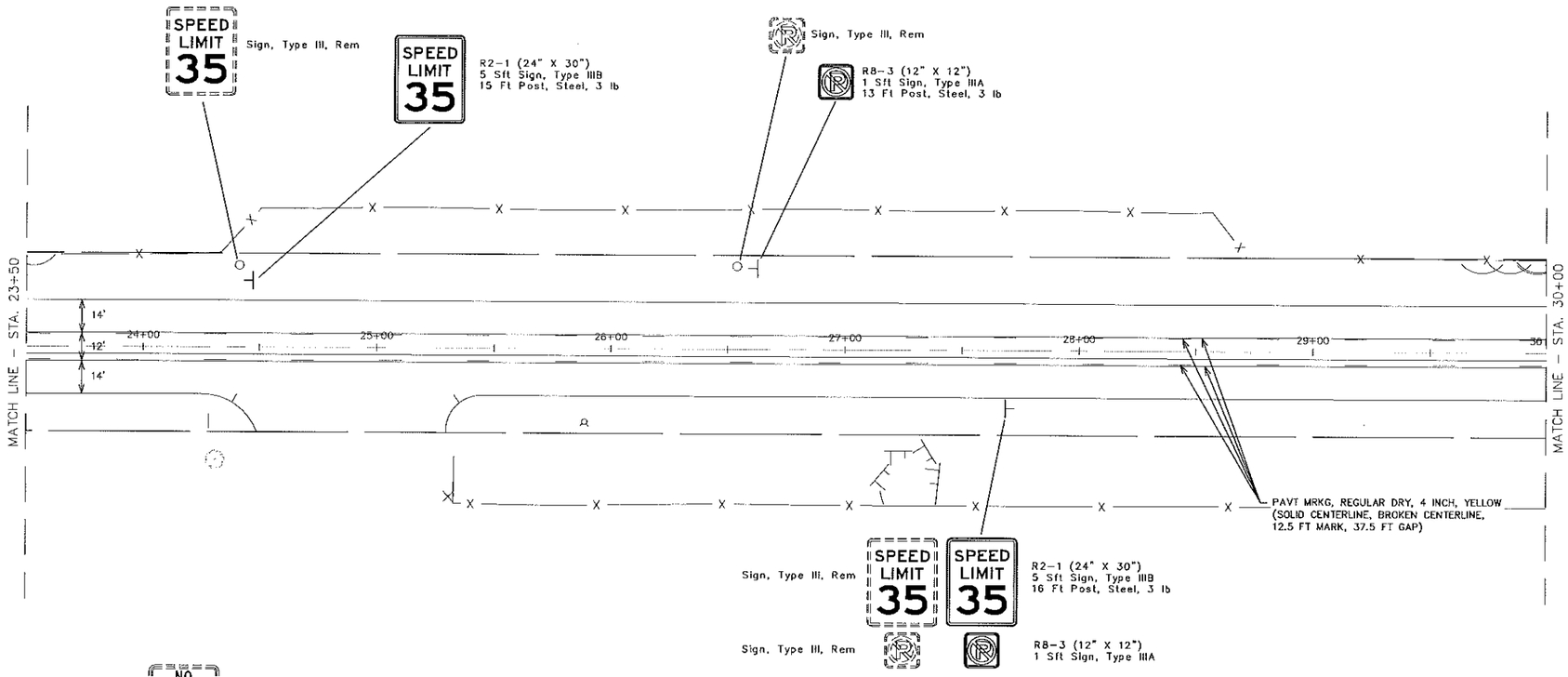

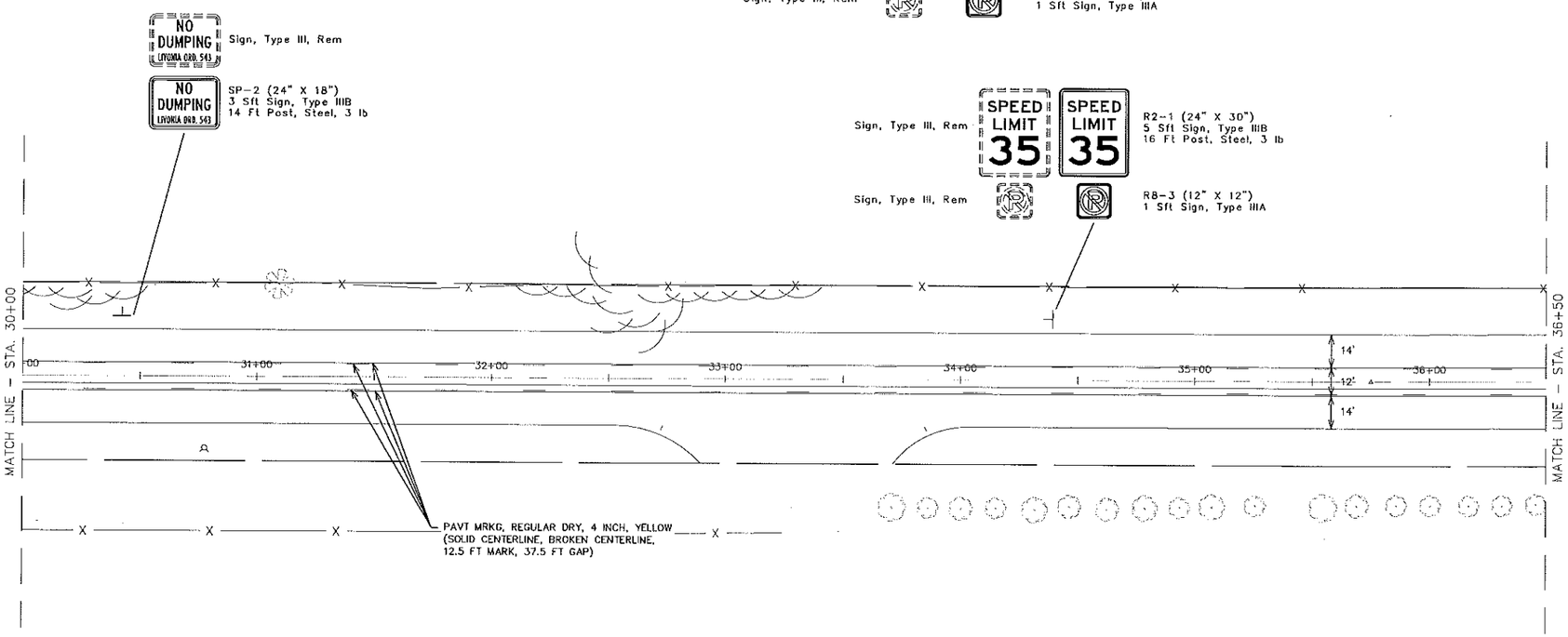

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CONSTRUCTION QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Post, Steel, 3 lb	74	Ft
Sign, Type III, Rem	7	Ea
Sign, Type IIIA	3	Sft
Sign, Type IIIB	18	Sft
Pavt Mrkg, Regular Dry, 4 Inch Yellow	3250	Ft
Rem Curing Compound, for Longit Mrkg, 4 Inch	3250	Ft

N

CITY OF LIVONIA

HRC
HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915
555 HOLET DRIVE, BLOOMFIELD HILLS, MICH. P.O. BOX 824, 48303 - 0824
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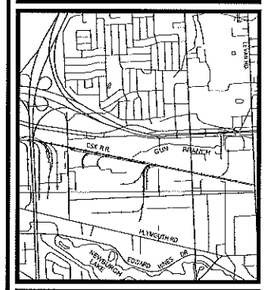
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 338-2592
WEB SITE: http:// www.hrc-engr.com

DATE	ADDITIONS AND/OR REVISIONS
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL

DESIGNED	KMK
DRAWN	KMK
CHECKED	AEM/LFM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PERMANENT SIGNING PLAN
23+50 TO 36+50

HRC JOB NO.	SCALE
20150103	1" = 30'
DATE: MARCH 2017	SHEET NO. 29

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D'Agostini, Robert

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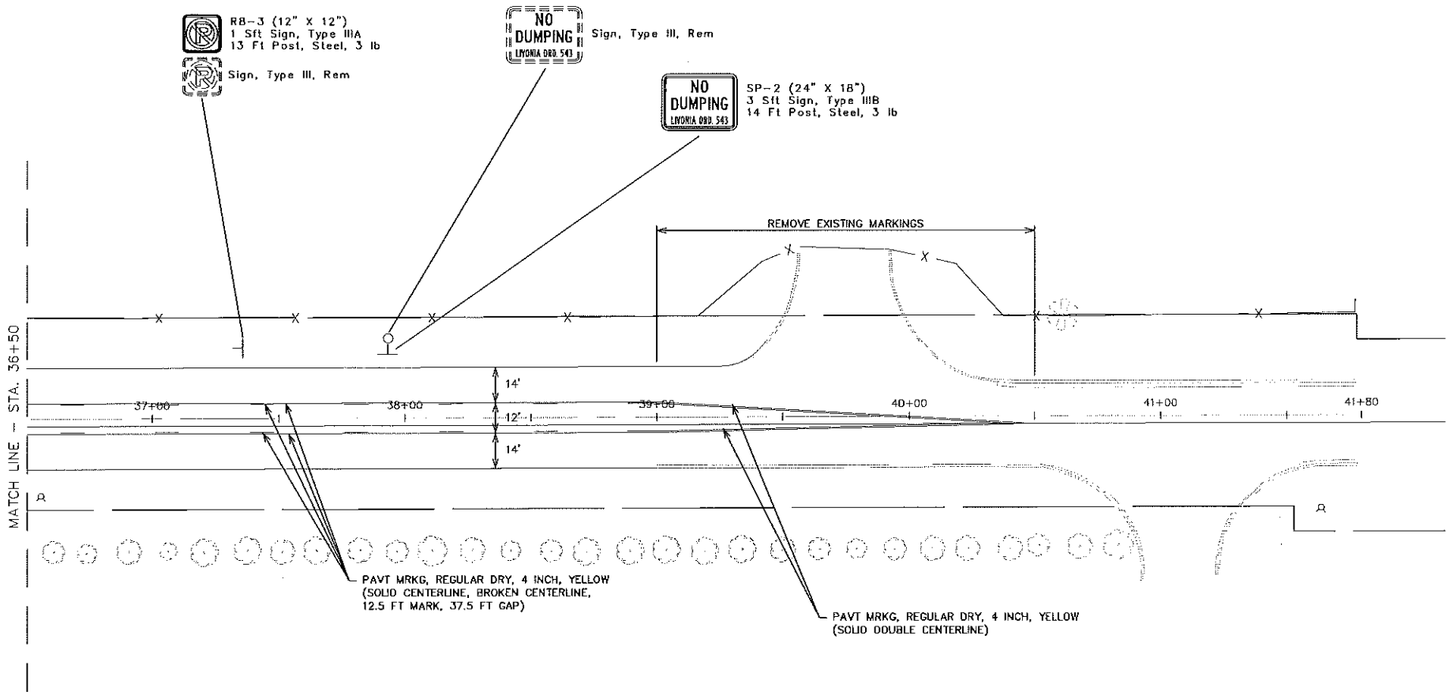

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CONSTRUCTION QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Post, Steel, 3 lb	27	Ft
Sign, Type III, Rem	2	Ea
Sign, Type IIIA	1	Sft
Sign, Type IIIB	3	Sft
Pavt Mrkg, Regular Dry, 4 inch Yellow	1230	Ft
Rem Curing Compound, for Longit Mrkg, 4 inch	1230	Ft
Pavt Mrkg, Longit, 6 inch or Less Width, Rem	360	Ft

CITY OF LIVONIA

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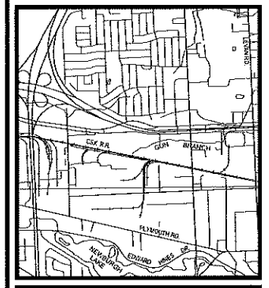
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	KMK
DRAWN	KMK
CHECKED	AEM/LFM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PERMANENT SIGNING PLAN
36+50 TO P.O.E.

HRC JOB NO. 20160103	SCALE 1" = 30'
DATE MARCH 2017	SHEET NO. 30

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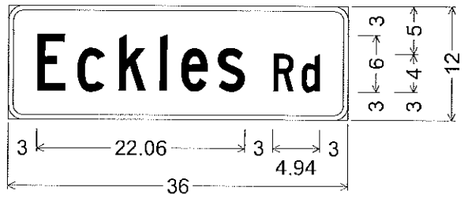
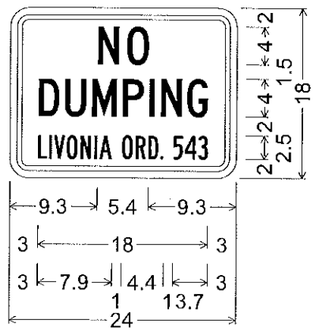
D'Agostini, Robert

D3-1a;
1.50" Radius, 0.50" Border, White on Green;
[Amrhein Rd] C 81% spacing;



D3-1b (12inch);
1.50" Radius, 0.50" Border, White on Green;
[Eckles Rd] C 93% spacing;



SP-2;
2.0" Radius, 0.5" Border, 0.8" Indent, Black on White;
[NO] C 2K;
[DUMPING] C 2K 70% spacing;
[LIVONIA ORD. 543] B 2K 65% spacing;

CITY OF LIVONIA

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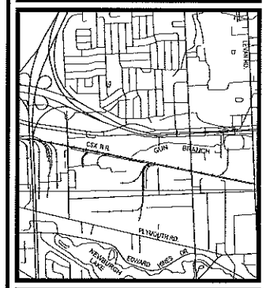
3-2-17	REISSUED FOR BIDS
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL

DESIGNED	KMK
DRAWN	KMK
CHECKED	AEM/LFM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PERMANENT SIGNING PLAN
SPECIAL DETAIL SIGNS

HRC JOB NO. 20160103	SCALE NTS
DATE MARCH 2017	SHEET NO. 31

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D'Agostini, Robert

Project Name: Amrhein Road Reconstruction

Project Location: Eckles Road to 3100 feet east of intersection
Livonia, Michigan

G2 Project No. 160639

Latitude: N/A Longitude: N/A

Soil Boring No. PC-01

G2 CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Portland Cement Concrete (8-1/4 inches)	0.7					
		Loose Brown Sand with trace silt and gravel		BS-1	8			
5			5.0	5	BS-2	9		
		End of Boring @ 5 ft						

Total Depth: 5 ft
Drilling Date: July 29, 2016
Inspector: J. Hayball, P.E.
Contractor: G2 Consulting Group, LLC
Driller: A. Denton

Water Level Observation:
Dry during and upon completion of drilling operations

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Figure No. 1

Project Name: Amrhein Road Reconstruction

Project Location: Eckles Road to 3100 feet east of intersection
Livonia, Michigan

G2 Project No. 160639

Latitude: N/A Longitude: N/A

Soil Boring No. PC-02

G2 CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Portland Cement Concrete (8-1/2 inches)	0.7					
		Loose Brown Sand with trace silt and gravel	2.5	BS-1	8			
		Medium Compact Brown Gravelly Sand with trace silt						
5			5.0	5	BS-2	16		
		End of Boring @ 5 ft						

Total Depth: 5 ft
Drilling Date: July 29, 2016
Inspector: J. Hayball, P.E.
Contractor: G2 Consulting Group, LLC
Driller: A. Denton

Water Level Observation:
Dry during and upon completion of drilling operations

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Figure No. 2

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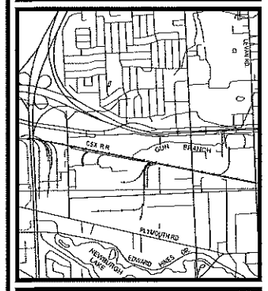
11-18-16	FINAL PLANS SUBMITTAL
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

SOIL BORINGS
PC-01 & PC-02

HRC JOB NO. 20160103	SCALE NO SCALE
DATE MARCH 2017	SHEET NO. 32

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D'Agostini, Robert
PAVEMENT CORE DCP 160639.GPJ 20140820 G2 CONSULTING DATA TEMPLATE.GDT 8/23/16

Project Name: Amrhein Road Reconstruction

Project Location: Eckles Road to 3100 feet east of intersection
Livonia, Michigan

G2 Project No. 160639

Latitude: N/A Longitude: N/A

Soil Boring No. PC-03

G2 CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Portland Cement Concrete (8-1/4 inches)	0.7					
		Loose Brown Sand with trace silt and gravel		BS-1	6			
5			5	BS-2	5			
		End of Boring @ 5 ft	5.0					

Total Depth: 5 ft
Drilling Date: July 29, 2016
Inspector: J. Hayball, P.E.
Contractor: G2 Consulting Group, LLC
Driller: A. Denton

Water Level Observation:
Dry during and upon completion of drilling operations

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Figure No. 3

Project Name: Amrhein Road Reconstruction

Project Location: Eckles Road to 3100 feet east of intersection
Livonia, Michigan

G2 Project No. 160639

Latitude: N/A Longitude: N/A

Soil Boring No. PC-04

G2 CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Portland Cement Concrete (9 inches)	0.8					
		Loose Brown Sand with trace silt and gravel		BS-1	10			
5			5	BS-2	8			
		End of Boring @ 5 ft	5.0					

Total Depth: 5 ft
Drilling Date: July 29, 2016
Inspector: J. Hayball, P.E.
Contractor: G2 Consulting Group, LLC
Driller: A. Denton

Water Level Observation:
Dry during and upon completion of drilling operations

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Figure No. 4

CITY OF LIVONIA

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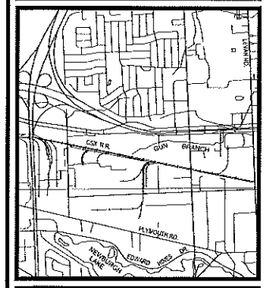
9-12-16	G.I. SUBMITTAL
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

SOIL BORINGS
PC-03 & PC-04

HRC JOB NO.	SCALE
20160103	NO SCALE
DATE	SHEET NO.
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D'Agostini, Robert

Project Name: Amrhein Road Reconstruction

Project Location: Eckles Road to 3100 feet east of intersection
Livonia, Michigan

G2 Project No. 160639

Latitude: N/A Longitude: N/A

Soil Boring No. PC-05

G2 CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Portland Cement Concrete (8-1/2 inches)	0.7					
		Loose Brown Sand with trace silt and gravel		BS-1	9			
5			5.0	5	BS-2	10		
		End of Boring @ 5 ft						

Total Depth: 5 ft
Drilling Date: July 29, 2016
Inspector: J. Hayball, P.E.
Contractor: G2 Consulting Group, LLC
Driller: A. Denton

Water Level Observation:
Dry during and upon completion of drilling operations

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Figure No. 5

Project Name: Amrhein Road Reconstruction

Project Location: Eckles Road to 3100 feet east of intersection
Livonia, Michigan

G2 Project No. 160639

Latitude: N/A Longitude: N/A

Soil Boring No. PC-06

G2 CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Portland Cement Concrete (9-1/4 inches)	0.8					
		Loose Brown Sand with trace silt and gravel		BS-1	7			
5			5.0	5	BS-2	8		
		End of Boring @ 5 ft						

Total Depth: 5 ft
Drilling Date: July 29, 2016
Inspector: J. Hayball, P.E.
Contractor: G2 Consulting Group, LLC
Driller: A. Denton

Water Level Observation:
Dry during and upon completion of drilling operations

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Figure No. 6

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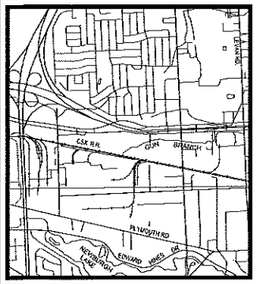
9-26-16	G.I. RESUBMISSION
9-12-16	G.I. SUBMITTAL
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

SOIL BORINGS
PC-05 & PC-06

HRC JOB NO.	SCALE
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DATE	SHEET NO.
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Project Name: Amrhein Road Reconstruction

Project Location: Eckles Road to 3100 feet east of intersection
Livonia, Michigan

G2 Project No. 160639

Latitude: N/A Longitude: N/A

Soil Boring No. PC-07

G2 CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Portland Cement Concrete (10 inches)	0.8					
		Medium Compact Brown Gravelly Sand with trace silt		BS-1	18			
5			5.0	5	BS-2	16		
		End of Boring @ 5 ft						

Total Depth: 5 ft
Drilling Date: July 29, 2016
Inspector: J. Hayball, P.E.
Contractor: G2 Consulting Group, LLC
Driller: A. Denton

Water Level Observation:
Dry during and upon completion of drilling operations

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Figure No. 7

Project Name: Amrhein Road Reconstruction

Project Location: Eckles Road to 3100 feet east of intersection
Livonia, Michigan

G2 Project No. 160639

Latitude: N/A Longitude: N/A

Soil Boring No. PC-08

G2 CONSULTING GROUP

SUBSURFACE PROFILE				SOIL SAMPLE DATA				
DEPTH (ft)	PRO-FILE	GROUND SURFACE ELEVATION: N/A	DEPTH (ft)	SAMPLE TYPE/NO.	DCP BLOWS/ 1.75-INCHES	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCOF. COMP. ST. (PSF)
		Portland Cement Concrete (9 inches)	0.8					
		Loose Brown Sand with trace silt and gravel		BS-1	8			
5			5.0	5	BS-2	9		
		End of Boring @ 5 ft						

Total Depth: 5 ft
Drilling Date: July 29, 2016
Inspector: J. Hayball, P.E.
Contractor: G2 Consulting Group, LLC
Driller: A. Denton

Water Level Observation:
Dry during and upon completion of drilling operations

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Drilling Method:
4-inch diameter diamond tipped core barrel; 3-inch diameter hand auger

Figure No. 8

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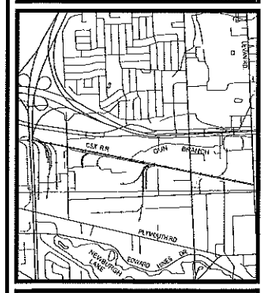
9-12-16	G.I. SUBMITTAL

DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

SOIL BORINGS
PC-07 & PC-08

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D'Agostini, Robert

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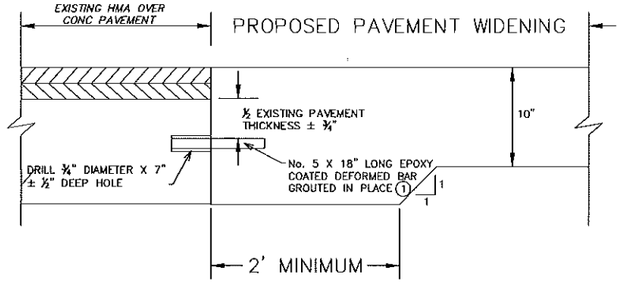
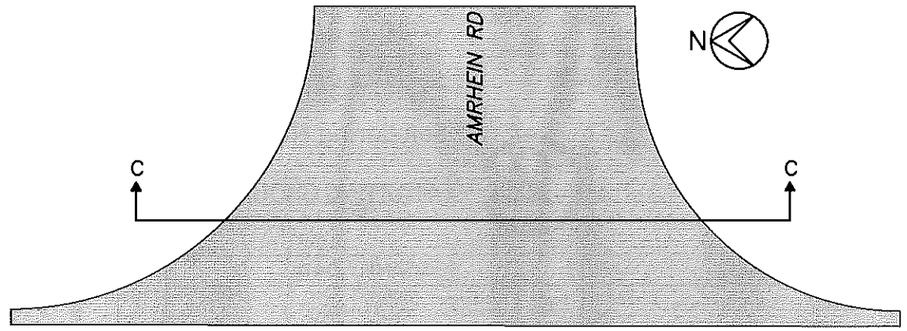


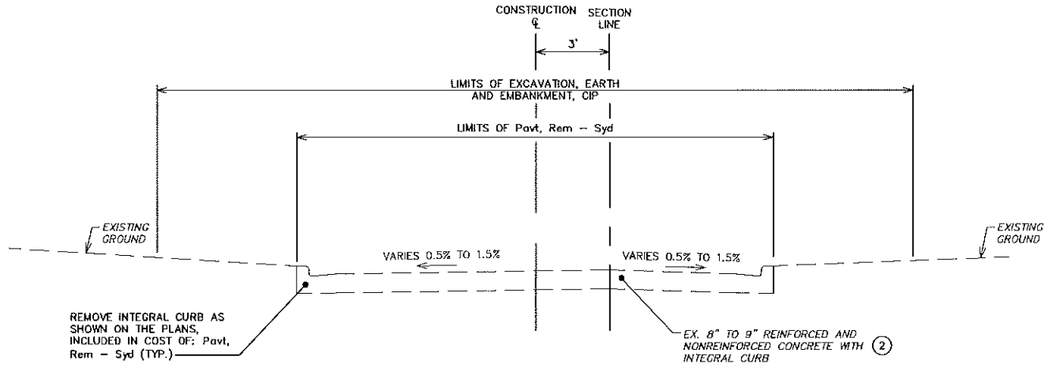
THICKENED EDGE PAVEMENT JOINTS

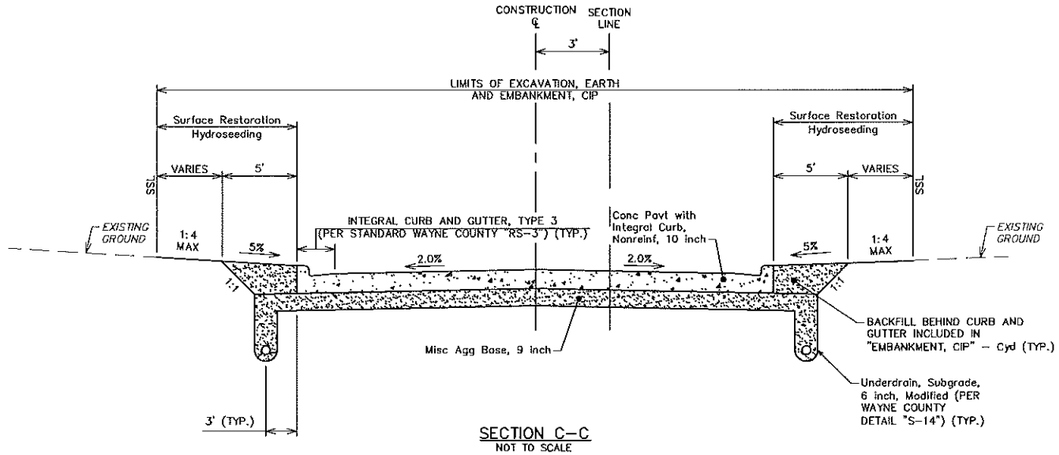
NOT TO SCALE

NOTES:

(1) TIE IN PROPOSED PAVEMENT WITH EPOXY COATED TIE BARS AS SHOWN @ 43" O.C. (MAX) LONGITUDINALLY (WITH ECKLES ROAD) AND 18" O.C. TRANSVERSELY AS PER WAYNE COUNTY STANDARD DETAIL "RS-2" OR AS DIRECTED BY THE COUNTY ENGINEER.







SECTION C–C
NOT TO SCALE

INTERSECTION DETAIL

NOTES:

(1) CURBS SHALL BE CONSTRUCTED WITH HEIGHT VARYING FROM 6" AT BACK OF CURB TO 0" HEIGHT WHEN TRANSITIONING TO INTERSECTION OF ECKLES RD.

(2) PORTIONS OF ROAD INCLUDE HMA OVERLAY.

GENERAL NOTE:
REFER TO SPECIAL PROVISION "PERMIT AND INSPECTION FEES" FOR WAYNE COUNTY PROJECT NOTES (STA. 10+22 TO 10+65).

CITY OF LIVONIA

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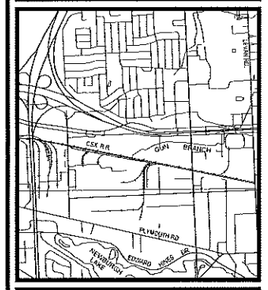

CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

PROJECT DETAILS
10+22 TO 10+65

HRC JOB NO.	SCALE
20160103	NO SCALE
DATE	SHEET NO.
MARCH 2017	36

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D'Agostini, Robert

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1. All materials and workmanship shall be in accordance with Wayne County Specifications which are defined as the current Michigan Department of Transportation (MDOT) Standard Specifications for Construction as modified by Wayne County Special Provisions.
2. Paving Standard Plan Details may be shown with wire fabric reinforcement. Use of reinforcement shall be required as called for on the plans.
3. A Transverse End of Pour Joint, Symbol (H), shall be constructed when there is an interruption in concrete paving for more than ½ hour. Transverse End of Pour Joint, Symbol (H), shall be constructed in accordance with current MDOT Standard Plan, R-39 series (Reinforced Concrete Pavement) and R-39P series (Plain Concrete Pavement). This note applies to both concrete base and finished concrete pavement.
4. When it is anticipated that construction traffic will be using the pavement, endings will be protected by means of a temporary concrete header as shown on RS-4.
5. The Expansion Joint Foam Rod shall be a solid round heat resistant Polyurethane foam capable of withstanding the temperature of the sealant. Density of the foam shall be 2-4 Lb/Cft.
6. Wire Fabric Reinforcement shall lay flat when delivered to the work area. The use of spreader bars will be required for lifting bundles of reinforcement.
7. Where the lane width of the pavement differs from wire fabric reinforcement standards, special sheets of the required width may be used or standard sheets may be cut to the required size or split sheets may be added to standard sheets to obtain the required size. Side laps shall not be less than the spacing of the longitudinal wires.
8. The ends of the Wire Fabric Reinforcement sheets shall be fastened in at least two places at each lap to prevent horizontal and vertical displacement.
9. When Concrete Pavement Repairs are longer than 20 feet, Transverse Plane of Weakness Joints (WT) shall be placed in-line with existing transverse joints, working cracks, or at 15 feet maximum and 6 feet minimum spacings.
10. Existing concrete pavements with HMA surface requiring saw-cutting for removal shall have the saw cuts extend completely thru the concrete pavement. Sawed over-cuts occurring in adjacent slab, gutter or shoulder, which will remain in place, shall be sealed.

REVISION DATE: 08/07/07 | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE | SCALE: NOT TO SCALE
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DESIGN PERMIT ENGINEER | GENERAL NOTES | SHEET 1 OF 7

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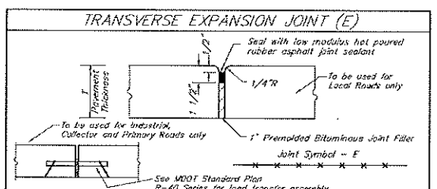
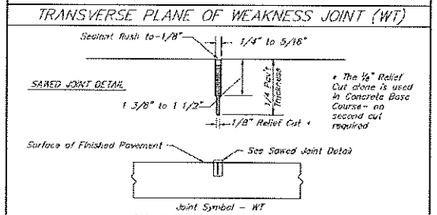
TRANSVERSE EXPANSION JOINT (E)



Expansion Joints shall be placed at the ends of radii at street intersections, at end connections with structures or existing pavements; and as shown on sheets RS-3 and RS-7 for Cul-de-sac and Eyebrow. Maximum spacing of 300 feet shall be maintained.

TRANSVERSE PLANE OF WEAKNESS JOINT (WT)



Transverse Plane of Weakness Joints shall be constructed immediately after the finishing operation has been completed. The Transverse Plane of Weakness Joints shall be placed at 12.5 foot intervals between transverse expansion joints.

Transverse Plane of Weakness Joints shall be sealed with low modulus hot-poured rubber-asphalt type joint sealing compound except for in Concrete Base Course.

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DIVISION OF ENGINEERING | PERMIT STANDARDS | RS-2
DESIGN PERMIT ENGINEER | PAVEMENT JOINTS | SHEET 1 OF 7

Work This Sheet with the General Notes on RS-1

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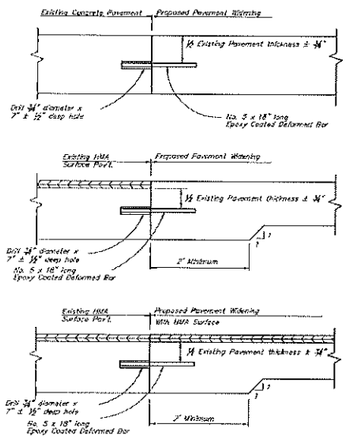
LONGITUDINAL EPOXY-ANCHORED LANE-TIES



Epoxy-Anchored Lane-Tie Spacing Shall be in Accordance with RS-2 Sheet 5 of 7.

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DESIGN PERMIT ENGINEER | PAVEMENT JOINTS | SHEET 2 OF 7

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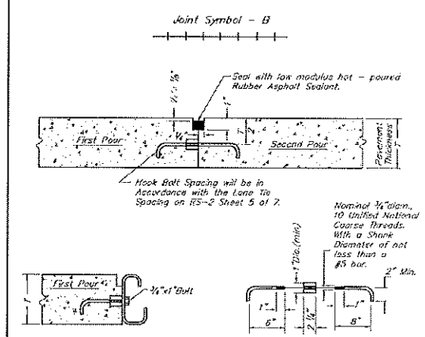
LONGITUDINAL FORMED BULKHEAD CONSTRUCTION JOINT WITH HOOK-BOLT ASSEMBLY (B)



In part width formed construction provide first-half of Hook Bolt Assembly. The threaded hole in the hook bolt coupling shall be filled with a rust preventive oil and plugged with a plastic or neoprene plug. The plug shall be of proper dimension to completely seal the hole and shall not project more than ⅛" after insertion.

On future widenings remove seal from first half of Hook Bolt and provide second-half Assembly.

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DESIGN PERMIT ENGINEER | PAVEMENT JOINTS | SHEET 3 OF 7

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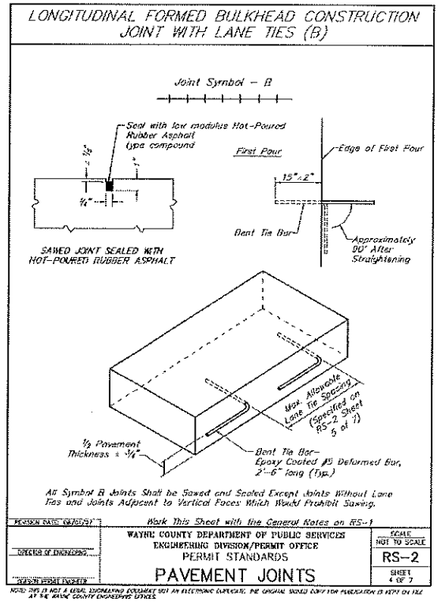
LONGITUDINAL FORMED BULKHEAD CONSTRUCTION JOINT WITH LANE TIES (B)



All Symbol B Joints Shall be Sawed and Sealed Except Joints Without Lane Ties and Joints Adjacent to Vertical Faces Which Would Prohibit Sawing.

REVISION DATE: 08/07/07 | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE | SCALE: NOT TO SCALE
DIRECTOR OF ENGINEERING | PERMIT STANDARDS | RS-2
DESIGN PERMIT ENGINEER | PAVEMENT JOINTS | SHEET 4 OF 7

Work This Sheet with the General Notes on RS-1

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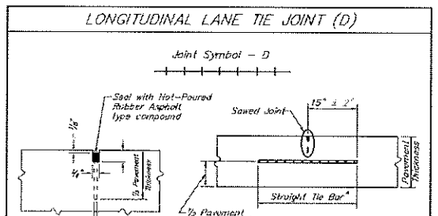
LONGITUDINAL LANE TIE JOINT (D)



* Epoxy Coated #5 Deformed Bar 30" Long (See below for Max. Allowable Lane Tie Spacing)

All Symbol D Tie Bars Shall be Placed at the Proper Spacing Longitudinally, and Transversely at 90° with the Joint.

MAXIMUM ALLOWABLE LANE TIE SPACING

MAX. ALLOWABLE LANE TIE SPACING SYMBOLS D AND D		TOTAL DISTANCE OF TIED JOINT FROM NEAREST FREE EDGE **
B Grade 40	D Grade 60	
2'-10"	3'-7"	12' or less
1'-11"	2'-5"	over 12' through 17'
1'-5"	1'-11"	over 17' through 24'
1'-2"	1'-9"	over 24' through 28'
1'-2"	1'-4"	over 28' through 36'
1'-1"	1'-1"	36' or greater ***

** Includes any Tied Combination of Lane Width, Valley Gutter, Curb & Gutter, or Shoulder.

*** For Widths Greater than 48' use #5 Deformed Bars at 1'-2" Spacing.

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DIVISION OF ENGINEERING | PERMIT STANDARDS | RS-2
DESIGN PERMIT ENGINEER | PAVEMENT JOINTS | SHEET 5 OF 7

Work This Sheet with the General Notes on RS-1

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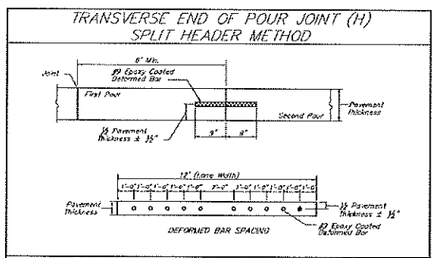
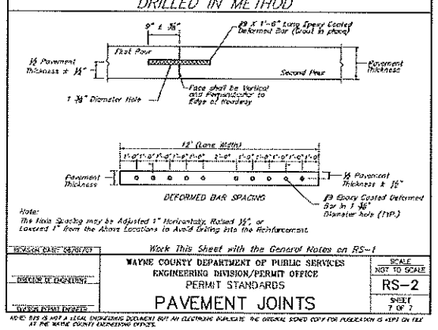
TRANSVERSE END OF POUR JOINT (H) SPLIT HEADER METHOD



TRANSVERSE END OF POUR JOINT (H) DRILLED IN METHOD



Note: The Hole Spacing may be Adjusted 1" Horizontally, Raised ½", or Lowered 1" from the Above Locations to Avoid Drilling into the Reinforcement.

REVISION DATE: 08/07/07 | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE | SCALE: NOT TO SCALE
DIVISION OF ENGINEERING | PERMIT STANDARDS | RS-2
DESIGN PERMIT ENGINEER | PAVEMENT JOINTS | SHEET 7 OF 7

Work This Sheet with the General Notes on RS-1

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CITY OF LIVONIA

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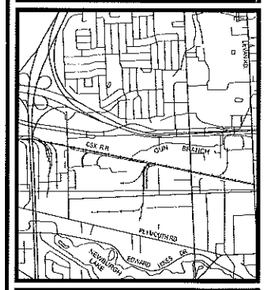
3-2-17	REISSUED FOR BIDS
DATE	ADDITIONS AND/OR REVISIONS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

WAYNE COUNTY
DETAILS
10+22 TO 10+65

HRC JOB NO. 20160103	SCALE: NO SCALE
DATE: MARCH 2017	SHEET NO. 37

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V:\20160\20160103\C\Sheets\intersection\cdt102_jnsc.dwg
D'Agostini, Robert

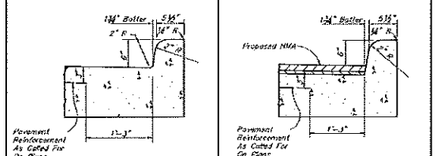
All transverse joints in the concrete pavement shall extend entirely through the integral curb and be of the same kind and thickness as provided for the pavement.

The joint material shall be pre-cut so as to conform to the geometric shape and cross sectional area of the curb, and shall be placed in contact with the filler material in the pavement.

Integral curbs, which are placed as part of a concrete base course pavement shall have transverse plane of weakness joints, formed by placing a pre-molded bituminous filler ½ inch thick, entirely through the curb, in exact alignment with all joints in the base course pavement. The joint material shall be pre-cut so as to conform to the geometric shape and cross sectional area of the curb.

The edges of all transverse joints in the integral curb shall be rounded with an approved finishing tool having a radius of ½ inch.

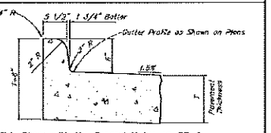
INTEGRAL STRAIGHT CURB



CONCRETE PAVEMENT	TYPE 3	CONCRETE BASE COURSE	TYPE 4

INTEGRAL STRAIGHT CURB W/REVERSE GUTTER PAN

Note: Reverse Gutter Pan to be used on Island within Cul-De-Sacs and Eyebrows as indicated on intersection details.



Work This Sheet with the General Notes on RS-1

REVISION DATE: 08/25/17	WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE	SCALE: NOT TO SCALE
DIRECTOR OF ENGINEERING	PERMIT STANDARDS	RS-3
DESIGN PROJECT ENGINEER	CURB AND CURB & GUTTER DETAILS	SHEET 1 OF 3

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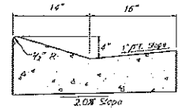
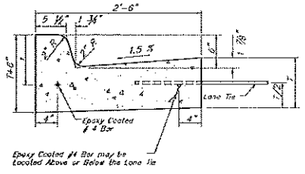
MOUNTABLE CURB AND GUTTER



STRAIGHT CURB AND GUTTER



NOTES:
PLACE 1/2" MEANESS JOINTS SHALL BE PLACED BETWEEN EXPANSION JOINTS AT APPROXIMATELY 10' INTERVALS.

EXPANSION JOINTS SHALL BE PLACED 10' EACH SIDE OF ALL CATCH BASINS AND AT THE ENDS OF RADII AT ALL STREET RETURNS AND SEALED WITH HOT-POURED RUBBER ASPHALT COMPOUND.

MATCH CONCRETE PAVEMENT JOINTS NOT TO EXCEED 25' SPACINGS.

"T" IS THE DEPTH OF PROPOSED CURB AND GUTTER SECTION THAT SHALL MATCH THE THICKNESS OF PROPOSED PAVEMENT, UNLESS OTHERWISE DIRECTED BY THE WAYNE COUNTY ENGINEER OR AS SHOWN ON APPROVED PLANS.

CENT LANE TIES WHEN PLACING CURB NEXT TO HMA PAVEMENT.

PLACE 1" FIBER JOINT FILLER AT 400' MAXIMUM INTERVALS.

WORK THIS SHEET WITH THE GENERAL NOTES ON RS-1

REVISION DATE: 08/25/17	WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE	SCALE: NO SCALE
DIRECTOR OF ENGINEERING	PERMIT STANDARDS	RS-3
DESIGN PROJECT ENGINEER	CURB AND CURB & GUTTER DETAILS	SHEET 2 OF 3

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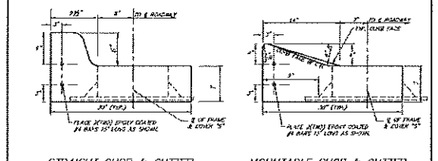
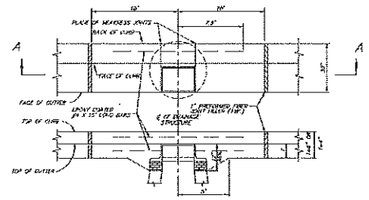


STRAIGHT CURB & GUTTER — MOUNTABLE CURB & GUTTER



SECTION A – A

WORK THIS SHEET WITH "S" SERIES STANDARDS.

REVISION DATE: 08/25/17	WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE	SCALE: NO SCALE
DIRECTOR OF ENGINEERING	PERMIT STANDARDS	RS-3
DESIGN PROJECT ENGINEER	CURB AND CURB & GUTTER DETAILS	SHEET 3 OF 3

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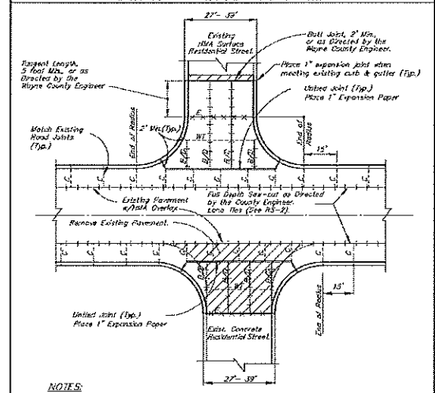
PRIMARY ROAD – NON-REINFORCED CONCRETE BASE COURSE WIDENING AT RESIDENTIAL STREET



NOTES:
1. Maximum Spacing of C Joints is 15'.
2. Longitudinal Joints shown on proposed residential street returns shall coincide with spacing and locations on existing residential streets.
3. Work this Sheet with RS-13 and RS-17 for Joint Spacing and Pavement Details.

Work this Sheet with the General Notes on RS-1

REVISION DATE: 08/25/17	WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE	SCALE: NOT TO SCALE
DIRECTOR OF ENGINEERING	PERMIT STANDARDS	P-5
DESIGN PROJECT ENGINEER	JOINT LAYOUT	SHEET 1 OF 6

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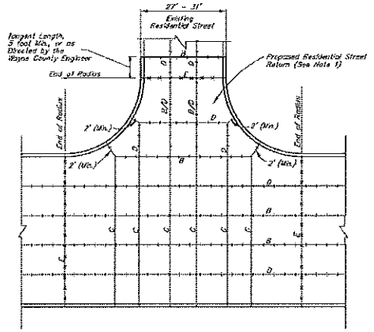
PRIMARY ROAD – NON-REINFORCED CONCRETE PAVEMENT AT RESIDENTIAL STREET (27' – 31')



NOTES:
1. Residential Street returns shall be constructed with non-reinforced concrete pavement.
2. Longitudinal Joints shown on proposed residential street returns shall coincide with spacing and locations on existing residential streets.
3. Work This Sheet with RS-13 for Joint Spacing and Pavement Details.

Work this Sheet with the General Notes on RS-1

REVISION DATE: 08/25/17	WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE	SCALE: NOT TO SCALE
DIRECTOR OF ENGINEERING	PERMIT STANDARDS	P-5
DESIGN PROJECT ENGINEER	JOINT LAYOUT	SHEET 2 OF 6

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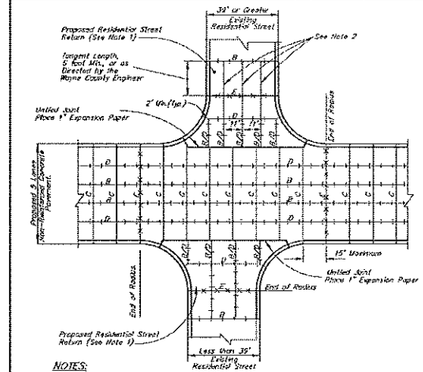
PRIMARY ROAD – NON-REINFORCED CONCRETE PAVEMENT AT RESIDENTIAL STREET (31' & OVER)



NOTES:
1. Residential Street return shall be constructed with non-reinforced concrete pavement.
2. Longitudinal Joints shown on proposed residential street returns shall coincide with spacing and locations on Existing Residential Streets.
3. C Joints between E Joints shall be equally spaced and shall not have a spacing greater than 15'.
4. Work This Sheet with RS-13 and RS-17 for Joint Spacing and Pavement Details.

Work this Sheet with the General Notes on RS-1

REVISION DATE: 08/25/17	WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE	SCALE: NOT TO SCALE
DIRECTOR OF ENGINEERING	PERMIT STANDARDS	P-5
DESIGN PROJECT ENGINEER	JOINT LAYOUT	SHEET 3 OF 6

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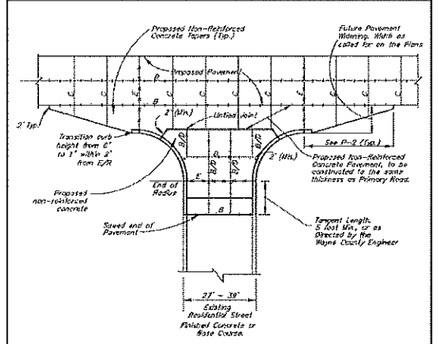
PRIMARY ROAD -- NON-REINFORCED CONCRETE PAVEMENT WITH FUTURE PAVEMENT WIDENING AT RESIDENTIAL STREET



NOTES:
1. Residential Street returns shall be constructed with non-reinforced concrete pavement.
2. Longitudinal Joints shown on Proposed Residential Street Returns shall coincide with spacing and locations on Existing Residential Streets.
3. C Joints between E Joints shall be equally spaced and shall not have a spacing greater than 15'.
4. Work This Sheet with RS-13 and RS-17 for Joint Spacing and Pavement Details.

Work this Sheet with the General Notes on RS-1

REVISION DATE: 08/25/17	WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE	SCALE: NOT TO SCALE
DIRECTOR OF ENGINEERING	PERMIT STANDARDS	P-5
DESIGN PROJECT ENGINEER	JOINT LAYOUT	SHEET 4 OF 6

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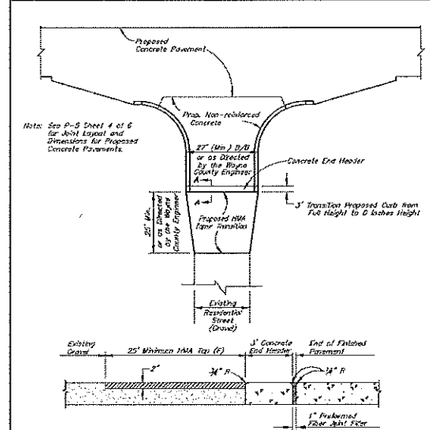
PRIMARY ROAD WITH FUTURE WIDENING AT RESIDENTIAL STREET (GRAVEL)



SECTION A–A

Concrete End Headers Shall be Placed at the Ends of all Pavements Abutting Gravel Roads

Work this Sheet with the General Notes on RS-1

REVISION DATE: 08/25/17	WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES ENGINEERING DIVISION/PERMIT OFFICE	SCALE: NOT TO SCALE
DIRECTOR OF ENGINEERING	PERMIT STANDARDS	P-5
DESIGN PROJECT ENGINEER	JOINT LAYOUT	SHEET 5 OF 6

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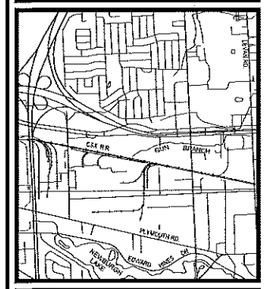
DATE	ADDITIONS AND/OR REVISIONS
3-2-17	REISSUED FOR BIDS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

WAYNE COUNTY
DETAILS
10+22 TO 10+65

HRC JOB NO. 20160103	SCALE: NO SCALE
DATE: MARCH 2017	SHEET NO. 38

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D'Agostini, Robert

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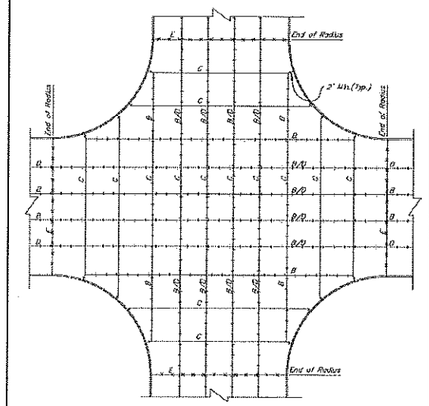
D'Agostini, Robert

PRIMARY/PRIMARY INTERSECTION NON-REINFORCED CONCRETE



① Doweled Joints shall be placed in the direction of the predominant truck movements and as shown on the Plans.

Work this Sheet with the General Notes on RS-1

MUNICIPAL BOARD APPROVED | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION/PERMIT OFFICE
PERMIT STANDARDS
JOINT LAYOUT
DIRECTOR OF ENGINEERING | SCALE: NOT TO SCALE | P-5
DESIGN POINT ENGINEER | SHEET: 6 OF 6

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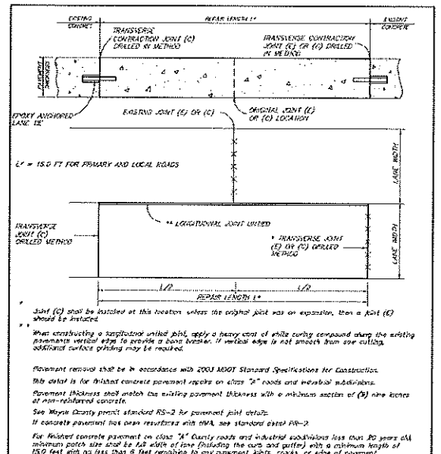

* Joint (C) shall be installed at this location unless the original joint was an expansion, then a joint (E) should be installed.

** When constructing a longitudinal untied joint, apply a heavy coat of white curing compound along the existing pavement vertical edge to provide a bond breaker. If vertical edge is not smooth from saw cutting, additional surface grinding may be required.

Pavement removal shall be in accordance with 2003 MDOT Standard Specifications for Construction.

This detail is for finished concrete pavement repairs on class "A" roads and residential subdivisions.

Pavement thickness shall match the existing pavement thickness with a minimum section of (9) nine inches of non-reinforced concrete.

See Wayne County permit standard RS-2 for pavement joint details.

If concrete pavement has been resurfaced with HMA, see standard detail RR-2.

For finished concrete pavement on class "A" County roads and industrial subdivisions less than 20 years old, minimum patch size shall be full width of lane (including the curb and gutter) with a minimum length of 15.0 feet with no less than 6 feet remaining to any pavement joints, cracks, or edge of pavement.

Saw cut must extend completely through the pavement section. Any over-cuts except at the outside corners of the pavement patch area will be required to be removed (this will increase the size of the patch).

All sawed over-cuts located at the outside corners of the patch location shall be cleaned and sealed with hot poured rubber asphalt.

CLASS "A" ROAD UNDER 20 YEARS OLD.

DIVISION DATE: | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION/PERMIT OFFICE
PERMIT STANDARDS
PAVEMENT REMOVAL AND REPAIR (PATCHING)
CLASS "A" ROAD UNDER 20 YEARS OLD
DIRECTOR OF ENGINEERING | SCALE: NOT TO SCALE | PR-1
DESIGN POINT ENGINEER | SHEET: 1 OF 2

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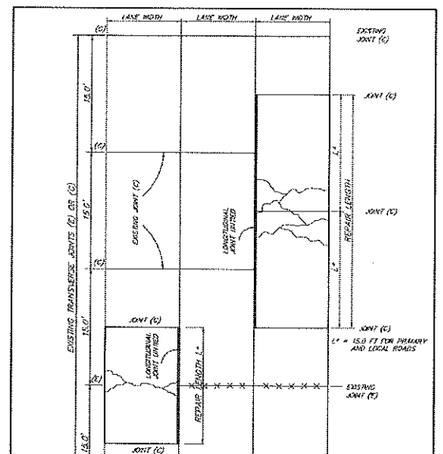

CLASS "A" ROAD UNDER 20 YEARS OLD.

DIVISION DATE: | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION/PERMIT OFFICE
PERMIT STANDARDS
PAVEMENT REMOVAL AND REPAIR (PATCHING)
DIRECTOR OF ENGINEERING | SCALE: NOT TO SCALE | PR-1
DESIGN POINT ENGINEER | SHEET: 2 OF 2

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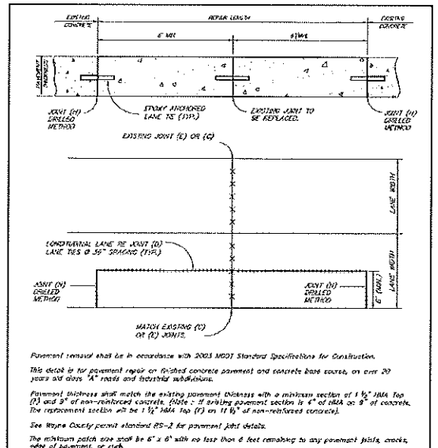

Pavement removal shall be in accordance with 2003 MDOT Standard Specifications for Construction.

This detail is for pavement repair on finished concrete pavement and concrete base courses, on over 20 years old class "A" roads and industrial subdivisions.

Pavement thickness shall match the existing pavement thickness with a minimum section of 1 ½" HMA Top (T) and 9" of non-reinforced concrete. (Note :- If existing pavement section is 6" of HMA on 9" of concrete, the replacement section will be 1 ½" HMA Top (T) on 11 ½" of non-reinforced concrete).

See Wayne County permit standard RS-2 for pavement joint details.

The minimum patch size shall be 6' x 6' with no less than 6 feet remaining to any pavement joints, cracks, edge of pavements, or curb.
(Note: If the distance between the face of curb and the pavement joint is less than 6 feet, the curb shall be removed and replaced).

Saw cut must extend completely through the pavement section. Any over-cuts except at the outside corners of the pavement patch area will be required to be removed (this will increase the size of the patch).

All sawed over-cuts located at the outside corners of the patch location shall be cleaned and sealed with hot poured rubber asphalt.

CLASS "A" ROAD OVER 20 YEARS OLD.

REVISION DATE: | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION/PERMIT OFFICE
PERMIT STANDARDS
PAVEMENT REMOVAL AND REPAIR (PATCHING)
DIRECTOR OF ENGINEERING | SCALE: NOT TO SCALE | PR-2
DESIGN PERMIT ENGINEER | SHEET: 1 OF 2

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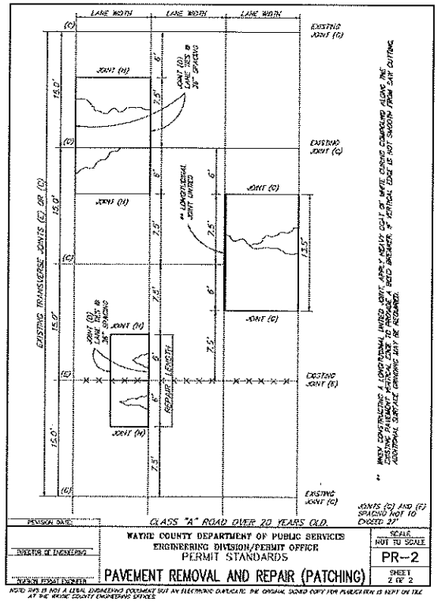

CLASS "A" ROAD OVER 20 YEARS OLD.

DIVISION DATE: | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION/PERMIT OFFICE
PERMIT STANDARDS
PAVEMENT REMOVAL AND REPAIR (PATCHING)
DIRECTOR OF ENGINEERING | SCALE: NOT TO SCALE | PR--2
DESIGN POINT ENGINEER | SHEET: 2 OF 2

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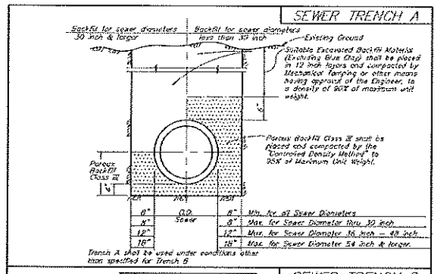
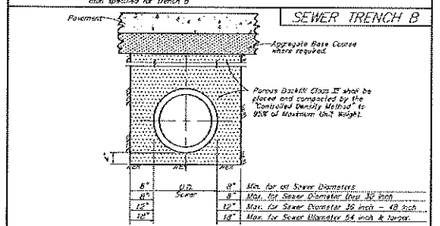
SEWER TRENCH A



Trench A shall be used under conditions other than specified for Trench B

SEWER TRENCH B



Trench B shall be used under Road Surfaces, Pavement, Sidewalk, Curb, Aggregate and Paved Drives and where the edge of trench is within 3 feet of the Pavement.

Work this Sheet with the General Notes on Standard Plan S-1

DIVISION DATE: 03/01/07 | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION/PERMIT OFFICE
PERMIT STANDARDS
SEWER TRENCH A, B
DIRECTOR OF ENGINEERING | SCALE: NOT TO SCALE | S-12
DESIGN POINT ENGINEER | SHEET: 1 OF 1

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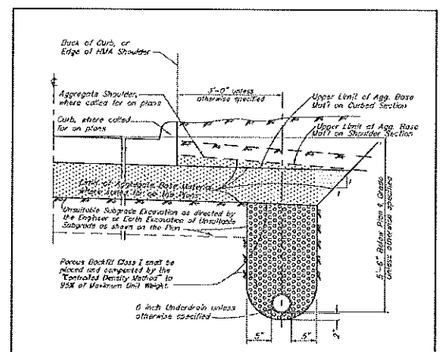

Subgrade Undercutting will not include the area of the Subgrade Underdrain Trench

Replacement of Underdrain backfill in areas of Subgrade Undercutting is included in the undercut backfill. When Porous Material for backfill of Subgrade Undercutting is used, it will be allowed over the Underdrain Trench.

Work this Sheet with the General Notes on Standard Plan S-1

DIVISION DATE: 03/01/07 | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION/PERMIT OFFICE
PERMIT STANDARDS
UNDERDRAIN
DIRECTOR OF ENGINEERING | SCALE: NOT TO SCALE | S-14
DESIGN POINT ENGINEER | SHEET: 1 OF 2

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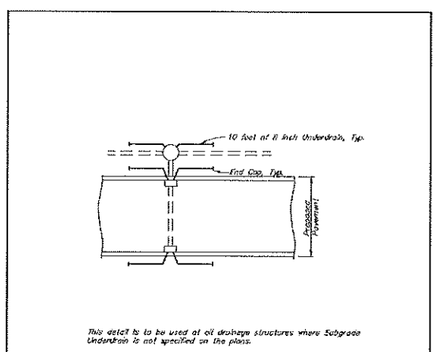

This detail is to be used at all drainage structures where Subgrade Undercut is not specified on the plans.

Provide 10 feet of 6 inch Underdrain parallel to the edge of the pavement in each direction at each drainage structure. The invert of the underdrain is to be at the mid-point of the outlet sewer (minimum) or 3.5 feet below the top of pavement centerline elevation, min.

Work this Sheet with the General Notes on Standard Plan S-1

DIVISION DATE: 03/01/07 | WAYNE COUNTY DEPARTMENT OF PUBLIC SERVICES
ENGINEERING DIVISION/PERMIT OFFICE
PERMIT STANDARDS
UNDERDRAIN
DIRECTOR OF ENGINEERING | SCALE: NOT TO SCALE | S-14
DESIGN PERMIT ENGINEER | SHEET: 2 OF 2

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CITY OF LIVONIA

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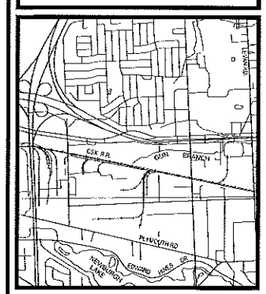
FAX (1st. Floor): (248) 454-6312
FAX (2nd. Floor): (248) 338-2592
WEB SITE: http:// www.hrc-engr.com

DATE	ADDITIONS AND/OR REVISIONS
3-2-17	REISSUED FOR BIDS
DESIGNED	RAD
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

WAYNE COUNTY
DETAILS
10+22 TO 10+65

HRC JOB NO.	SCALE
20160103	NO SCALE
DATE: MARCH 2017	SHEET NO. 39

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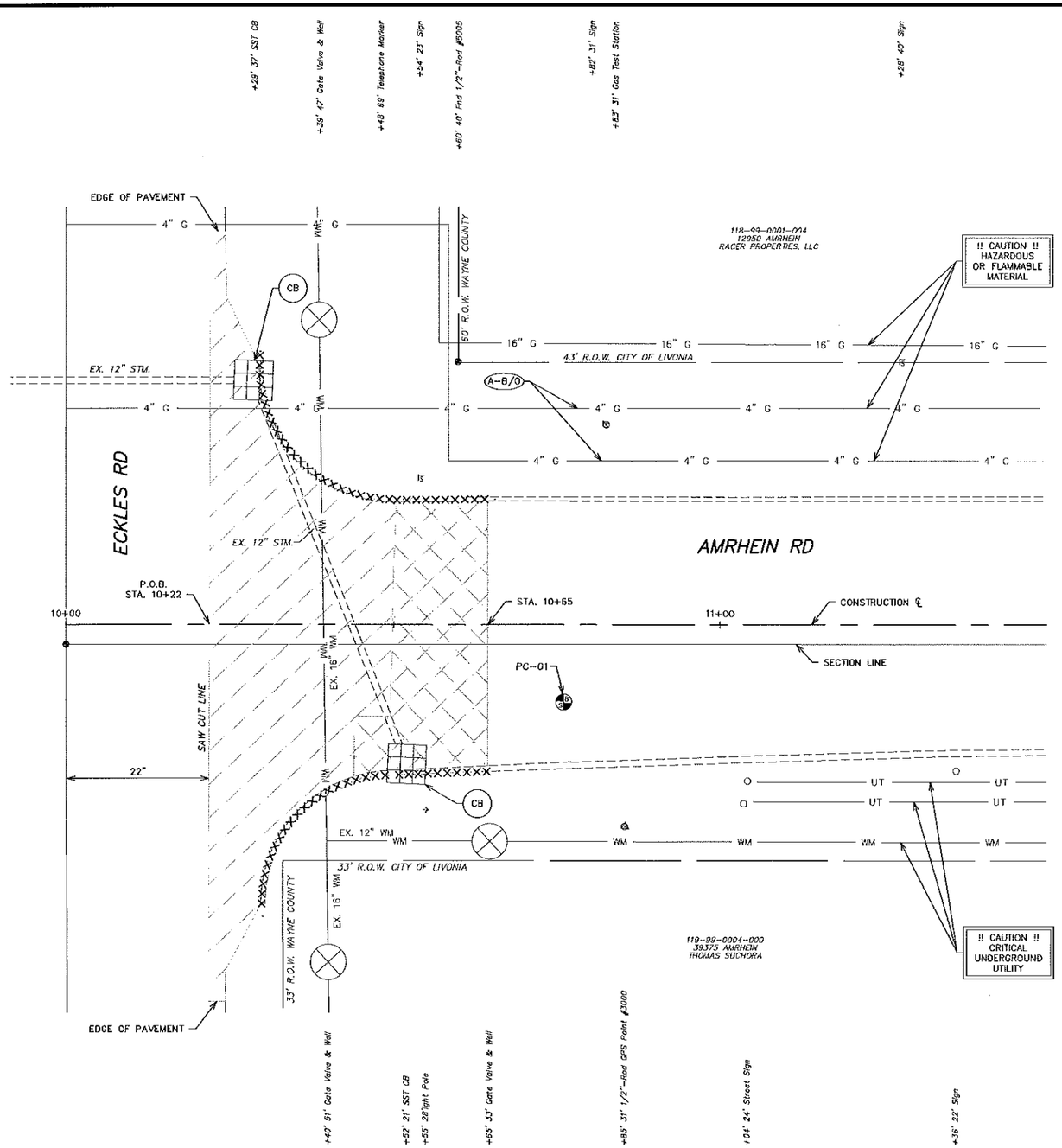

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REMOVAL QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Pavt, Rem	272	Syd
Erosion Control, Inlet Protection, Fabric Drop	2	Ea
HMA Surface, Rem	198	Syd

NOTES:

(1) HMA AREA IS AN OVERLAY OVER CONCRETE. AREA PAID FOR AS BOTH: HMA Surface, Rem – Syd and Pavt, Rem – Syd

(2) CONCRETE CURB ABUTTING HMA SURFACE TO BE INCLUDED IN THE COST OF "Pavt, Rem – Syd" UNDER THE HMA OVERLAY

(3) SAW CUT THE EXISTING PAVEMENT FULL DEPTH AT 22' FROM ECKLES RD CENTERLINE AND REMOVE EXISTING PAVEMENT, CURB AND PAVEMENT SHOULDER AND/OR AS DIRECTED BY THE COUNTY ENGINEER.

LEGEND

- HMA Surface, Rem
- Pavt, Rem
- A-B/O — ABANDON BY OTHERS
- CURB REMV.

811

THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM AT 800-482-7171 OR 811.

NOTICE:
ALL EXISTING UTILITIES SHOWN ON THIS TOPOGRAPHIC SURVEY HAVE BEEN TAKEN FROM VISUAL OBSERVATION, AND RECORD MAPPING WHERE AVAILABLE. NO GUARANTEE IS MADE, OR SHOULD BE ASSUMED, AS TO THE COMPLETENESS OR ACCURACY OF THE UTILITIES SHOWN ON THIS DRAWING. PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS PRIOR TO CONSTRUCTION ACTIVITIES.

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3-2-17	REISSUED FOR BIDS

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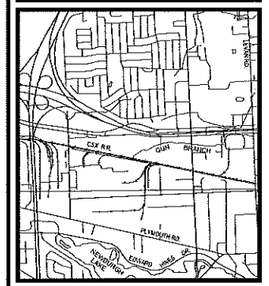
DRAWN	RAD
CHECKED	AEM
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

REMOVAL PLAN
10+22 TO 10+65

HRC JOB NO.	SCALE
20160103	1" = 10'
DATE	SHEET NO.
MARCH 2017	40

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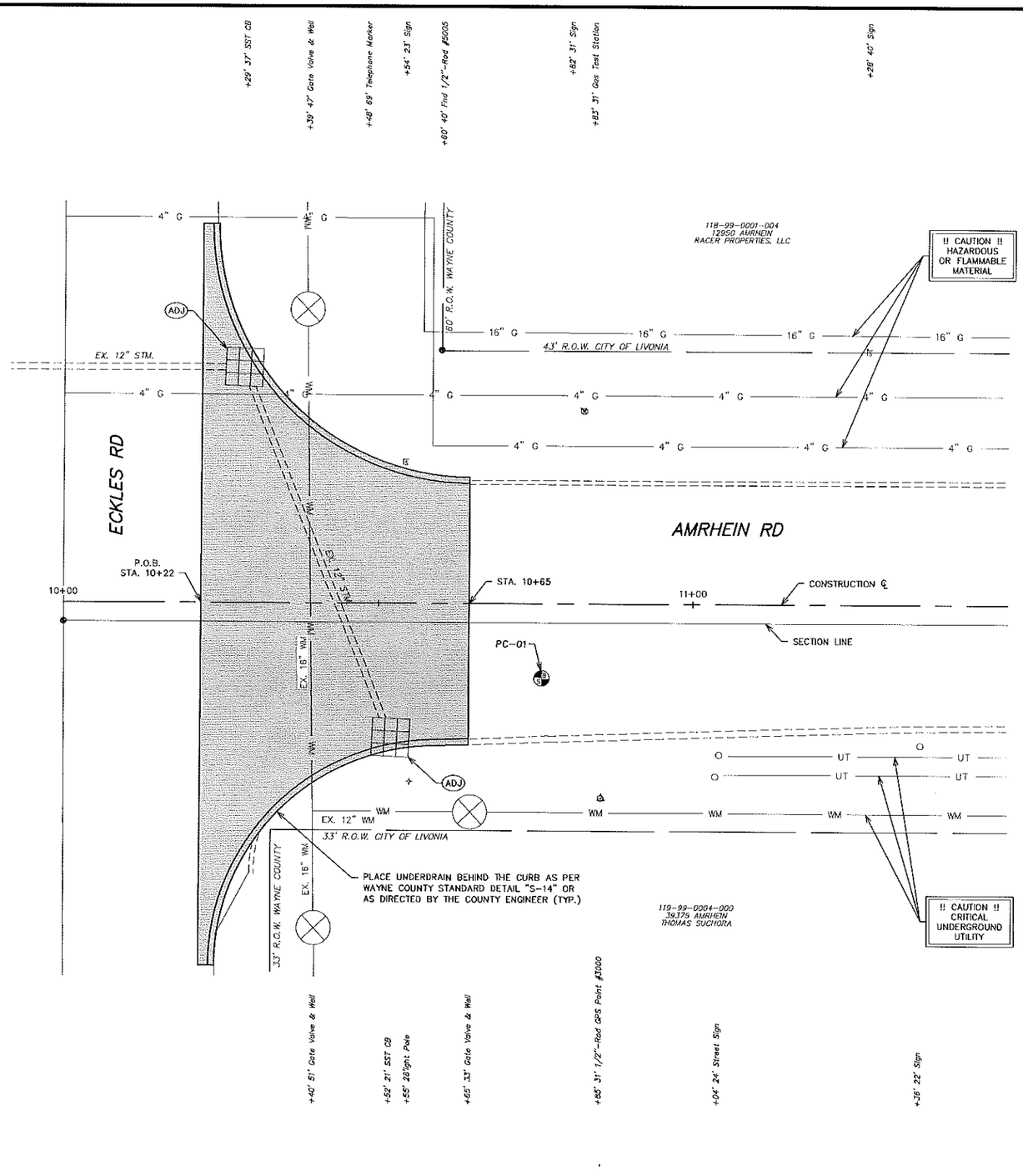

CONSTRUCTION QUANTITIES - THIS SHEET		
PAY ITEM	QTY	UNIT
Embankment, CIP	20	Cyd
Excavation, Earth	85	Cyd
Misc Agg Base, 9 inch	315	Syd
Dr Structure Cover, Adj, Case 1	2	Ea
Dr Structure, Tap, 6 inch	2	Ea
Dr Structure, Cleaning	2	Ea
Underdrain, Subgrade, 6 inch, Modified	125	Ft
Conc Pavt with Integral Curb, Nonreinf, 10 inch	285	Syd
Joint, Contraction, Cp	167	Ft
Joint, Contraction, Crg	115	Ft

STRUCTURE ADJUST SCHEDULE						
STATION/ OFFSET	STUCTURE		EXIST. RIM ELEV	PROP. RIM ELEV.	CASE 1 OR CASE 2	STR. COVER TYPE
	TYPE	PAID AS				
10+29, L 37'	STM	DR	704.67	704.74	1	-
10+52, R 21'	STM	DR	704.21	704.25	1	-

LEGEND

Conc Pavt with Integral Curb, Nonreinf, 10 inch

(ADJ) STRUCTURE ADJUST

811

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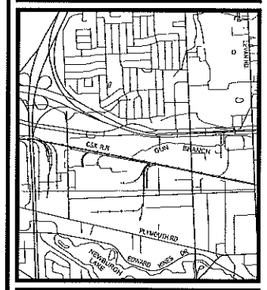
APPROVED	BWS



CITY OF LIVONIA

AMRHEIN ROAD RECONSTRUCTION

CONSTRUCTION PLAN
10+22 TO 10+65

HRC JOB NO.	SCALE
20160103	1" = 10'
DATE	SHEET NO.
MARCH 2017	41

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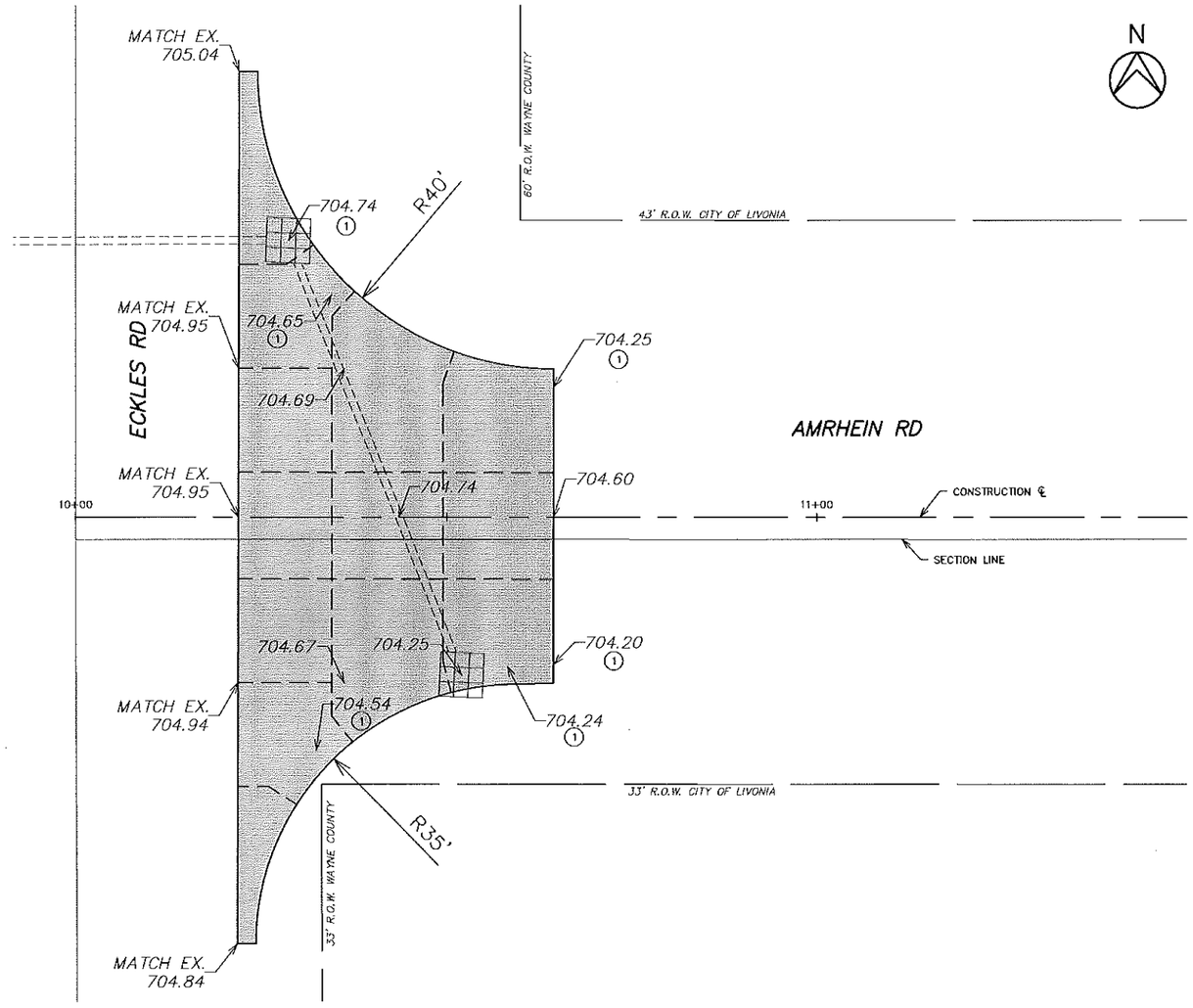

NOTES:

1. DETAILED GRADES AT EDGE OF METAL PER WAYNE COUNTY STANDARD PLAN "R-3" (TYP.)
2. PLACE NEW CONSTRUCTION PAVEMENT JOINTS TO MATCH THE EXISTING PAVEMENT JOINTS OR AS DIRECTED BY THE COUNTY ENGINEER AND AS SHOWN ON THE PLANS
3. CONTRACTOR IS RESPONSIBLE FOR THE SUBMISSION OF AN INTERSECTION JOINTING PLAN FOR REVIEW AND APPROVAL BY THE COUNTY ENGINEER, PRIOR TO PLACEMENT OF CONCRETE.
4. CONTRACTOR IS RESPONSIBLE TO RESOLVE ANY WATER PONDING ISSUES AND MAINTAIN A POSITIVE FLOW ALONG THE GUTTER LINE/EDGE OF PAVEMENT WITHIN THE LIMIT OF THE PROJECT

CITY OF LIVONIA

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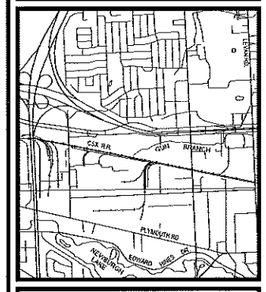
APPROVED	BWS



CITY OF LIVONIA
AMRHEIN ROAD RECONSTRUCTION

DETAILED GRADES
10+22 TO 10+65

HRC JOB NO.	SCALE
20160103	1" = 10'
DATE	SHEET NO.
MARCH 2017	42

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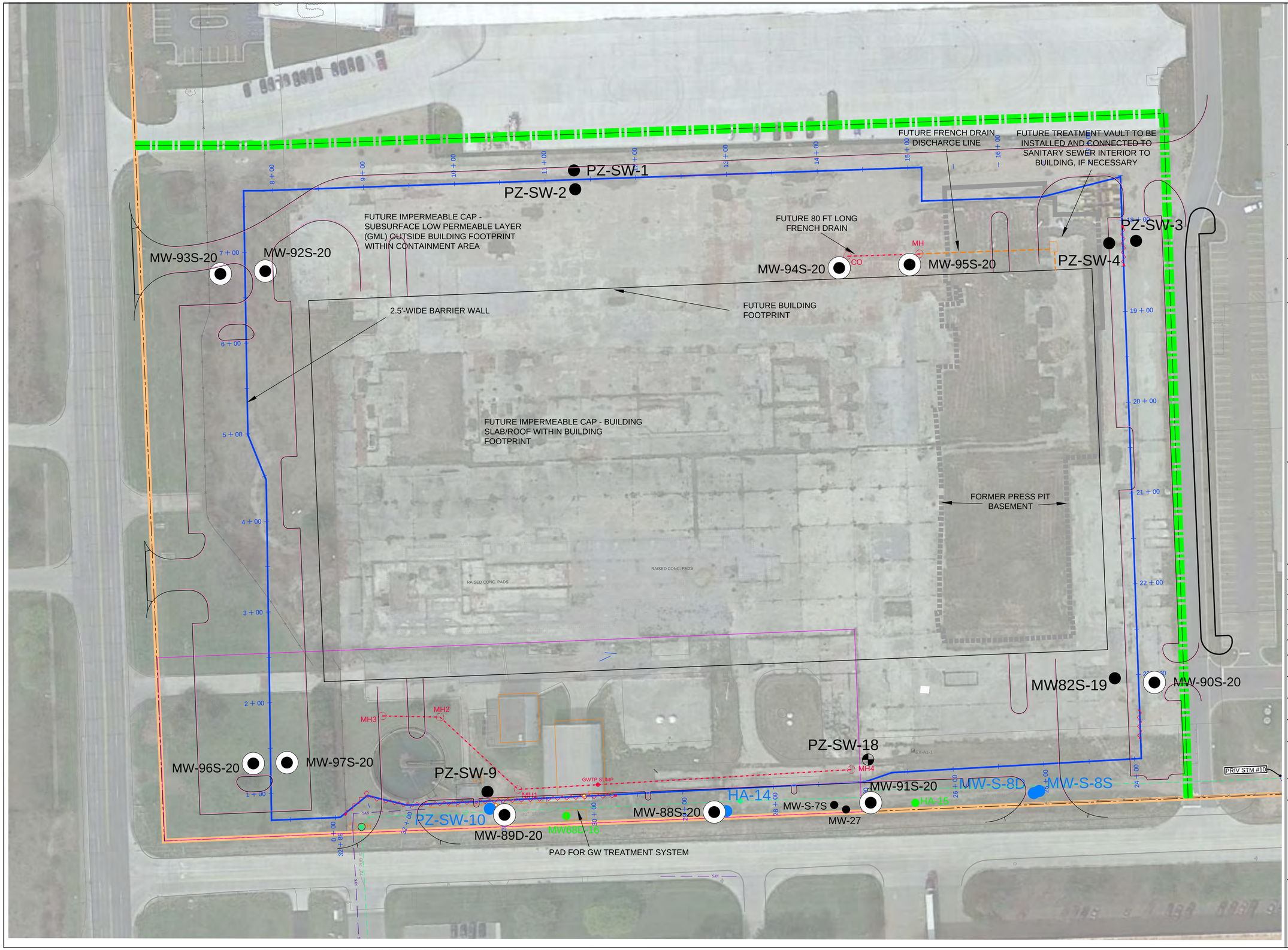
Attachment F

Construction Groundwater Monitoring Summary



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Farmington Hills, MI 48331
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LEGEND

- AREA BARRIER WALL
- FRENCH DRAIN
- GWTP DISCHARGE LINE
- EXTENTS OF FORMER PRESS PIT BASEMENT
- STORMWATER SEWER LINE
- SITE BOUNDARY
- SANITARY LINE
- FENCE
- MW-A2-2S — EXISTING MONITORING WELL/ PERFORMANCE MONITORING LOCATION
- MW-86S-20 — PROPOSED NEW MONITORING WELL/ PERFORMANCE MONITORING LOCATION
- MW-A2-2S — EXISTING MONITORING WELL/ CONSTRUCTION MONITORING LOCATION
- MW-A2-2S — EXISTING MONITORING WELL/ CONSTRUCTION AND PERFORMANCE MONITORING LOCATION
- JET-GROUTED BARRIER WALL

Client

RACER TRUST

Project

ECKLES ROAD SITE
LIVONIA, MICHIGAN

No.	Issue	Drawn	Approved	Date
-	-	-	-	-

Drawn DRAWN	Designer
Drafting Check	Design Check
Project Manager CM	Date Jun 28, 2021
This document shall not be used for construction unless signed and sealed for construction.	Scale AS SHOWN
Original Size ANSI D	Bar is one inch on original size drawing 0 1"

Project No. 012607A-T31

Title

CONSTRUCTION MONITORING LOCATIONS
PERFORMANCE MONITORING LOCATIONS
AREA 1 INTERIM MEASURE COMPONENTS

Sheet No.

FIGURE F.1

Sheet 1 of 1

Plot Date: 28 June 2021 - 10:17 PM Plotted By: Chris Meincke CAD File: N:\US\Detroit\Legacy\drawings\12000s\12607\12607-MEMO\012607A-T31Y21(MEMO278)012607A-T31Y21(MEMO278)GN012607A-T31Y21(MEMO278)GN-DE008.dwg

Table F.1

Area 1 Infiltration Barrier Construction
Monitoring Locations
Eckles Road Site
Livonia, Michigan

Containment Area Location	*Well ID.*	*Portion of Shallow Aquifer*	*DTW (ft bgs)*	*3-Feb*	*18-Feb*	*5-Mar*	*19-Mar*	*6-Apr*	*20-Apr*	*5-May*	*27-May*	*17-Jun*
Inside	GWTP Sump	Deep	GWTP Sump(Inside)	NM	9.91	8.65	7.3	6.72	10.45	11.85	7.5	**5.65**
Outside	PZ-SW-10	Shallow	PZ-SW-10 (Outside)	9.85	10.2	10.25	10.31	10.25	10.22	10.35	10.51	10.28
Outside	MW68D-16	Deep	MW68D-16 (Outside)	12.82	13.08	13.15	13.17	13.2	13.05	13.02	13.32	13.2
Outside	HA-14	Deep	HA-14(Outside)	11.43	11.8	11.8	11.81	11.45	11.44	11.61	11.99	12
Outside	HA-15	Deep	HA-15(Outside)	NM	11.86	11.85	11.85	11.75	11.75	11.82	11.95	buried*
Outside	MW-S-7S	Shallow	MW-S-7S(Outside)	12.19	12.19	12.29	12.3	13.22	12.22	12.19	12.42	buried*
Outside	MW-27	Deep	MW-27(Outside)	11.9	12.02	12.05	12.1	11.95	11.95	12.02	12.14	buried*
Outside	MW-S-8S	Shallow	MW-S-8S(Outside)	11.2	12.35	11.28	11.3	11.18	buried*	buried*	11.38	11.55
Outside	MW-S-8D	Deep	MW-S-8D(Outside)	NM	11.04	11.01	11.01	10.8	buried*	buried*	11.11	11.11
Inside	PZ-SW-9	Shallow	PZ-SW-9 (Inside)	4.9	6.28	6.01	5.95	5.61	6.22	6.49	6.5	5.75
Inside	PZ-SW-18	Shallow	PZ-SW-18(Inside)	3.74	NM	NM	NM	NM	NM	NM	5	damaged

		TOC	Grounwater Elevation	3-Feb	18-Feb	5-Mar	19-Mar	6-Apr	20-Apr	5-May	27-May	17-Jun
Inside	GWTP Sump	705.37	GWTP Sump		695.46	696.72	698.07	698.65	694.92	693.52	697.87	699.72
Outside	PZ-SW-10	705.57	PZ-SW-10	695.72	695.37	695.32	695.26	695.32	695.35	695.22	695.06	695.29
Outside	MW68D-16	707.889	MW68D-16	695.069	694.809	694.739	694.719	694.689	694.839	694.869	694.569	694.689
Outside	HA-14	705.95	HA-14	694.52	694.15	694.15	694.14	694.5	694.51	694.34	693.96	693.95
Outside	HA-15	705.35	HA-15		693.49	693.5	693.5	693.6	693.6	693.53	693.4	
Outside	MW-S-7S	706.07	MW-S-7S	693.88	693.88	693.78	693.77	692.85	693.85	693.88	693.65	
Outside	MW-27	705.75	MW-27	693.85	693.73	693.7	693.65	693.8	693.8	693.73	693.61	
Outside	MW-S-8S	704.59	MW-S-8S	693.39	692.24	693.31	693.29	693.41			693.21	693.04
Outside	MW-S-8D	704.36	MW-S-8D		693.32	693.35	693.35	693.56			693.25	693.25
Inside	PZ-SW-9	705.69	PZ-SW-9	700.79	699.41	699.68	699.74	700.08	699.47	699.2	699.19	699.94
Inside	PZ-SW-18	705.28	PZ-SW-18	701.54							700.28	

GWTP Pumping Volume Summary	February	March	April	May	June
Gallons	346,232	248,135	267,941	304,773	

Notes:

Existing monitoring wells will be utilized if intact and accessible following construction activities, otherwise a replacement monitoring well/temporary well point will be installed as construction activites/completion allows.
TOC - Top of Casing Elevation
ft AMSL - feet above mean sea level.
ft BGS - feet below ground surface.
Buried* - Contractor trailer and gravel installed over monitoring well locations
NM - Not Measured during specific event
MW-S-8S/D measured on 5/28/21

Eckles Road Site Construction Monitoring
Grounwdater Elevations