Memorandum

August 30, 2019 DRAFT

To:	Greg Rudloff, USEPA	Ref. No.:	012607-T31Y19
From:	Chris Meincke/ds/266	Tel:	248-893-3400
cc:	David Favero, RACER Tom Kinney, GHD		

Subject: **Area 1 PFAS Characterization Summary**
Performance Based Administrative Order on Consent
Docket Number RCRA 05 2011 0025
Eckles Road Site, Livonia, Michigan
USEPA ID No. MID 005 356 621

1. Introduction

GHD Services Inc. (GHD) has prepared this memorandum to summarize the June and July 2019 soil and groundwater investigation activities and associated results for the Revitalizing Auto Communities Environmental Response Trust (RACER) located at 12950 Eckles Road in Livonia, Michigan (Site). The soil and groundwater sampling activities were conducted to further characterize the presence of Per- and Polyfluoroalkyl Substances (PFAS) in and related to Area 1 at the Site as described in the USEPA-approved Proposed Scope of Work – Area 1 PFAS Characterization, dated April 24, 2019.

The following sections present monitoring well installation, and soil and groundwater sampling protocols, laboratory analysis and results.

2. Investigation Background

PFAS, specifically perfluorooctane sulfonic acid (PFOS) has been detected in Site groundwater at concentrations greater than Michigan Part 201 generic drinking water criteria and groundwater surface water interface criteria, and Michigan Rule 57 Water Quality Values at locations within the Area 1 Barrier Wall, and the influent and effluent of the on-site groundwater treatment plant (GWTP). The majority of monitoring wells at the Site within Area 1 are screened to monitor the deeper portion of the shallow saturated unit (approximately 15 to 25 feet below ground surface (bgs)) where the highest concentrations of nickel and hexavalent chromium are detected.

The proposed scope of work included installation of monitoring wells screened to monitor the shallow portion (approximately 5 to 15 feet bgs) of the shallow saturated unit and collection of groundwater samples to determine if there is variability in PFAS concentrations based on depth at numerous locations within the Area

1 Barrier Wall. Existing monitoring wells in the deep portion (approximately 15 to 25 feet bgs) of the shallow saturated unit were supplemented with shallow monitoring wells at six locations at the Site, and groundwater samples were collected from seven existing deep monitoring wells, one existing shallow well, and the six new shallow monitoring wells for the analysis of PFAS, nickel, total chromium, and hexavalent chromium (chromium VI), manganese, and sodium. Soil samples from two of the new monitoring wells were also collected for the analysis of PFAS and total organic carbon (TOC)/fraction of organic carbon (FOC). An updated Quality Assurance Project Plan was submitted to USEPA on June 27, 2019 for review. Based on comments received from USEPA, the QAPP was revised and submitted to USEPA on August 1, 2019.

3. Site Activities Summary

GHD mobilized to the Site on June 19, 2019 to begin soil boring/monitoring well installation activities, monitoring well sampling tubing replacement in existing wells, and monitoring well development activities. Following monitoring well installation, GHD mobilized to the Site on July 22, 2019 to begin groundwater sample collection activities. Twelve soil samples from two soil borings and nineteen water samples from fourteen monitoring wells, and equipment and field blanks, were collected and sent to Test America for the analysis of PFAS by EPA Method 537 modified to further characterize PFAS within the Area 1 barrier wall. Water samples were also collected for the analysis of select metals (chromium, hexavalent chromium, manganese, nickel, and sodium) from the fourteen monitoring wells identified above, and twenty-six additional monitoring wells within Area 1 to provide additional post-injection performance monitoring results. A summary of samples sent to Test America for analysis of PFAS and/or metals, PFAS Total Oxidizable Precursor (TOP) ASSAY, and/or TOC/FOC is presented in Table 1. Samples collected for PFAS analysis were split and sent to USEPA for PFAS analysis according to USEPA Standard Operating Procedure (SOP) OM-021 for water samples and OM-022 for soil samples. A summary of samples sent to the USEPA Regional Laboratory in Chicago is presented in Table 2.

3.1 Soil Boring Installation

Prior to installation of monitoring wells, soil borings were installed to obtain information on the subsurface geology and obtain soil samples for laboratory analysis. Soil was visually observed for signs of impact, scanned with a photoionization detector (PID) and logged per GHD standard operating procedure. Soil samples were collected from five-foot intervals for laboratory analysis of PFAS from MW-A1-12S and MW-31S-19, and performance of a leaching test, similar to the synthetic precipitation leaching procedure (SPLP) test. Select samples were also collected from MW-A1-12S and MW-31S-19 for the analysis of TOC/FOC, and, based on preliminary results of soil sample results, select soil from each soil boring was submitted for PFAS TOP Assay. Split soil samples were collected and sent to USEPA's Regional Laboratory in Chicago for the analysis of PFAS.

3.2 Monitoring Well Installation and Development

New shallow monitoring wells were installed to supplement existing deep wells MW-31D-12, MW-A1-12D, MW73D-16, MW-82D-18, MW-67D-16, and MW69D-16. New shallow wells MW-31S-19, MW-A1-12S, MW-73S-19, MW-82S-19, MW-67S-19, and MW-69S-19 were installed to straddle the water table and were

generally screened between 2 to 12 feet below ground surface (bgs) and 3 to 13 feet bgs. Soil boring and monitoring well completion details are provided in Attachment A. New monitoring wells were surveyed on July 24, 2019. Prior to groundwater sample collection, new high density polyethylene (HDPE) tubing was installed in all new monitoring wells, and the existing tubing was replaced with HDPE tubing in monitoring wells that had not previously been sampled for PFAS. Prior to sampling, all monitoring wells that had new tubing installed were developed using a dedicated whaler pump and dedicated tubing to remove approximately 20 calculated well volumes at minimum. After 20 well volumes were removed, each monitoring well was allowed to recover for a minimum 24 hours prior to sampling.

3.3 Groundwater Sampling

GHD collected groundwater samples from a total of 14 monitoring wells for analysis of PFAS and metals. Groundwater samples were collected from an additional twenty-six monitoring wells for analysis of metals. Split samples were collected and sent to USEPA's Regional Laboratory in Chicago for the analysis of PFAS.

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 to 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

A sample key for samples sent to Test America is provided in Table 1. A sample key for samples sent to USEPA's Regional Laboratory in Chicago, Illinois is provided in Table 2. A Site Plan with sampling locations is presented on Figure 1.

4. Results

4.1 Soil Sample Results

Soil sample analytical results were compared to Michigan Department of Environment, Great Lakes, and Energy (EGLE) Generic Cleanup Criteria for Residential and Nonresidential category, effective December 30, 2013 and as amended (June 25, 2018).

PFOS was detected at concentrations greater than groundwater surface water interface protection criteria (GSIPC) in soil samples collected from MW-31S-19. Analytical results of soil samples are provided in Table 3. Analytical results from USEPA split samples are also provided in Table 3. Soil leaching test results did not identify concentrations of PFOS greater than groundwater surface water interface criteria or drinking water criteria in any soil samples. Soil Leaching test results are provided in Table 4. Laboratory Analytical Reports from Test America are presented in Attachment B. Laboratory results from USEPA's regional laboratory in Chicago, Illinois are presented in Attachment C. Laboratory results from the TOP Assay were not available at the time this memo was prepared but will be submitted when they are available.

Results provided by USEPA had reporting limits approximately one order of magnitude lower than results provided by Test America, therefore, some detections reported by USEPA correlate with non-detections reported by Test America. For constituents that had detections reported by both USEPA and Test America, results were generally similar, however, there were two USEPA results that were less than 50 percent, of the corresponding Test America result, specifically PFOS results for soil samples collected from MW-31S-19 from the 10 to 15 feet bgs interval (740 ng/kg compared to 287 ng/kg) and 20 to 25 feet bgs interval (350 ng/kg compared to 87.1 ng/kg in a pair of field duplicate samples but 240 ng/kg compared to 205 ng/kg in the parent samples) . The samples from 20 to 25 feet bgs interval were field duplicate samples indicating there is variability between both labs when comparing results from the analysis of the same material, .Both sets of results from both laboratories were qualified as estimated values, and both results are at concentrations similar to, or below the reporting limit identified by Test America for the majority of soil samples.

The soil results do not indicate a significant on-going source of PFAS that could desorb to groundwater and result in increased PFAS groundwater concentrations. Detected concentrations of PFAS in soil samples are likely the result of PFAS-impacted groundwater coming into contact with the soil and adsorbing to the soil matrix. If groundwater concentrations are reduced, low concentrations of PFAS may desorb from soil into groundwater over time,

4.2 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 (June 25, 2018).

PFOS was detected in nine of the fourteen monitoring wells at concentrations greater than the EGLE GSI criteria of 12 ng/l for surface waters not used for human consumption. In monitoring well pairs where PFOS was detected at concentrations greater than GSI, PFOS concentrations in shallow monitoring wells were generally an order of magnitude less than concentrations in deep monitoring wells, with the exception of the MW-69S-19/MW-69D-16 monitoring well pair. PFOS was detected at a concentration of 780 ng/l in MW-

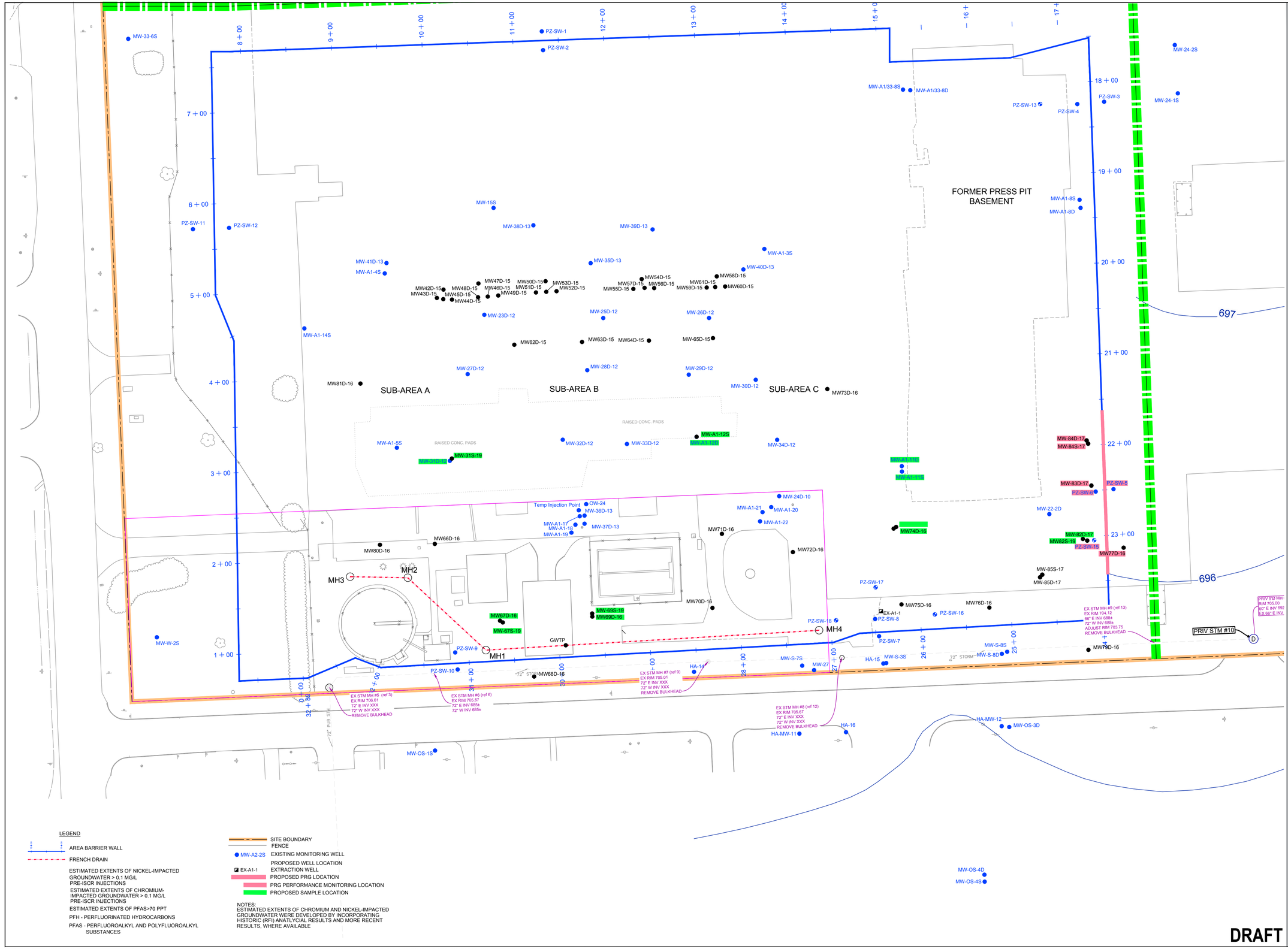
69S-19, and at 22 ng/l in MW-69D-16. The MW-69S-19/MW-69D-16 monitoring well pair is located near the center of the French drain collection system and vertical mixing may have occurred during dewatering activities, and former plating waste was managed in the adjacent former on-site wastewater secondary treatment pits. Analytical results of samples analyzed for PFAS are provided in Table 4. PFAS-impacted groundwater appears to be primarily located within the western portion of the former plating area, and coincides with areas and depths previously impacted with chromium VI. Analytical results of groundwater samples analyzed for PFAS are presented on Figure 2. Analytical results from USEPA split samples are also provided in Table 4. Laboratory Analytical Reports from Test America are presented in Attachment B. Laboratory results from USEPA's regional laboratory in Chicago, Illinois are presented in Attachment C. Results provided by USEPA had reporting limits approximately one order of magnitude higher than results provided by Test America, therefore, some detections reported by Test America correlate with non-detections reported by USEPA. For constituents that had detections reported by both USEPA and Test America, specifically PFOS, results were generally similar in nature and varied by less than 20 percent, with the exception of low level detections from MW-69D-16, which had reported PFOS concentrations of 22 ng/l and 35.8 ng/l, which still appear to be relatively similar results. Data validation activities are being conducted at the time this memo was prepared and a summary will be submitted when available.

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. Chromium VI was detected at a concentrations of 24 mg/l in a groundwater sample collected from MW-A1-4S, a shallow monitoring well located immediately northwest of the area that was previously treated with ISCR injections in the deeper portion of the shallow of the shallow saturated unit. Chromium VI concentrations within the area previously treated with ISCR injections ranged between nondetect and 0.11 mg/l. Nickel concentrations within the area previously treated with ISCR injections ranged between nondectect and 4.8 mg/L, not including MW-69D-16, which had a reported nickel concentration of 560 mg/l. Analytical results of samples analyzed for metals are presented on Figure 3 and in Table 5.

5. Conclusions

As previously identified, concentrations of PFOS are above EGLE GSI and drinking water criteria in groundwater within the Area 1 Barrier Wall and generally appear to be associated with the former use of chromic acid in plating operations. The GWTP influent currently meets GLWA Special Discharge Permit effluent limits for metals, however, PFOS has previously been detected in the GWTP influent/effluent at concentrations greater than limits established by GLWA. The information obtained from this investigation is being used in an existing groundwater model to predict potential PFOS distribution under potential groundwater management scenarios being evaluated to eliminate the discharge of PFAS-impacted groundwater or reduce the concentration of PFAS in water discharged to the sanitary sewer system and will be presented under separate cover. Chromium VI, nickel, and PFOS appear to be delineated within the Area 1 Barrier Wall and there are areas within the northern portion of Area 1 where chromium VI, nickel and PFOS are below applicable GLWA Special Discharge Permit limits and/or EGLE GSI criteria. Potential

dewatering strategies from the northern un-impacted areas of the Site are currently being evaluated as an alternative for groundwater management strategies at the Site.



LEGEND

- AREA BARRIER WALL
- FRENCH DRAIN
- ESTIMATED EXTENTS OF NICKEL-IMPACTED GROUNDWATER > 0.1 MG/L PRE-ISCR INJECTIONS
- ESTIMATED EXTENTS OF CHROMIUM-IMPACTED GROUNDWATER > 0.1 MG/L PRE-ISCR INJECTIONS
- ESTIMATED EXTENTS OF PFAS>70 PPT
- PFH - PERFLUORINATED HYDROCARBONS
- PFAS - PERFLUOROALKYL AND POLYFLUOROALKYL SUBSTANCES
- SITE BOUNDARY
- FENCE
- MW-A2-2S EXISTING MONITORING WELL
- EX-A1-1 PROPOSED WELL LOCATION EXTRACTION WELL
- PROPOSED PRG LOCATION
- PRG PERFORMANCE MONITORING LOCATION
- PROPOSED SAMPLE LOCATION

NOTES:
ESTIMATED EXTENTS OF CHROMIUM AND NICKEL-IMPACTED GROUNDWATER WERE DEVELOPED BY INCORPORATING HISTORIC (RFI) ANALTYCIAL RESULTS AND MORE RECENT RESULTS, WHERE AVAILABLE

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Client
RACER TRUST

Project
ECKLES ROAD SITE
LIVONIA, MICHIGAN

No.	Issue	Drawn	Approved	Date
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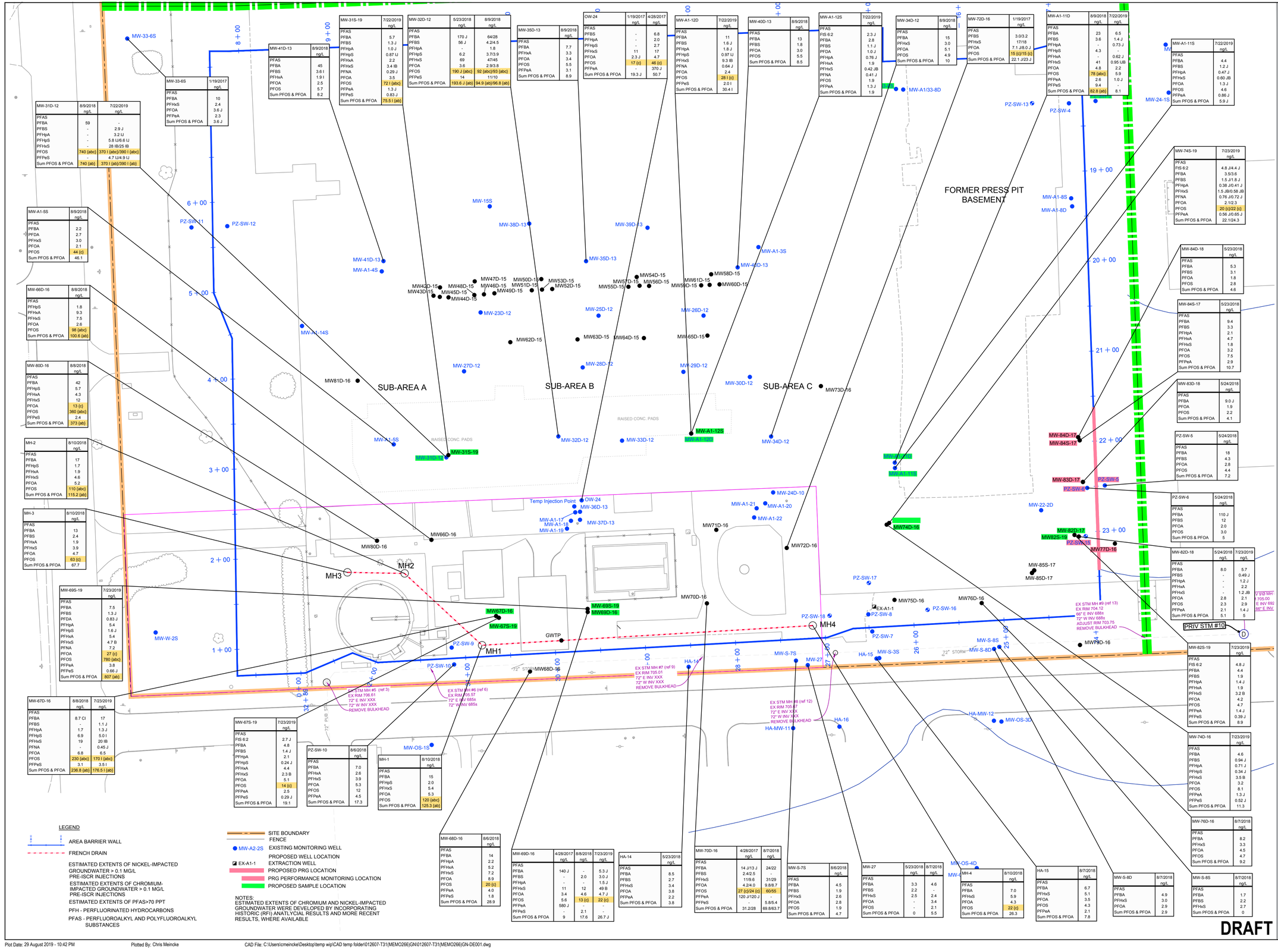
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Drafting Check	Design Check
Project Manager CM	Date Aug 29, 2019
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Project No. 012607-T31

Title
PROPOSED MONITORING WELLS
AREA 1 PFAS INVESTIGATION

Sheet No.
FIGURE 1
Sheet 1 of 1

Plot Date: 29 August 2019 - 10:39 PM Plotted By: Chris Meincke CAD File: C:\Users\cmeincke\Desktop\temp wip\CAD temp folder\012607-T31(MEMO266)GN\012607-T31(MEMO266)GN-DE003.dwg



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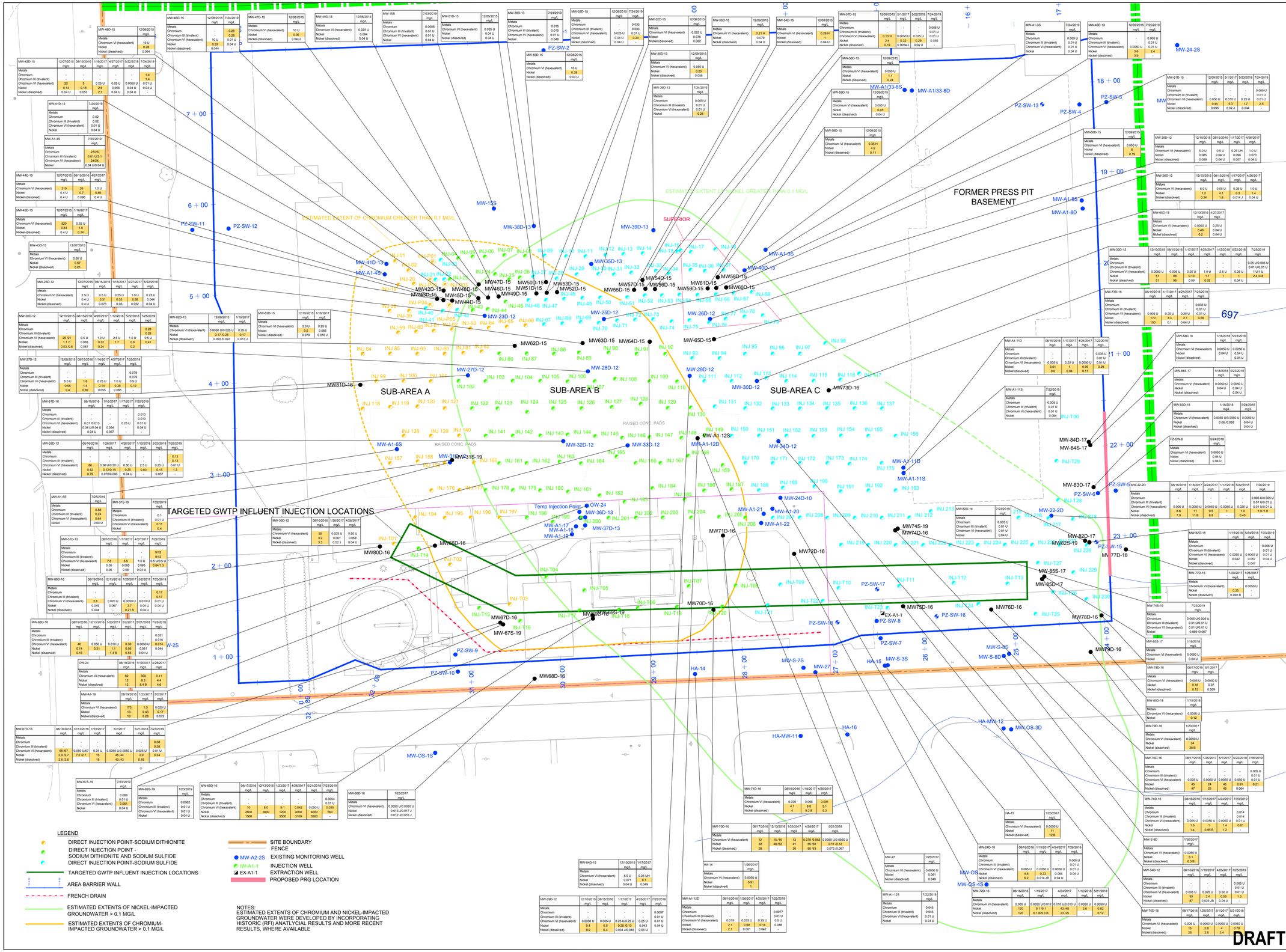

SUB-AREA A
SUB-AREA B
SUB-AREA C
FORMER PRESS PIT BASEMENT
ESTIMATED EXTENT OF CHROMIUM GREATER THAN 0.1 MG/L
ESTIMATED EXTENT OF NICKEL GREATER THAN 0.1 MG/L
SUPERIOR
RAISED CONC. PADS
TARGETED GWTP INFLUENT INJECTION LOCATIONS
Temp Injection Point
PZ-SW-2
PZ-SW-3
PZ-SW-4
PZ-SW-5
PZ-SW-6
PZ-SW-7
PZ-SW-8
PZ-SW-9
PZ-SW-10
PZ-SW-11
PZ-SW-12
PZ-SW-13
PZ-SW-15
PZ-SW-16
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MW-27S
MW-28S
MW-29S
MW-30S
MW-31S
MW-32S
MW-33S
MW-34S
MW-35S
MW-36S
MW-37S
MW-38S
MW-39S
MW-40S

Table 1

Field Sample Key
PFAS Characterization
RACER Eckles Road Site
Livonia, Michigan

Sample ID	Location	Sample Date	Sample Depth feet bgs Start	Sample Depth feet bgs End	Matrix	Analysis [1]	Notes
S-12607-062019-SK-001	MW-A1-12S	6/18/2018	1	5	Soil	PFAS	
S-12607-062019-SK-002	MW-A1-12S	6/18/2018	5	10	Soil	PFAS, TOC/FOC	
S-12607-062019-SK-003	MW-A1-12S	6/18/2018	10	15	Soil	PFAS	
S-12607-062019-SK-004	MW-A1-12S	6/18/2018	15	20	Soil	PFAS, TOP ASSAY	
S-12607-062019-SK-005	MW-A1-12S	6/18/2018	20	23.5	Soil	PFAS, TOC/FOC	
S-12607-062019-SK-006	MW-31S-19	6/18/2018	0.6	5	Soil	PFAS, TOC/FOC	
S-12607-062019-SK-007	MW-31S-19	6/6/2018	5	10	Soil	PFAS, TOC/FOC	
S-12607-062019-SK-008	MW-31S-19	6/6/2018	10	15	Soil	PFAS, TOC/FOC, TOP ASSAY	
S-12607-062019-SK-009	MW-31S-19	6/6/2018	15	20	Soil	PFAS	
S-12607-062019-SK-010	MW-31S-19	6/6/2018	20	25	Soil	PFAS	
S-12607-062019-SK-011	MW-31S-19	6/6/2018	20	25	Soil	PFAS	Field Duplicate
S-12607-062019-SK-012	MW-31S-19	6/6/2018	25	30	Soil	PFAS	
012607A-LEACHATE Fluid	Lab Blank	6/27/2019			Leachate Fluid	PFAS	
012607A-LEACH-SOIL 001	MW-A1-12S	7/1/2019	1	5	Soil Leachate	PFAS	
012607A-LEACH-SOIL 002	MW-A1-12S	7/1/2019	5	10	Soil Leachate	PFAS	
012607A-LEACH-SOIL 003	MW-A1-12S	7/1/2019	10	15	Soil Leachate	PFAS	
012607A-LEACH-SOIL 004	MW-A1-12S	6/27/2019	15	20	Soil Leachate	PFAS	
012607A-LEACH-SOIL 005	MW-A1-12S	6/27/2019	20	23.5	Soil Leachate	PFAS	
012607A-LEACH-SOIL 006	MW-31S-19	7/1/2019	0.6	5	Soil Leachate	PFAS	
012607A-LEACH-SOIL 007	MW-31S-19	6/27/2019	5	10	Soil Leachate	PFAS	
012607A-LEACH-SOIL 008	MW-31S-19	6/27/2019	10	15	Soil Leachate	PFAS	
012607A-LEACH-SOIL 009	MW-31S-19	7/1/2019	15	20	Soil Leachate	PFAS	
012607A-LEACH-SOIL 010	MW-31S-19	7/1/2019	20	25	Soil Leachate	PFAS	
012607A-LEACH-SOIL 011	MW-31S-19	7/1/2019	20	25	Soil Leachate	PFAS	Field Duplicate (Soil)
012607A-LEACH-SOIL 012	MW-31S-19	6/27/2019	25	30	Soil Leachate	PFAS	
GW-012607-072219-DA-001	MW-31S-19	7/22/2019			Groundwater	PFAS, Metals	
GW-012607-072219-DA-002	MW-31D-12	7/22/2019			Groundwater	PFAS, Metals	
GW-012607-072219-DA-003	MW-31D-12	7/22/2019			Groundwater	PFAS, Metals	Field Duplicate
GW-012607-072219-DA-004	MW-A1-11S	7/22/2019			Groundwater	PFAS, Metals	
GW-012607-072219-DA-005	MW-A1-11D	7/22/2019			Groundwater	PFAS, Metals	
GW-012607-072219-DA-006	MW-A1-12S	7/22/2019			Groundwater	PFAS, Metals	
GW-012607-072219-DA-007	MW-A1-12D	7/22/2019			Groundwater	PFAS, Metals	
EB-012607-072219-DA-001	Equipment Blank - Tubing	7/22/2019			Water	PFAS	
FB-012607-072219-DA-001	Field Blank	7/22/2019			Water	PFAS	
FB-012607-072319-DA-002	Field Blank	7/23/2019			Water	PFAS	
GW-012607-072319-DA-008	MW-69S-19	7/23/2019			Groundwater	PFAS, Metals	
GW-012607-072319-DA-009	MW-69D-16	7/23/2019			Groundwater	PFAS, Metals	
GW-012607-072319-DA-010	MW-67S-19	7/23/2019			Groundwater	PFAS, Metals	
GW-012607-072319-DA-011	MW-67D-19	7/23/2019			Groundwater	PFAS, Metals	MS/MSD
GW-012607-072319-DA-012	MW-74D-16	7/23/2019			Groundwater	PFAS, Metals	
GW-012607-072319-DA-013	MW-74S-19	7/23/2019			Groundwater	PFAS, Metals	
GW-012607-072319-DA-014	MW-74S-19	7/23/2019			Groundwater	PFAS, Metals	Field Duplicate
GW-012607-072319-DA-015	MW-82S-19	7/23/2019			Groundwater	PFAS, Metals	
GW-012607-072319-DA-016	MW-82D-17	7/23/2019			Groundwater	PFAS, Metals	
GW-012607-072319-DA-017	MW-15S	7/23/2019			Groundwater	Metals	
GW-012607-072419-DA-018	MW-38D-13	7/24/2019			Groundwater	Metals	
GW-012607-072419-DA-019	MW-39D-13	7/24/2019			Groundwater	Metals	
GW-012607-072419-DA-020	MW-A1-3S	7/24/2019			Groundwater	Metals	
GW-012607-072419-DA-021	MW-A1-4S	7/24/2019			Groundwater	Metals	
GW-012607-072419-DA-022	MW-A1-4S	7/24/2019			Groundwater	Metals	Field Duplicate
GW-012607-072419-DA-023	MW-41D-13	7/24/2019			Groundwater	Metals	
GW-012607-072419-DA-024	MW-42D-15	7/24/2019			Groundwater	Metals	
GW-012607-072419-DA-025	MW-46D-15	7/24/2019			Groundwater	Metals	
GW-012607-072419-DA-026	MW-53D-15	7/24/2019			Groundwater	Metals	
GW-012607-072419-DA-027	MW-57D-15	7/24/2019			Groundwater	Metals	
GW-012607-072419-DA-028	MW-61D-15	7/24/2019			Groundwater	Metals	
GW-012607-072519-DA-029	MW-40D-13	7/25/2019			Groundwater	Metals	
GW-012607-072519-DA-030	MW-81D-16	7/25/2019			Groundwater	Metals	
GW-012607-072519-DA-031	MW-27D-12	7/25/2019			Groundwater	Metals	
GW-012607-072519-DA-032	MW-28D-12	7/25/2019			Groundwater	Metals	
GW-012607-072519-DA-033	MW-29D-12	7/25/2019			Groundwater	Metals	
GW-012607-072519-DA-034	NW-30D-12	7/25/2019			Groundwater	Metals	
GW-012607-072519-DA-035	NW-30D-12	7/25/2019			Groundwater	Metals	Field Duplicate
GW-012607-072519-DA-036	MW73D-16	7/25/2019			Groundwater	Metals	
GW-012607-072519-DA-037	MW-A1-5S	7/25/2019			Groundwater	Metals	
GW-012607-072519-DA-038	MW-32D-12	7/25/2019			Groundwater	Metals	

Table 1

Field Sample Key
PFAS Characterization
RACER Eckles Road Site
Livonia, Michigan

Sample ID	Location	Sample Date	Sample Depth feet bgs Start	Sample Depth feet bgs End	Matrix	Analysis [1]	Notes
GW-012607-072519-DA-039	MW-34D-12	7/25/2019			Groundwater	Metals	
GW-012607-072519-DA-040	MW-80D-16	7/25/2019			Groundwater	Metals	
GW-012607-072519-DA-041	MW-66D-16	7/25/2019			Groundwater	Metals	
GW-012607-072619-DA-042	MW-24D-10	7/26/2019			Groundwater	Metals	
GW-012607-072619-DA-043	MW-22-2D	7/26/2019			Groundwater	Metals	
GW-012607-072619-DA-044	MW-22-2D	7/26/2019			Groundwater	Metals	Field Duplicate
GW-012607-072619-DA-045	MW76D-16	7/26/2019			Groundwater	Metals	

Notes:
Metals - Chromium, nickel, chromium VI, manganese, sodium
FOC/TOC - Total Organic Carbon/Fraction Organic Carbon

Table 2

Field Sample Key
PFAS Characterization-USEPA Split Samples
RACER Eckles Road Site
Livonia, Michigan

Sample ID	Location	Sample Date	Sample Depth feet bgs Start	Sample Depth feet bgs End	Matrix	Analysis [1]	Notes
S-12607-062019-SK-001~Split	MW-A1-12S	6/18/2018	1	5	Soil	PFAS	
S-12607-062019-SK-002~Split	MW-A1-12S	6/18/2018	5	10	Soil	PFAS	
S-12607-062019-SK-003~Split	MW-A1-12S	6/18/2018	10	15	Soil	PFAS	
S-12607-062019-SK-004~Split	MW-A1-12S	6/18/2018	15	20	Soil	PFAS	
S-12607-062019-SK-005~Split	MW-A1-12S	6/18/2018	20	23.5	Soil	PFAS	
S-12607-062019-SK-006~Split	MW-31S-19	6/18/2018	0.6	5	Soil	PFAS	
S-12607-062019-SK-007~Split	MW-31S-19	6/6/2018	5	10	Soil	PFAS	
S-12607-062019-SK-008~Split	MW-31S-19	6/6/2018	10	15	Soil	PFAS	
S-12607-062019-SK-009~Split	MW-31S-19	6/6/2018	15	20	Soil	PFAS	
S-12607-062019-SK-010~Split	MW-31S-19	6/6/2018	20	25	Soil	PFAS	
S-12607-062019-SK-011~Split	MW-31S-19	6/6/2018	20	25	Soil	PFAS	Field Duplicate
S-12607-062019-SK-012~Split	MW-31S-19	6/6/2018	25	30	Soil	PFAS	
GW-012607-072219-DA-001A	MW-31S-19	7/22/2019			Groundwater	PFAS	
GW-012607-072219-DA-002A	MW-31D-12	7/22/2019			Groundwater	PFAS	
GW-012607-072219-DA-003A	MW-31D-12	7/22/2019			Groundwater	PFAS	Field Duplicate
GW-012607-072219-DA-004A	MW-A1-11S	7/22/2019			Groundwater	PFAS	
GW-012607-072219-DA-005A	MW-A1-11D	7/22/2019			Groundwater	PFAS	
GW-012607-072219-DA-006A	MW-A1-12S	7/22/2019			Groundwater	PFAS	
GW-012607-072219-DA-007A	MW-A1-12D	7/22/2019			Groundwater	PFAS	
EB-012607-072219-DA-001A	Equipment Blank - Tubing	7/22/2019			Water	PFAS	
FB-012607-072219-DA-001A	Field Blank	7/22/2019			Water	PFAS	
FB-012607-072319-DA-002A	Field Blank	7/23/2019			Water	PFAS	
GW-012607-072319-DA-008A	MW-69S-19	7/23/2019			Groundwater	PFAS	
GW-012607-072319-DA-009A	MW-69D-16	7/23/2019			Groundwater	PFAS	
GW-012607-072319-DA-010A	MW-67S-19	7/23/2019			Groundwater	PFAS	
GW-012607-072319-DA-011A	MW-67D-19	7/23/2019			Groundwater	PFAS	MS/MSD
GW-012607-072319-DA-012A	MW-74D-16	7/23/2019			Groundwater	PFAS	
GW-012607-072319-DA-013A	MW-74S-19	7/23/2019			Groundwater	PFAS	
GW-012607-072319-DA-014A	MW-74S-19	7/23/2019			Groundwater	PFAS	Field Duplicate
GW-012607-072319-DA-015A	MW-82S-19	7/23/2019			Groundwater	PFAS	
GW-012607-072319-DA-016A	MW-82D-17	7/23/2019			Groundwater	PFAS	

(1) - PFAS Analysis performed by USEPA Region 5 Chicago Regional Laboratory
Soils - SOP OM022 OSTRI PFCs in Soil
Water - SOP OM021 OSTRI PFCs in Water

Table 3

Analytical Results of Soil Samples
Eckles Road Site
Livonia, Michigan

Sample Location:			EGLE Generic Cleanup Criteria:[1]	MW-A1-12S	MW-A1-12S	MW-A1-12S	MW-A1-12S	MW-A1-12S	MW-A1-12S	MW-A1-12S	MW-A1-12S	MW-A1-12S
Sample Identification:			Groundwater	S-12607-062019-SK-001	-12607-062019-SK-001~Sp	S-12607-062019-SK-002	-12607-062019-SK-002~Sp	S-12607-062019-SK-003	-12607-062019-SK-003~Sp	S-12607-062019-SK-004	-12607-062019-SK-004~Sp	S-12607-062019-SK-005
Sample Date:			Surface Water	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019
Sample Depth:			Interface Protection	(1-5) ft BGS	(1-5) ft BGS	(5-10) ft BGS	(5-10) ft BGS	(10-15) ft BGS	(10-15) ft BGS	(15-20) ft BGS	(15-20) ft BGS	(20-23.5) ft BGS
Sample Type:			d		USEPA Split		USEPA Split		USEPA Split		USEPA Split	
Per/Polyfluoroalkyl Substances (PFAS)	**CAS Number**	**Units**										
Perfluorobutane sulfonic acid (PFBS)	375-73-5	ng/kg		210 U	110 U	260 U	127 U	230 U	101 U	220 U	102 U	240 U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/kg		52 J	--	110 J	--	81 J	--	57 J	--	83 J
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/kg		210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	220 U	20.4 U	240 U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/kg		210 U	22.1 U	35 J	29.7	230 U	20.1 U	220 U	20.4 U	240 U
Perfluorododecanoic acid (PFDoDA)	307-55-1	ng/kg		210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	220 U	20.4 U	240 U
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	ng/kg		210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	220 U	20.4 U	240 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/kg		210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	220 U	20.4 U	240 U
Perfluorohexane sulfonate (PFHxS)	108427-53-8	ng/kg		--	22.1 U	--	25.5 U	--	20.1 U	--	20.4 U	--
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	ng/kg		210 U	--	260 U	--	230 U	--	160 JI	--	240 U
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/kg		210 U	44.2 U	260 U	50.9 U	230 U	40.2 U	220 U	40.8 U	240 U
Perfluorononane sulfonic acid (PFNS)	474511-07-4	ng/kg		210 U	--	260 U	--	230 U	--	220 U	--	240 U
Perfluorononanesulfonate (PFNS)	68259-12-1	ng/kg		--	22.1 U	--	25.5 U	--	20.1 U	--	20.4 U	--
Perfluorononanoic acid (PFNA)	375-95-1	ng/kg		210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	220 U	20.4 U	240 U
Perfluorooctane sulfonamide (FOSA)	754-91-6	ng/kg		210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	220 U	20.4 U	240 U
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	ng/kg	240	520 U	26.5 U	640 U	34	580 U	67.6	540 U	93.3 I	590 U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/kg	10000000	210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	220 U	20.4 U	240 U
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	ng/kg		210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	32 JI	20.4 U	240 U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/kg		210 U	110 U	260 U	127 U	230 U	101 U	220 U	102 U	240 U
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	ng/kg		210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	220 U	20.4 U	240 U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/kg		210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	220 U	20.4 U	240 U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/kg		210 U	22.1 U	260 U	25.5 U	230 U	20.1 U	220 U	20.4 U	240 U
Potassium Perfluorobutane Sulfonate	29420-49-3	ng/kg		--	22.1 U	--	25.5 U	--	20.1 U	--	70.8	--
Fluorotelomer sulfonic acid	757124-72-4	ng/kg		--	22.1 U	--	25.5 U	--	20.1 U	--	20.4 U	--
Fluorotelomer sulfonic acid (4:2)	757124-72-4_4:2	ng/kg		2100 U	--	2600 U	--	2300 U	--	2200 U	--	2400 U
Fluorotelomer sulfonic acid(8:2)	39108-34-4_8:2	ng/kg		2100 U	--	2600 U	--	2300 U	--	2200 U	--	2400 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	2991-50-6	ng/kg		2100 U	22.1 U	2600 U	25.5 U	2300 U	20.1 U	2200 U	20.4 U	2400 U
N-Methyl perfluorooctane sulfonamido acetic acid	2355-31-9	ng/kg		2100 U	22.1 U	2600 U	25.5 U	2300 U	20.1 U	2200 U	20.4 U	2400 U
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	39108-34-4	ng/kg		--	22.1 U	--	25.5 U	--	20.1 U	--	20.4 U	--
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	27619-97-2	ng/kg		2100 U	--	2600 U	--	2300 U	--	2200 U	--	2400 U
Total PFOS and PFOA	1763231/335671	ng/kg		0	0	0	34	0	67.6	0	93.3 I	0
General Chemistry												
Fraction organic carbon (FOC)	FOC	%		--	--	0.3	--	--	--	--	--	0.3
Total organic carbon (TOC)	TOC	mg/kg		--	--	1000 U	--	--	--	--	--	1700
Geotech												
Density	DENSITY	g/cc		--	--	1.73	--	--	--	--	--	1.57

Notes:

U - Not detected at the associated reporting limit.
J - Estimated concentration.
DRAFT - Reporting with Laboratory Qualifiers - Validation pending

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 299.46 and R 299.48, respectively, effective December 30, 2013, pursuant to Part 201 of 1994 PA 451 as amended

Sample Location:			MW-A1-12S	MW-31S-19	MW-31S-19	MW-31S-19	MW-31S-19	MW-31S-19	MW-31S-19	MW-31S-19	MW-31S-19	MW-31S-19	MW-31S-19
Sample Identification:			3-12607-062019-SK-005~Spli	S-12607-062019-SK-006	-12607-062019-SK-006~Sp	S-12607-062019-SK-007	-12607-062019-SK-007~Sp	S-12607-062019-SK-008	-12607-062019-SK-008~Sp	S-12607-062019-SK-009	-12607-062019-SK-009~Sp	S-12607-062019-SK-010	-12607-062019-SK-010~Sp
Sample Date:			6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019	6/20/2019
Sample Depth:			(20-23.5) ft BGS	(0.6-5) ft BGS	(0.6-5) ft BGS	(5-10) ft BGS	(5-10) ft BGS	(10-15) ft BGS	(10-15) ft BGS	(15-20) ft BGS	(15-20) ft BGS	(20-25) ft BGS	(20-25) ft BGS
Sample Type:			USEPA Split		USEPA Split		USEPA Split		USEPA Split		USEPA Split		USEPA Split
		Units											
Per/Polyfluoroalkyl Substances (PFAS)	**CAS Number**												
Perfluorobutane sulfonic acid (PFBS)	375-73-5	ng/kg	89.6 U	210 U	105 U	230 U	92.4 U	220 U	97.7 U	220 U	96.6 U	230 U	93.4 U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/kg	--	72 J	--	45 J	--	65 J	--	53 J	--	72 J	--
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluorododecanoic acid (PFDoDA)	307-55-1	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluorohexane sulfonate (PFHxS)	108427-53-8	ng/kg	48.7 I	--	21 U	--	18.5 U	--	19.5 U	--	19.3 U	--	18.7 U
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	ng/kg	--	210 U	--	230 U	--	40 JI	--	37 JI	--	230 U	--
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/kg	35.9 U	210 U	42 U	230 U	37 U	220 U	39.1 U	220 U	38.6 U	230 U	37.3 U
Perfluorononane sulfonic acid (PFNS)	474511-07-4	ng/kg	--	210 U	--	230 U	--	220 U	--	220 U	--	230 U	--
Perfluorononanesulfonate (PFNS)	68259-12-1	ng/kg	17.9 U	--	21 U	--	18.5 U	--	19.5 U	--	19.3 U	--	18.7 U
Perfluorononanoic acid (PFNA)	375-95-1	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluorooctane sulfonamide (FOSA)	754-91-6	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	ng/kg	45 I	520 U	25.2 U	570 U	24.9	**740 I[d]**	**287[d]**	**580[d]**	**379[d]**	240 JI	205 I
Perfluorooctanoic acid (PFOA)	335-67-1	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/kg	89.6 U	210 U	105 U	230 U	92.4 U	220 U	97.7 U	220 U	96.6 U	230 U	93.4 U
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/kg	17.9 U	210 U	21 U	230 U	18.5 U	220 U	19.5 U	220 U	19.3 U	230 U	18.7 U
Potassium Perfluorobutane Sulfonate	29420-49-3	ng/kg	17.9 U	--	21 U	--	18.5 U	--	19.5 U	--	19.3 U	--	18.7 U
Fluorotelomer sulfonic acid	757124-72-4	ng/kg	17.9 U	--	21 U	--	18.5 U	--	19.5 U	--	19.3 U	--	18.7 U
Fluorotelomer sulfonic acid (4:2)	757124-72-4_4:2	ng/kg	--	2100 U	--	2300 U	--	2200 U	--	2200 U	--	2300 U	--
Fluorotelomer sulfonic acid(8:2)	39108-34-4_8:2	ng/kg	--	2100 U	--	2300 U	--	2200 U	--	2200 U	--	2300 U	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	2991-50-6	ng/kg	17.9 U	2100 U	21 U	2300 U	18.5 U	2200 U	19.5 U	2200 U	19.3 U	2300 U	18.7 U
N-Methyl perfluorooctane sulfonamido acetic acid	2355-31-9	ng/kg	17.9 U	2100 U	21 U	2300 U	18.5 U	2200 U	19.5 U	2200 U	19.3 U	2300 U	18.7 U
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	39108-34-4	ng/kg	17.9 U	--	21 U	--	18.5 U	--	19.5 U	--	19.3 U	--	18.7 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	27619-97-2	ng/kg	--	2100 U	--	2300 U	--	2200 U	--	2200 U	--	2300 U	--
Total PFOS and PFOA	1763231/335671	ng/kg	45 I	0	0	0	24.9	740 I	287	580	379	240 JI	205 I
General Chemistry													
Fraction organic carbon (FOC)	FOC	%	--	0.4	--	0.4	--	0.2	--	--	--	--	--
Total organic carbon (TOC)	TOC	mg/kg	--	1000 U	--	1300	--	3600	--	--	--	--	--
Geotech													
Density	DENSITY	g/cc	--	1.72	--	1.85	--	1.62	--	--	--	--	--

Sample Location:			**MW-31S-19**	**MW-31S-19**	**MW-31S-19**	**MW-31S-19**
Sample Identification:			**S-12607-062019-SK-011**	**-12607-062019-SK-011~Sp**	**S-12607-062019-SK-012**	**S-12607-062019-SK-012~Split**
Sample Date:			**6/20/2019**	**6/20/2019**	**6/20/2019**	**6/20/2019**
Sample Depth:			**(20-25) ft BGS**	**(20-25) ft BGS**	**(25-30) ft BGS**	**(25-30) ft BGS**
Sample Type:				**USEPA Split**		**USEPA Split**
		Units				
Per/Polyfluoroalkyl Substances (PFAS)	**CAS Number**					
Perfluorobutane sulfonic acid (PFBS)	375-73-5	ng/kg	230 U	108 U	260 U	139 U
Perfluorobutanoic acid (PFBA)	375-22-4	ng/kg	99 J	--	260 U	--
Perfluorodecanesulfonic acid (PFDS)	335-77-3	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluorodecanoic acid (PFDA)	335-76-2	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluorododecanoic acid (PFDoDA)	307-55-1	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluoroheptanoic acid (PFHpA)	375-85-9	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluorohexane sulfonate (PFHxS)	108427-53-8	ng/kg	--	21.6 U	--	27.7 U
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	ng/kg	44 JI	--	260 U	--
Perfluorohexanoic acid (PFHxA)	307-24-4	ng/kg	230 U	43.3 U	260 U	55.5 U
Perfluorononane sulfonic acid (PFNS)	474511-07-4	ng/kg	230 U	--	260 U	--
Perfluorononanesulfonate (PFNS)	68259-12-1	ng/kg	--	21.6 U	--	27.7 U
Perfluorononanoic acid (PFNA)	375-95-1	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluorooctane sulfonamide (FOSA)	754-91-6	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	ng/kg	**350 J[d]**	87.1 I	650 U	33.3 U
Perfluorooctanoic acid (PFOA)	335-67-1	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluoropentanoic acid (PFPeA)	2706-90-3	ng/kg	230 U	108 U	260 U	139 U
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	ng/kg	230 U	21.6 U	260 U	27.7 U
Perfluoroundecanoic acid (PFUnA)	2058-94-8	ng/kg	230 U	21.6 U	260 U	27.7 U
Potassium Perfluorobutane Sulfonate	29420-49-3	ng/kg	--	21.6 U	--	27.7 U
Fluorotelomer sulfonic acid	757124-72-4	ng/kg	--	21.6 U	--	27.7 U
Fluorotelomer sulfonic acid (4:2)	757124-72-4_4:2	ng/kg	2300 U	--	2600 U	--
Fluorotelomer sulfonic acid(8:2)	39108-34-4_8:2	ng/kg	2300 U	--	2600 U	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	2991-50-6	ng/kg	2300 U	21.6 U	2600 U	27.7 U
N-Methyl perfluorooctane sulfonamido acetic acid	2355-31-9	ng/kg	2300 U	21.6 U	2600 U	27.7 U
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	39108-34-4	ng/kg	--	21.6 U	--	27.7 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	27619-97-2	ng/kg	2300 U	--	2600 U	--
Total PFOS and PFOA	1763231/335671	ng/kg	350	87.1 I	0	0
General Chemistry						
Fraction organic carbon (FOC)	FOC	%	--	--	1.2	--
Total organic carbon (TOC)	TOC	mg/kg	--	--	5800	--
Geotech						
Density	DENSITY	g/cc	--	--	1.57	--

Table 4

Analytical Results of Soil Leachate Samples
Eckles Road Site
Livonia, Michigan

Sample Location:		EGLE Generic Groundwater Cleanup Criteria: Residential and Nonresic			MW-31S-19	MW-31S-19	MW-31S-19	MW-31S-19	MW-31S-19	MW-31S-19
Sample Identification:		Residential Drinking Water	Non-Residential Drinking Water	Groundwater Surface Water Interface [2]	012607A-LEACH-SOIL 007	012607A-LEACH-SOIL 008	012607A-LEACH-SOIL 012	012607A-LEACH-SOIL 006	012607A-LEACH-SOIL 009	012607A-LEACH-SOIL 010
Sample Date:					6/27/2019	6/27/2019	6/27/2019	7/1/2019	7/1/2019	7/1/2019
Sample Type:					(5-10) ft BGS	(10-15) ft BGS	(25-30) ft BGS	(0.6-5) ft BGS	(15-20) ft BGS	(20-25) ft BGS
Parameters	**Units**	**a**	**b**	**c**						
Per/Polyfluoroalkyl Substances (PFAS)										
Perfluorobutane sulfonic acid (PFBS)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	0.22 J	2.1 U
Perfluorobutanoic acid (PFBA)	ng/L				1.5 J	1.9	1.9 U	5.8	2.4	1.9 J
Perfluorodecanesulfonic acid (PFDS)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluorodecanoic acid (PFDA)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluorododecanoic acid (PFDoDA)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluoroheptanoic acid (PFHpA)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L				0.37 JB	0.39 JB	0.52 JIB	0.35 JB	0.47 JB	0.63 JIB
Perfluorohexanoic acid (PFHxA)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluorononane sulfonic acid (PFNS)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluorononanoic acid (PFNA)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluorooctane sulfonamide (FOSA)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	70	70	12	2.3 I	7.7 I	1.9 U	0.85 J	10	7.6
Perfluorooctanoic acid (PFOA)	ng/L	70	70	12000	2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluoropentanoic acid (PFPeA)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluorotridecanoic acid (PFTrDA)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Perfluoroundecanoic acid (PFUnA)	ng/L				2.1 U	1.9 U	1.9 U	2.0 U	2.0 U	2.1 U
Fluorotelomer sulfonic acid (4:2)	ng/L				21 U	19 U	19 U	20 U	20 U	21 U
Fluorotelomer sulfonic acid(8:2)	ng/L				21 U	19 U	19 U	20 U	20 U	21 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L				21 U	19 U	19 U	20 U	20 U	21 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L				21 U	19 U	19 U	20 U	20 U	21 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6	ng/L				21 U	19 U	19 U	20 U	20 U	21 U
Total PFOS and PFOA	ng/L	70	70		2.3 I	7.7 I	0	0.85 J	10	7.6

Notes:

U - Not detected at the associated reporting limit.
J - Estimated concentration.
B - Result detected in associated method blank.

DRAFT - Reporting with Laboratory Qualifiers - Validation pending

(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
(5) 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 4

Analytical Results of Soil Leachate Samples
Eckles Road Site
Livonia, Michigan

Sample Location:		MW-31S-19	MW-A1-12S	MW-A1-12S	MW-A1-12S	MW-A1-12S	MW-A1-12S	Leach Water Supply
Sample Identification:		012607A-LEACH-SOIL 011	012607A-LEACH-SOIL 004	012607A-LEACH-SOIL 005	012607A-LEACH-SOIL 001	012607A-LEACH-SOIL 002	012607A-LEACH-SOIL 003	012607A-LEACHATE FLUID
Sample Date:		7/1/2019	6/27/2019	6/27/2019	7/1/2019	7/1/2019	7/1/2019	6/27/2019
Sample Type:		(20-25) ft BGS	(15-20) ft BGS	(20-23.5) ft BGS	(1-5) ft BGS	(5-10) ft BGS	(10-15) ft BGS	-
Parameters	Units	Duplicate						
Per/Polyfluoroalkyl Substances (PFAS)								
Perfluorobutane sulfonic acid (PFBS)	ng/L	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U
Perfluorobutanoic acid (PFBA)	ng/L	2.0 U	0.64 J	0.60 J	2.2	1.0 J	1.8 J	0.77 J
Perfluorodecanesulfonic acid (PFDS)	ng/L	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U
Perfluorodecanoic acid (PFDA)	ng/L	2.0 U	1.9 U	1.9 U	0.43 J	0.83 J	2.0 U	1.9 U
Perfluorododecanoic acid (PFDoDA)	ng/L	2.0 U	1.9 U	1.9 U	0.80 J	1.9 U	2.0 U	1.9 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	2.0 U	1.9 U	0.26 JI	2.0 U	1.9 U	2.0 U	1.9 U
Perfluoroheptanoic acid (PFHpA)	ng/L	2.0 U	1.9 U	0.38 JI	0.28 JI	1.9 U	2.0 U	1.9 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	0.64 JIB	0.48 JIB	1.9 U	0.26 JB	0.27 JB	0.30 JB	0.29 JB
Perfluorohexanoic acid (PFHxA)	ng/L	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U
Perfluorononane sulfonic acid (PFNS)	ng/L	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U
Perfluorononanoic acid (PFNA)	ng/L	2.0 U	1.9 U	1.9 U	0.30 J	0.26 J	2.0 U	1.9 U
Perfluorooctane sulfonamide (FOSA)	ng/L	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	8.4	1.9 U	1.9 U	2.0 U	1.9 U	0.67 J	1.9 U
Perfluorooctanoic acid (PFOA)	ng/L	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L	0.31 J	1.9 U	0.44 J	2.0 U	1.9 U	2.0 U	1.9 U
Perfluoropentanoic acid (PFPeA)	ng/L	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U
Perfluoroundecanoic acid (PFUnA)	ng/L	2.0 U	1.9 U	1.9 U	2.0 U	1.9 U	2.0 U	1.9 U
Fluorotelomer sulfonic acid (4:2)	ng/L	20 U	19 U	19 U	20 U	19 U	20 U	19 U
Fluorotelomer sulfonic acid(8:2)	ng/L	20 U	19 U	19 U	20 U	19 U	20 U	19 U
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	20 U	19 U	19 U	20 U	19 U	20 U	19 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	20 U	19 U	19 U	20 U	19 U	20 U	19 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6	ng/L	20 U	19 U	19 U	20 U	19 U	20 U	19 U
Total PFOS and PFOA	ng/L	8.4	0	0	0	0	0.67 J	0

Table 5

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

Sample Location:		EGLE Generic Groundwater Cleanup Criteria(1)			MW-31S-19	MW-31S-19	MW-31D-12	MW-31D-12	MW-31D-12	MW-31D-12	MW-67S-19	MW-67S-19	MW-67D-16	MW-67D-16
Sample Identification:		**Residential**	**Non-Residential**	**Groundwater**	**GW-12607-072219-DA-001**	**GW-12607-072219-DA-001A**	**GW-12607-072219-DA-002**	**GW-12607-072219-DA-002A**	**GW-12607-072219-DA-003**	**GW-12607-072219-DA-003A**	**GW-12607-072319-DA-010**	**GW-12607-072319-DA-010A**	**GW-12607-072319-DA-011**	**GW-12607-072319-DA-011A**
Sample Date:		**Drinking Water**	**Drinking Water**	**Surface Water**	**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**
Sample Type:				**Interface** [(2)]		**USEPA Split**		**USEPA Split**	**Duplicate**	**USEPA Split Duplicate**		**USEPA Split**		**USEPA Split**
Parameters	**Units**	**a**	**b**	**c**										
Per/Polyfluoroalkyl Substances (PFAS)														
Perfluorobutane sulfonic acid (PFBS)	ng/L				1.3 J	50 U	2.9 J	50 U	25 U	50 U	1.4 J	50 U	1.1 J	50 U
Perfluorobutanoic acid (PFBA)	ng/L				5.7	--	25 U	--	25 U	--	4.8	--	17	--
Perfluorodecanesulfonic acid (PFDS)	ng/L				2.0 U	10 U	25 U	10 U	25 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluorodecanoic acid (PFDA)	ng/L				2.0 U	10 U	25 U	10 U	25 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluorododecanoic acid (PFDoDA)	ng/L				2.0 U	10 U	25 U	10 U	25 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L				0.87 IJ	10 U	5.8 IJ	10 U	6.6 IJ	10 U	0.24 J	10 U	5.0 I	10 U
Perfluoroheptanoic acid (PFHpA)	ng/L				1.0 J	15 U	25 U	15 U	3.2 IJ	15 U	2.1	15 U	1.3 J	15 U
Perfluorohexane sulfonate (PFHxS)	ng/L				--	10 U	--	24.9 I	--	23.6 I	--	10 U	--	19 I
Perfluorohexane sulfonic acid (PFHxS)	ng/L				3.4 IB	--	28 IB	--	25 IB	--	2.3 B	--	20 IB	--
Perfluorohexanoic acid (PFHxA)	ng/L				2.2	100 U	25 U	100 U	25 U	100 U	4.4	100 U	1.9 U	100 U
Perfluorononane sulfonic acid (PFNS)	ng/L				2.0 U	--	25 U	--	25 U	--	1.9 U	--	1.9 U	--
Perfluorononanesulfonate (PFNS)	ng/L				--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Perfluorononanoic acid (PFNA)	ng/L				0.29 J	150 U	25 U	150 U	25 U	150 U	1.9 U	150 U	0.45 J	150 U
Perfluorooctane sulfonamide (FOSA)	ng/L				2.0 U	10 U	25 U	10 U	25 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	70	70	12	**72 I**[abc]	**64.5**[c]	**370 I**[abc]	**342 I**[abc]	**390 I**[abc]	**329 I**[abc]	**14**[c]	11.3 I	**170 I**[abc]	**155 I**[abc]
Perfluorooctanoic acid (PFOA)	ng/L	70	70	12000	3.5	10 U	25 U	12.1	25 U	12.6	5.1	10 U	6.5	10 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L				0.83 J	10 U	4.7 IJ	10 U	4.9 IJ	10 U	0.29 J	10 U	3.5 I	10 U
Perfluoropentanoic acid (PFPeA)	ng/L				1.3 J	50 U	25 U	50 U	25 U	50 U	2.5	50 U	1.9 U	50 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L				2.0 U	10 U	25 U	10 U	25 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluorotridecanoic acid (PFTrDA)	ng/L				2.0 U	10 U	25 U	10 U	25 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluoroundecanoic acid (PFUnA)	ng/L				2.0 U	10 U	25 U	10 U	25 U	10 U	1.9 U	10 U	1.9 U	10 U
Total PFOS and PFOA	ng/L				75.5 I	64.5	370 I	354.1 I	390 I	341.6 I	19.1	11.3 I	176.5 I	155 I
Potassium Perfluorobutane Sulfonate	ng/L				--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Fluorotelomer sulfonic acid	ng/L				--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Fluorotelomer sulfonic acid (4:2)	ng/L				20 U	--	250 U	--	250 U	--	19 U	--	19 U	--
Fluorotelomer sulfonic acid(8:2)	ng/L				20 U	--	250 U	--	250 U	--	19 U	--	19 U	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L				20 U	10 U	250 U	10 U	250 U	10 U	19 U	10 U	19 U	10 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L				20 U	10 U	250 U	10 U	250 U	10 U	19 U	10 U	19 U	10 U
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L				--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L				20 U	--	250 U	--	250 U	--	2.7 J	--	19 U	--
Field Parameters														
Conductivity, field	mS/cm				0.858	--	12	--	12	--	0.775	--	3.61	--
Dissolved oxygen (DO), field	mg/L				0.56	--	24.46	--	24.46	--	4.72	--	0.61	--
Oxidation reduction potential (ORP), field	millivolts				207	--	-485	--	-485	--	164	--	-41	--
pH, field	s.u.	6.5 - 8.5	6.5 - 8.5		7.29	--	**10.22**[ab]	--	**10.22**[ab]	--	6.56	--	6.76	--
Temperature, sample	Deg C				19.94	--	19.11	--	19.11	--	18.26	--	17.67	--
Turbidity, field	NTU				8.19	--	13.49	--	13.49	--	16.2	--	24.8	--

4.14

Notes:

U - Not detected at the associated reporting limit.
J - Estimated concentration.
B - Result detected in associated method blank.

DRAFT - Reporting with Laboratory Qualifiers - Validation pending

(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
(5) 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 5

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

Sample Location:		MW-69S-19	MW-69S-19	MW-69D-16	MW-69D-16	MW-74S-19	MW-74S-19	MW-74S-19	MW-74S-19	MW-74D-16	MW-74D-16
Sample Identification:		**GW-12607-072319-DA-008**	**GW-12607-072319-DA-008A**	**GW-12607-072319-DA-009**	**GW-12607-072319-DA-009A**	**GW-12607-072319-DA-013**	**GW-12607-072319-DA-013A**	**GW-12607-072319-DA-014**	**GW-12607-072319-DA-014A**	**GW-12607-072319-DA-012**	**GW-12607-072319-DA-012A**
Sample Date:		**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**
Sample Type:			**USEPA Split**		**USEPA Split**		**USEPA Split**	**Duplicate**	**USEPA Split Duplicate**		**USEPA Split**
Parameters	**Units**										
Per/Polyfluoroalkyl Substances (PFAS)											
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.3 J	50 U	3.0 J	50 U	1.5 J	50 U	1.8 J	50 U	0.94 J	50 U
Perfluorobutanoic acid (PFBA)	ng/L	7.5	--	5.3 J	--	3.5	--	3.6	--	4.6	--
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	10 U	8.9 U	10 U	1.8 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluorodecanoic acid (PFDA)	ng/L	0.83 J	10 U	8.9 U	10 U	1.8 U	10 U	0.37 J	10 U	1.9 U	10 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	10 U	8.9 U	10 U	1.8 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.6 J	10 U	8.9 U	10 U	0.27 J	10 U	1.9 U	10 U	0.34 J	10 U
Perfluoroheptanoic acid (PFHpA)	ng/L	5.4	15 U	1.5 J	15 U	0.38 J	15 U	0.41 J	15 U	0.71 J	15 U
Perfluorohexane sulfonate (PFHxS)	ng/L	--	10 U	--	15.3 I	--	10 U	--	10 U	--	10 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	4.7 B	--	49 B	--	1.5 JB	--	0.58 JB	--	3.5 B	--
Perfluorohexanoic acid (PFHxA)	ng/L	5.4	100 U	8.9 U	100 U	1.8 U	100 U	0.60 J	100 U	1.9 U	100 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.9 U	--	8.9 U	--	1.8 U	--	1.9 U	--	1.9 U	--
Perfluorononanesulfonate (PFNS)	ng/L	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Perfluorononanoic acid (PFNA)	ng/L	7.2	150 U	8.9 U	150 U	0.76 J	150 U	0.72 J	150 U	1.9 U	150 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 U	10 U	8.9 U	10 U	1.8 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	**780[abc]**	**666[abc]**	**22[c]**	**35.8 I[c]**	**20[c]**	**18.7[c]**	**22[c]**	**20[c]**	8.1	10 U
Perfluorooctanoic acid (PFOA)	ng/L	27	34	4.7 J	10 U	2.1	10 U	2.3	10 U	3.2	10 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L	0.66 J	10 U	8.9 U	10 U	1.8 U	10 U	0.39 J	10 U	0.52 J	10 U
Perfluoropentanoic acid (PFPeA)	ng/L	3.8	50 U	8.9 U	50 U	0.56 J	50 U	0.65 J	50 U	1.3 J	50 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	10 U	8.9 U	10 U	1.8 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	10 U	8.9 U	10 U	1.8 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	10 U	8.9 U	10 U	1.8 U	10 U	1.9 U	10 U	1.9 U	10 U
Total PFOS and PFOA	ng/L	807	700	26.7 J	35.8 I	22.1	18.7	24.3	20	11.3	0
Potassium Perfluorobutane Sulfonate	ng/L	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Fluorotelomer sulfonic acid	ng/L	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Fluorotelomer sulfonic acid (4:2)	ng/L	19 U	--	180 U	--	18 U	--	19 U	--	19 U	--
Fluorotelomer sulfonic acid(8:2)	ng/L	19 U	--	89 U	--	18 U	--	19 U	--	19 U	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	19 U	10 U	89 U	10 U	18 U	10 U	19 U	10 U	19 U	10 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	19 U	10 U	89 U	10 U	18 U	10 U	19 U	10 U	19 U	10 U
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	19 U	--	89 U	--	4.8 J	--	4.4 J	--	19 U	--
Field Parameters											
Conductivity, field	mS/cm	0.53	--	12.01	--	0.48	--	0.48	--	0.664	--
Dissolved oxygen (DO), field	mg/L	0.1	--	0.01	--	ND	--	ND	--	ND	--
Oxidation reduction potential (ORP), field	millivolts	39.4	--	1	--	-23	--	-23	--	-103	--
pH, field	s.u.	7.33	--	6.5	--	7.41	--	7.41	--	7.34	--
Temperature, sample	Deg C	19.76	--	17.26	--	20.49	--	20.49	--	19.07	--
Turbidity, field	NTU	13.91	--	3.19	--	9.16	--	9.16	--	9.8	--

Table 5

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

Sample Location:		MW-82S-19	MW-82S-19	MW-82D-18	MW-82D-18	MW-A1-11S	MW-A1-11S	MW-A1-11D	MW-A1-11D	MW-A1-12S	MW-A1-12S	MW-A1-12D	MW-A1-12D
Sample Identification:		**GW-12607-072319-DA-015**	**GW-12607-072319-DA-015A**	**GW-12607-072319-DA-016**	**GW-12607-072319-DA-016A**	**GW-12607-072219-DA-004**	**GW-12607-072219-DA-004A**	**GW-12607-072219-DA-005**	**GW-12607-072219-DA-005A**	**GW-12607-072219-DA-006**	**GW-12607-072219-DA-006A**	**GW-12607-072219-DA-007**	**GW-12607-072219-DA-007A**
Sample Date:		**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/22/2019**
Sample Type:			**USEPA Split**		**USEPA Split**		**USEPA Split**		**USEPA Split**		**USEPA Split**		**USEPA Split**
Parameters	**Units**												
Per/Polyfluoroalkyl Substances (PFAS)													
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.9	50 U	0.49 J	50 U	1.2 J	50 U	1.4 J	50 U	1.1 J	50 U	1.6 J	50 U
Perfluorobutanoic acid (PFBA)	ng/L	4.4	--	5.7	--	4.4	--	6.5	--	2.8	--	11	--
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.0 J	10 U	1.9 U	10 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	0.97 IJ	10 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.4 J	15 U	1.2 J	15 U	0.47 J	15 U	0.73 J	15 U	0.76 J	15 U	1.8 J	15 U
Perfluorohexane sulfonate (PFHxS)	ng/L	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	3.2 B	--	1.2 JB	--	0.60 JB	--	0.95 IJB	--	0.42 JB	--	9.3 IB	--
Perfluorohexanoic acid (PFHxA)	ng/L	1.9	100 U	2.2	100 U	1.9 U	100 U	0.62 J	100 U	1.9	100 U	1.9 U	100 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.9 U	--	1.9 U	--	1.9 U	--	1.9 U	--	1.9 U	--	1.9 U	--
Perfluorononanesulfonate (PFNS)	ng/L	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Perfluorononanoic acid (PFNA)	ng/L	1.9 U	150 U	1.9 U	150 U	1.9 U	150 U	1.9 U	150 U	0.41 J	150 U	0.64 J	150 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	4.7	10 U	2.9	10 U	4.6	10 U	5.9	10 U	1.9	10 U	**28 I[c]**	**27.9 I[c]**
Perfluorooctanoic acid (PFOA)	ng/L	4.2	10 U	2.1	10 U	1.3 J	10 U	2.2	10 U	1.9 U	10 U	2.4	10.5
Perfluoropentane sulfonic acid (PFPeS)	ng/L	0.39 J	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	2.0 I	10 U
Perfluoropentanoic acid (PFPeA)	ng/L	1.4 J	50 U	1.4 J	50 U	0.86 J	50 U	1.0 J	50 U	1.3 J	50 U	1.9 U	50 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U	1.9 U	10 U
Total PFOS and PFOA	ng/L	8.9	0	5	0	5.9 J	0	8.1	0	1.9	0	30.4 I	38.4 I
Potassium Perfluorobutane Sulfonate	ng/L	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Fluorotelomer sulfonic acid	ng/L	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Fluorotelomer sulfonic acid (4:2)	ng/L	19 U	--	19 U	--	19 U	--	19 U	--	19 U	--	19 U	--
Fluorotelomer sulfonic acid(8:2)	ng/L	19 U	--	19 U	--	19 U	--	19 U	--	19 U	--	19 U	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	19 U	10 U	19 U	10 U	19 U	10 U	19 U	10 U	19 U	10 U	19 U	10 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	19 U	10 U	19 U	10 U	19 U	10 U	19 U	10 U	19 U	10 U	19 U	10 U
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U	--	10 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	4.8 J	--	19 U	--	19 U	--	19 U	--	2.3 J	--	19 U	--
Field Parameters													
Conductivity, field	mS/cm	0.566	--	0.249	--	0.41	--	0.8	--	0.371	--	4.51	--
Dissolved oxygen (DO), field	mg/L	1.64	--	0.41	--	0.12	--	ND	--	2.67	--	1.45	--
Oxidation reduction potential (ORP), field	millivolts	116	--	38	--	75.5	--	-391.1	--	272	--	-302	--
pH, field	s.u.	6.68	--	7.15	--	7.21	--	7.38	--	**6.43[ab]**	--	**8.55[ab]**	--
Temperature, sample	Deg C	20.3	--	16.59	--	18.84	--	17.18	--	19.73	--	17.03	--
Turbidity, field	NTU	14.9	--	12.5	--	26.26	--	7.45	--	15.6	--	2.45	--

Table 5

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

Sample Location:		**Equipment Blank**	**Equipment Blank**	**Field Blank**	**Field Blank**	**Field Blank**	**Field Blank**
Sample Identification:		**EB-12607-072219-DA-001**	**EB-12607-072219-DA-001A**	**FB-12607-072219-DA-001**	**FB-12607-072219-DA-001A**	**FB-12607-072319-DA-002**	**FB-12607-072319-DA-002A**
Sample Date:		**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/22/2019**	**7/23/2019**	**7/23/2019**
Sample Type:			**USEPA Split**		**USEPA Split**		**USEPA Split**
Parameters	**Units**						
Per/Polyfluoroalkyl Substances (PFAS)							
Perfluorobutane sulfonic acid (PFBS)	ng/L	1.9 U	50 U	1.9 U	50 U	1.8 U	50 U
Perfluorobutanoic acid (PFBA)	ng/L	0.35 J	--	1.9 U	--	1.8 U	--
Perfluorodecanesulfonic acid (PFDS)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Perfluorodecanoic acid (PFDA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Perfluorododecanoic acid (PFDoDA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Perfluoroheptane sulfonic acid (PFHpS)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Perfluoroheptanoic acid (PFHpA)	ng/L	1.9 U	15 U	1.9 U	15 U	1.8 U	15 U
Perfluorohexane sulfonate (PFHxS)	ng/L	--	10 U	--	10 U	--	10 U
Perfluorohexane sulfonic acid (PFHxS)	ng/L	0.27 JB	--	0.30 JB	--	0.24 JB	--
Perfluorohexanoic acid (PFHxA)	ng/L	1.9 U	100 U	1.9 U	100 U	1.8 U	100 U
Perfluorononane sulfonic acid (PFNS)	ng/L	1.9 U	--	1.9 U	--	1.8 U	--
Perfluorononanesulfonate (PFNS)	ng/L	--	10 U	--	10 U	--	10 U
Perfluorononanoic acid (PFNA)	ng/L	1.9 U	150 U	1.9 U	150 U	1.8 U	150 U
Perfluorooctane sulfonamide (FOSA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Perfluorooctane sulfonic acid (PFOS)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Perfluorooctanoic acid (PFOA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Perfluoropentane sulfonic acid (PFPeS)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Perfluoropentanoic acid (PFPeA)	ng/L	1.9 U	50 U	1.9 U	50 U	1.8 U	50 U
Perfluorotetradecanoic acid (PFTeDA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Perfluorotridecanoic acid (PFTrDA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Perfluoroundecanoic acid (PFUnA)	ng/L	1.9 U	10 U	1.9 U	10 U	1.8 U	10 U
Total PFOS and PFOA	ng/L	0	0	0	0	0	0
Potassium Perfluorobutane Sulfonate	ng/L	--	10 U	--	10 U	--	10 U
Fluorotelomer sulfonic acid	ng/L	--	10 U	--	10 U	--	10 U
Fluorotelomer sulfonic acid (4:2)	ng/L	19 U	--	19 U	--	18 U	--
Fluorotelomer sulfonic acid(8:2)	ng/L	19 U	--	19 U	--	18 U	--
N-Ethyl perfluorooctane sulfonamidoacetic acid	ng/L	19 U	10 U	19 U	10 U	18 U	10 U
N-Methyl perfluorooctane sulfonamido acetic acid	ng/L	19 U	10 U	19 U	10 U	18 U	10 U
Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	ng/L	--	10 U	--	10 U	--	10 U
Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	ng/L	19 U	--	19 U	--	18 U	--
Field Parameters							
Conductivity, field	mS/cm	--	--	--	--	--	--
Dissolved oxygen (DO), field	mg/L	--	--	--	--	--	--
Oxidation reduction potential (ORP), field	millivolts	--	--	--	--	--	--
pH, field	s.u.	--	--	--	--	--	--
Temperature, sample	Deg C	--	--	--	--	--	--
Turbidity, field	NTU	--	--	--	--	--	--

Table 6

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

Sample Location:		EGLE Generic Groundwater Cleanup Criteria: Residential and Nonresidential (1)			MW-15S	MW-22-2D	MW-22-2D	MW-24D-10	MW-27D-12	MW-28D-12	MW-29D-12	MW-30D-12	MW-30D-12
Sample Identification:		**Residential Drinking Water**	**Non-Residential Drinking Water**	**Groundwater Surface Water Interface [2]**	**GW-12607-072319-DA-017**	**GW-12607-072619-DA-043**	**GW-12607-072619-DA-044**	**GW-12607-072619-DA-042**	**GW-12607-072519-DA-031**	**GW-12607-072519-DA-032**	**GW-12607-072519-DA-033**	**GW-12607-072519-DA-034**	**GW-12607-072519-DA-035**
Sample Date:					**7/23/2019**	**7/26/2019**	**7/26/2019**	**7/26/2019**	**7/25/2019**	**7/25/2019**	**7/25/2019**	**7/25/2019**	**7/25/2019**
Sample Type:							**Duplicate**						**Duplicate**
Parameters	**Units**	**a**	**b**	**c**									
Metals													
Chromium	mg/L	0.1	0.1	0.10	0.0056	0.005 U	0.005 U	0.005 U	0.079	**0.28**[abc]	0.0097	0.05 U	0.005 U
Chromium III (trivalent)	mg/L	0.1	0.1	0.10	0.01 U	0.01 U	0.01 U	0.01 U	0.079	**0.28**[abc]	0.01 U	0.01 U	0.01 U
Chromium VI (hexavalent)	mg/L	0.1	0.1	0.011	0.01 U	0.01 U	0.01 U	0.01 U	0.5 U	0.5 U	0.01 U	1 U	1 U
Manganese	mg/L	0.05	0.05	2.8	0.042	**0.08**[ab]	**0.083**[ab]	**0.33**[ab]	0.025	0.015 U	0.015 U	0.15 U	**0.15**[ab]
Nickel	mg/L	0.1	0.1	0.0730	0.04 U	**1.9**[abc]	**1.9**[abc]	0.04 U	**0.12**[abc]	**0.41**[abc]	0.04 U	**2.4**[abc]	**4.8**[abc]
Sodium	mg/L	230	350		23	88	92	230	**3000**[ab]	**6800**[ab]	**1700**[ab]	**6800**[ab]	**10000**[ab]
Field Parameters													
Conductivity, field	mS/cm				0.41	1.28	1.28	1.83	12.73	22.63	6.66	36.3	36.3
Dissolved oxygen (DO), field	mg/L				0.91	0.33	0.33	0.5	3.93	0.14	0.08	0.06	0.06
Oxidation reduction potential (ORP), field	millivolts				39.9	-256	-256	-315.2	-241	-619.7	-542.9	-624.8	-624.8
pH, field	s.u.	6.5 - 8.5	6.5 - 8.5		7.23	6.66	6.66	7.7	**10.15**[ab]	**8.89**[ab]	8.39	8.44	8.44
Temperature, sample	Deg C				23.33	18	18	20.2	20	19.4	19.7	19.4	19.4
Turbidity, field	NTU				12.01	12	12	1.04	3.99	3.66	22.3	23.8	23.8

Notes:

U - Not detected at the associated reporting limit.
J - Estimated concentration.
B - Result detected in associated method blank.

DRAFT - Reporting with Laboratory Qualifiers - Validation pending

(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
(5) 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 6

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

Sample Location:		**MW-31D-12**	**MW-31D-12**	**MW-32D-12**	**MW-34D-12**	**MW-38D-13**	**MW-39D-13**	**MW-40D-13**	**MW-41D-13**	**MW-42D-15**	**MW-46D-15**	**MW-53D-15**
Sample Identification:		**GW-12607-072219-DA-002**	**GW-12607-072219-DA-003**	**GW-12607-072519-DA-038**	**GW-12607-072519-DA-039**	**GW-12607-072419-DA-018**	**GW-12607-072419-DA-019**	**GW-12607-072519-DA-029**	**GW-12607-072419-DA-023**	**GW-12607-072419-DA-024**	**GW-12607-072419-DA-025**	**GW-12607-072419-DA-026**
Sample Date:		**7/22/2019**	**7/22/2019**	**7/25/2019**	**7/25/2019**	**7/24/2019**	**7/24/2019**	**7/25/2019**	**7/24/2019**	**7/24/2019**	**7/24/2019**	**7/24/2019**
Sample Type:												
Parameters	**Units**											
Metals												
Chromium	mg/L	**9**[abc]	**12**[abc]	**0.13**[abc]	0.005 U	0.015	0.005 U	0.005 U	0.02	**1.4**[abc]	**0.28**[abc]	0.033
Chromium III (trivalent)	mg/L	**9**[abc]	**12**[abc]	**0.13**[abc]	0.01 U	0.015	0.01 U	0.01 U	0.02	**1.4**[abc]	**0.28**[abc]	0.033
Chromium VI (hexavalent)	mg/L	0.5 U	0.5 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Manganese	mg/L	**0.49**[ab]	**1.2**[ab]	0.018	**0.42**[ab]	**0.26**[ab]	**0.12**[ab]	**0.056**[ab]	**0.49**[ab]	**0.071**[ab]	**0.4**[ab]	**0.37**[ab]
Nickel	mg/L	**0.84**[abc]	**1.3**[abc]	**1.3**[abc]	**1.3**[abc]	0.048	**0.28**[abc]	**2.4**[abc]	0.04 U	0.04 U	0.04 U	**0.24**[abc]
Sodium	mg/L	**3100**[ab]	**4400**[ab]	**4000**[ab]	**570**[ab]	24	15	61	26	62	30	46
Field Parameters												
Conductivity, field	mS/cm	12	12	15.2	2.46	0.65	0.44	0.739	0.93	0.51	0.575	0.86
Dissolved oxygen (DO), field	mg/L	24.46	24.46	1.45	0.2	0.69	0.41	1.75	0.06	1.05	1.26	0.05
Oxidation reduction potential (ORP), field	millivolts	-485	-485	-253	-456.6	-1	-10	130	-390.3	-197	-173	-409.4
pH, field	s.u.	**10.22**[ab]	**10.22**[ab]	**9.99**[ab]	7.51	**6.09**[ab]	6.56	**6.03**[ab]	7.61	7.24	**6.16**[ab]	7.76
Temperature, sample	Deg C	19.11	19.11	18.36	18.9	18.47	18.75	17.69	16.6	18.06	19.54	17.1
Turbidity, field	NTU	13.49	13.49	15.3	23.2	12.3	55.2	4.97	4.45	10.9	22.6	3.41

Table 6

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

Sample Location:		**MW-57D-15**	**MW-61D-15**	**MW-66D-16**	**MW-67D-16**	**MW-69D-16**	**MW-73D-16**	**MW-74D-16**	**MW-76D-16**	**MW-80D-16**	**MW-81D-16**	**MW-31S-19**
Sample Identification:		**GW-12607-072419-DA-027**	**GW-12607-072419-DA-028**	**GW-12607-072519-DA-041**	**GW-12607-072319-DA-011**	**GW-12607-072319-DA-009**	**GW-12607-072519-DA-036**	**GW-12607-072319-DA-012**	**GW-12607-072619-DA-045**	**GW-12607-072519-DA-040**	**GW-12607-072519-DA-030**	**GW-12607-072219-DA-001**
Sample Date:		**7/24/2019**	**7/24/2019**	**7/25/2019**	**7/23/2019**	**7/23/2019**	**7/25/2019**	**7/23/2019**	**7/26/2019**	**7/25/2019**	**7/25/2019**	**7/22/2019**
Sample Type:												
Parameters	**Units**											
Metals												
Chromium	mg/L	0.005 U	0.005 U	0.031	**0.38**[abc]	0.0054	0.005 U	0.014	0.005 U	**0.17**[abc]	0.013	0.1
Chromium III (trivalent)	mg/L	0.01 U	0.01 U	0.016	**0.38**[abc]	0.01 U	0.01 U	0.014	0.01 U	**0.17**[abc]	0.013	0.01 U
Chromium VI (hexavalent)	mg/L	0.01 U	0.01 U	**0.014**[c]	0.01 U	**0.035**[c]	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.11**[abc]
Manganese	mg/L	0.015 U	**0.16**[ab]	**1.4**[ab]	**0.73**[ab]	**3**[abc]	**0.1**[ab]	**0.14**[ab]	**0.14**[ab]	**0.46**[ab]	**0.53**[ab]	**0.29**[ab]
Nickel	mg/L	0.055	**2.5**[abc]	0.044	**0.34**[abc]	**560**[abc]	**0.66**[abc]	**0.81**[abc]	**0.21**[abc]	0.04 U	0.04 U	**0.4**[abc]
Sodium	mg/L	**940**[ab]	99	**1400**[ab]	**870**[ab]	**2600**[ab]	**600**[ab]	42	**250**[a]	**770**[ab]	29	18
Field Parameters												
Conductivity, field	mS/cm	3.25	1	6.23	3.61	12.01	2.89	0.664	1.93	3.38	0.775	0.858
Dissolved oxygen (DO), field	mg/L	1.07	0.19	0.43	0.61	0.01	0.08	ND	0.25	0.5	0.9	0.56
Oxidation reduction potential (ORP), field	millivolts	-364	-417.2	-394.2	-41	1	-442.1	-103	-416.5	-291.6	96	207
pH, field	s.u.	**10.29**[ab]	7.85	7.85	6.76	6.5	8.15	7.34	7.94	7.35	6.76	7.29
Temperature, sample	Deg C	18.55	18.2	18.8	17.67	17.26	22.3	19.07	16.2	19.2	20.28	19.94
Turbidity, field	NTU	3.08	4.21	2	24.8	3.19	9.97	9.8	2.49	3.93	4.86	8.19

Table 6

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

Sample Location:		**MW-67S-19**	**MW-69S-19**	**MW-74S-19**	**MW-74S-19**	**MW-82D-18**	**MW-82S-19**	**MW-A1-3S**	**MW-A1-4S**	**MW-A1-4S**	**MW-A1-5S**	**MW-A1-11D**
Sample Identification:		**GW-12607-072319-DA-010**	**GW-12607-072319-DA-008**	**GW-12607-072319-DA-013**	**GW-12607-072319-DA-014**	**GW-12607-072319-DA-016**	**GW-12607-072319-DA-015**	**GW-12607-072419-DA-020**	**GW-12607-072419-DA-021**	**GW-12607-072419-DA-022**	**GW-12607-072519-DA-037**	**GW-12607-072219-DA-005**
Sample Date:		**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/23/2019**	**7/24/2019**	**7/24/2019**	**7/24/2019**	**7/25/2019**	**7/22/2019**
Sample Type:					**Duplicate**							
Parameters	**Units**											
Metals												
Chromium	mg/L	0.069	0.0062	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	**23**[abc]	**26**[abc]	**0.88**[abc]	0.005 U
Chromium III (trivalent)	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**2.1**[abc]	**0.24**[abc]	0.01 U
Chromium VI (hexavalent)	mg/L	**0.061**[c]	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**24**[abc]	**24**[abc]	**0.64**[abc]	0.01 U
Manganese	mg/L	0.033	**1.3**[ab]	**0.66**[ab]	**0.67**[ab]	**0.16**[ab]	0.024	0.015 U	0.048	0.05	0.015 U	**0.29**[ab]
Nickel	mg/L	0.04 U	0.04 U	**0.089**[c]	**0.087**[c]	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.29**[abc]
Sodium	mg/L	97	79	10	10	12	45	160	13	13	5 U	160
Field Parameters												
Conductivity, field	mS/cm	0.775	0.53	0.48	0.48	0.249	0.566	0.92	0.76	0.76	0.261	0.8
Dissolved oxygen (DO), field	mg/L	4.72	0.1	ND	ND	0.41	1.64	0.26	1.81	1.81	7.07	ND
Oxidation reduction potential (ORP), field	millivolts	164	39.4	-23	-23	38	116	-375.6	-260.7	-260.7	275	-391.1
pH, field	s.u.	6.56	7.33	7.41	7.41	7.15	6.68	7.75	7.23	7.23	6.61	7.38
Temperature, sample	Deg C	18.26	19.76	20.49	20.49	16.59	20.3	20.5	18.8	18.8	19.87	17.18
Turbidity, field	NTU	16.2	13.91	9.16	9.16	12.5	14.9	4.73	2.93	2.93	2.81	7.45

Sample Location:		**MW-A1-11S**	**MW-A1-12D**	**MW-A1-12S**
Sample Identification:		**GW-12607-072219-DA-004**	**GW-12607-072219-DA-007**	**GW-12607-072219-DA-006**
Sample Date:		**7/22/2019**	**7/22/2019**	**7/22/2019**
Sample Type:				
Parameters	**Units**			
Metals				
Chromium	mg/L	0.005 U	0.0077	0.045
Chromium III (trivalent)	mg/L	0.01 U	0.01 U	0.045
Chromium VI (hexavalent)	mg/L	0.01 U	0.5 U	0.01 U
Manganese	mg/L	**0.16**[ab]	0.017	**0.41**[ab]
Nickel	mg/L	**0.084**[c]	**0.086**[c]	0.04 U
Sodium	mg/L	10	**1200**[ab]	5 U
Field Parameters				
Conductivity, field	mS/cm	0.41	4.51	0.371
Dissolved oxygen (DO), field	mg/L	0.12	1.45	2.67
Oxidation reduction potential (ORP), field	millivolts	75.5	-302	272
pH, field	s.u.	7.21	**8.55**[ab]	**6.43**[ab]
Temperature, sample	Deg C	18.84	17.03	19.73
Turbidity, field	NTU	26.26	2.45	15.6

Attachment A
Monitoring Well Stratigraphic Logs

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ECKLES RD
PROJECT NUMBER: 012607A-T31Y19
CLIENT: RACER TRUST
LOCATION: LIVONIA, MI

HOLE DESIGNATION: SB/MW31D-12
DATE COMPLETED: 20 June 2019
DRILLING METHOD: GEOPROBE-D.P.
FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE	SAMPLE PID (ppm)
	CONCRETE	0.60	CONCRETE BENTONITE CHIPS					
2	SP-SAND, trace silt, with fine to coarse gravel, compact, fine grained, poorly graded, brown, moist			1DP		70		7.9
4			2" PVC WELL CASING					12.9
6	- wet at 6.3ft BGS		8" BOREHOLE					
8	SP/GP-SAND/GRAVEL, compact, fine to coarse sand, fine grained gravel, poorly graded, brown, wet	7.50	2" PVC WELL SCREEN	2DP		95		20.8
10			SAND PACK					19.5
12	SM-SILTY SAND, trace fine gravel, compact, fine grained, poorly graded, gray, wet	11.00		3DP		85		14.1
14	- with fine gravels/gravel seem at 14.0ft BGS							22.4
16	- fine gravel seem at 15.6ft BGS							
18				4DP		40		14.7
20	- black (odorous, sulfur odor), no gravel at 20.0ft BGS							21.2
22				5DP		80		20.8
24								
26	- brown at 25.0ft BGS							123.3
28	CL-SILTY CLAY, very stiff, low plasticity, brownish-gray, moist	27.40		6DP		90		32.9
30	END OF BOREHOLE @ 30.0ft BGS	30.00						32.9
32								
34								
36								
38								

WELL DETAILS
Screened interval:
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
0.50 to 1.50ft BGS
Material: BENTONITE CHIPS
Sand Pack:
1.50 to 13.00ft BGS
Material: #4 SAND

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

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ECKLES RD
PROJECT NUMBER: 012607A-T31Y19
CLIENT: RACER TRUST
LOCATION: LIVONIA, MI

HOLE DESIGNATION: SB/MW67D-16
DATE COMPLETED: 21 June 2019
DRILLING METHOD: GEOPROBE-D.P.
FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE	SAMPLE PID (ppm)
0	TOPSOIL - with fine to coarse gravel, brown at 0.7ft BGS	0.40	CONCRETE BENTONITE CHIPS					
2	SP-SAND, trace silt, trace fine to coarse gravel, compact, fine to coarse sand, poorly graded, light brown, moist			1DP		70		1.7
4			2" PVC WELL CASING					1.8
6	- wet at 6.3ft BGS		8" BOREHOLE					
8				2DP		60		2.0
10			2" PVC WELL SCREEN SAND PACK					1.8
12				3DP		25		1.1
14								1.9
16	- fine gravel seem at 15.7ft BGS - light grayish brown at 15.8ft BGS							
18				4DP		85		1.5
20								1.5
22				5DP		95		1.4
24	- dark gray to black at 24.2ft BGS							1.5
26	CL-SILTY CLAY, trace fine to coarse gravel, very stiff, low plasticity, dark brown, moist	25.50						
28	- Refusal at 28.0ft BGS END OF BOREHOLE @ 28.0ft BGS	28.00		6DP		100		1.2
30								
32								
34								
36								
38								

WELL DETAILS
Screened interval:
3.00 to 13.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
0.50 to 1.50ft BGS
Material: BENTONITE CHIPS
Sand Pack:
1.50 to 13.00ft BGS
Material: #4 SAND

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

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ECKLES RD
PROJECT NUMBER: 012607A-T31Y19
CLIENT: RACER TRUST
LOCATION: LIVONIA, MI

HOLE DESIGNATION: SB/MW69D-16
DATE COMPLETED: 21 June 2019
DRILLING METHOD: GEOPROBE-D.P.
FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE	SAMPLE PID (ppm)
0	TOPSOIL	0.40	CONCRETE					
2	SM-SILTY SAND, trace clay, with fine to coarse gravel, compact, fine grained, poorly graded, brown, moist		BENTONITE CHIPS	1DP		65		0.3
4	- wet at 3.0ft BGS		2" PVC WELL CASING					0.5
6			8" BOREHOLE					
8			2" PVC WELL SCREEN	2DP		75		0.8
10			SAND PACK					0.8
12				3DP		45		0.6
14								0.5
16	- trace fine gravel, dark gray at 17.0ft BGS							
18				4DP		75		1.1
20	- trace fine gravel, black at 20.5ft BGS							0.6
22	SM-SILTY SAND, trace fine gravel, compact, fine grained, poorly graded, light brown, wet	21.50		5DP		90		0.8
24								0.6
26				6DP		90		
28	- Refusal at 27.5ft BGS	27.50						1.7
30	END OF BOREHOLE @ 27.5ft BGS							
32								
34								
36								
38								

WELL DETAILS
Screened interval:
2.50 to 12.50ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
0.50 to 1.70ft BGS
Material: BENTONITE CHIPS
Sand Pack:
1.70 to 12.50ft BGS
Material: #4 SAND

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

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ECKLES RD
PROJECT NUMBER: 012607A-T31Y19
CLIENT: RACER TRUST
LOCATION: LIVONIA, MI

HOLE DESIGNATION: SB/MW74s-19
DATE COMPLETED: 19 June 2019
DRILLING METHOD: GEOPROBE-D.P.
FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE	SAMPLE PID (ppm)
0	CONCRETE	0.80	CONCRETE					
2	SP-SAND, trace silt, with fine gravels, compact, fine grained, poorly graded, brown, moist		BENTONITE CHIPS	1DP		75		0.0
4	- wet at 3.0ft BGS		▽ 2" PVC WELL CASING					0.1
6			8" BOREHOLE	2DP		95		0.2
8			2" PVC WELL SCREEN					
10			SAND PACK					0.3
12				3DP		25		0.7
14								0.5
16								
18	- light gray at 17.4ft BGS			4DP		80		0.7
20		20.40						0.7
22	SM-SILTY SAND, compact, fine grained, poorly graded, light gray, wet			5DP		85		0.4
24	- black at 24.5ft BGS							0.6
26	- trace clay at 25.9ft BGS							
28	CL-SILTY CLAY, trace fine to coarse gravel, stiff, slight plasticity, gray, moist	27.60		6DP		65		0.5
30	END OF BOREHOLE @ 30.0ft BGS	30.00						0.2
32								
34								
36								
38								

WELL DETAILS
Screened interval:
2.50 to 12.50ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
0.50 to 1.70ft BGS
Material: BENTONITE CHIPS
Sand Pack:
1.70 to 12.50ft BGS
Material: #4 SAND

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

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ECKLES RD
PROJECT NUMBER: 012607A-T31Y19
CLIENT: RACER TRUST
LOCATION: LIVONIA, MI

HOLE DESIGNATION: SB/MW82s-19
DATE COMPLETED: 19 June 2019
DRILLING METHOD: GEOPROBE-D.P.
FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE	SAMPLE PID (ppm)
0	CONCRETE	0.70	CONCRETE					
2	SP-SAND, trace silt, with fine to coarse gravels, compact, fine grained, poorly graded, brown, moist		BENTONITE CHIPS	1DP		70		0.6
4	- trace fine gravel, wet at 2.3ft BGS		2" PVC WELL CASING					0.0
6			8" BOREHOLE					
8				2DP		85		0.0
10			2" PVC WELL SCREEN					0.0
12			SAND PACK	3DP		35		0.0
14								
16	- dark grayish brown at 15.2ft BGS							0.0
18				4DP		65		0.2
20	- gray at 20.0ft BGS							0.4
22	- dark gray at 22.5ft BGS			5DP		55		0.4
24								
26								0.3
28	CL-SILTY CLAY, trace fine to coarse gravel, stiff, low plasticity, gray, moist	27.90		6DP		65		0.2
30	END OF BOREHOLE @ 30.0ft BGS	30.00						0.1
32								
34								
36								
38								

WELL DETAILS
Screened interval:
2.00 to 12.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
0.50 to 1.40ft BGS
Material: BENTONITE CHIPS
Sand Pack:
1.40 to 12.00ft BGS
Material: #4 SAND

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

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: ECKLES RD
PROJECT NUMBER: 012607A-T31Y19
CLIENT: RACER TRUST
LOCATION: LIVONIA, MI

HOLE DESIGNATION: SB/MWA1-12
DATE COMPLETED: 20 June 2019
DRILLING METHOD: GEOPROBE-D.P.
FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE	SAMPLE PID (ppm)
	CONCRETE		CONCRETE					
		1.00	BENTONITE CHIPS					
2	SP-SAND, trace silt, with fine gravel, compact, fine grained, poorly graded, brown, moist			1DP		60		4.6
4	- wet at 3.5ft BGS		2" PVC WELL CASING					19.5
6			8" BOREHOLE					
8				2DP		100		26.1
10			2" PVC WELL SCREEN					27.3
12			SAND PACK	3DP		60		26.1
14								20.8
16								
18	SM-SILTY SAND, compact, fine grained, poorly graded, black, wet	17.80		4DP		80		18.9
20								23.4
22				5DP		80		27.6
24	- Refusal at 23.5ft BGS	23.50						-
	END OF BOREHOLE @ 23.5ft BGS							
26								
28								
30								
32								
34								
36								
38								

WELL DETAILS
Screened interval:
2.00 to 12.00ft BGS
Length: 10ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
0.50 to 1.20ft BGS
Material: BENTONITE CHIPS
Sand Pack:
1.20 to 12.00ft BGS
Material: #4 SAND

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

OVERBURDEN LOG 012607A-T31Y19-SC.GPJ GHD_Corp 4/7/19

Attachment B
Test America
Laboratory Analytical Reports

Attachment B.1
Test America
Laboratory Analytical Reports
Soil

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

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

Laboratory Job ID: 240-114831-1
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:
6/28/2019 12:39:11 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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: 240-114831-1

Job ID: 240-114831-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-114831-1

Comments
Per GHD, analyze the samples for density.

Receipt
The samples were received on 6/21/2019 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.1° C.

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

Geotechnical
Method(s) D2937: The density results for the following samples do not represent the in-place density of the soil: S-12607-062019-SK-002 (240-114831-1), S-12607-062019-SK-005 (240-114831-2), S-12607-062019-SK-006 (240-114831-3), S-12607-062019-SK-007 (240-114831-4), S-12607-062019-SK-008 (240-114831-5) and S-12607-062019-SK-012 (240-114831-6). The soils were received in a disturbed state and were subsequently molded in the laboratory to an approximation of the field environment.

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, RACER Eckles Rd

Job ID: 240-114831-1

Qualifiers

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

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

Job ID: 240-114831-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-114831-1	S-12607-062019-SK-002	Solid	06/20/19 10:10	06/21/19 09:35	
240-114831-2	S-12607-062019-SK-005	Solid	06/20/19 10:40	06/21/19 09:35	
240-114831-3	S-12607-062019-SK-006	Solid	06/20/19 13:20	06/21/19 09:35	
240-114831-4	S-12607-062019-SK-007	Solid	06/20/19 13:25	06/21/19 09:35	
240-114831-5	S-12607-062019-SK-008	Solid	06/20/19 13:35	06/21/19 09:35	
240-114831-6	S-12607-062019-SK-012	Solid	06/20/19 14:40	06/21/19 09:35	

Detection Summary

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

Job ID: 240-114831-1

Client Sample ID: S-12607-062019-SK-002 — Lab Sample ID: 240-114831-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
In Place Density	1.73				g/cc	1		D2937	Total/NA
Fractional Organic Carbon	0.3				%	1		D2974	Total/NA

Client Sample ID: S-12607-062019-SK-005 — Lab Sample ID: 240-114831-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	1700		1000		mg/Kg	1		Lloyd Kahn	Total/NA
In Place Density	1.57				g/cc	1		D2937	Total/NA
Fractional Organic Carbon	0.3				%	1		D2974	Total/NA

Client Sample ID: S-12607-062019-SK-006 — Lab Sample ID: 240-114831-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
In Place Density	1.72				g/cc	1		D2937	Total/NA
Fractional Organic Carbon	0.4				%	1		D2974	Total/NA

Client Sample ID: S-12607-062019-SK-007 — Lab Sample ID: 240-114831-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	1300		1000		mg/Kg	1		Lloyd Kahn	Total/NA
In Place Density	1.85				g/cc	1		D2937	Total/NA
Fractional Organic Carbon	0.4				%	1		D2974	Total/NA

Client Sample ID: S-12607-062019-SK-008 — Lab Sample ID: 240-114831-5

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	3600		1000		mg/Kg	1		Lloyd Kahn	Total/NA
In Place Density	1.62				g/cc	1		D2937	Total/NA
Fractional Organic Carbon	0.2				%	1		D2974	Total/NA

Client Sample ID: S-12607-062019-SK-012 — Lab Sample ID: 240-114831-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	5800		1000		mg/Kg	1		Lloyd Kahn	Total/NA
In Place Density	1.57				g/cc	1		D2937	Total/NA
Fractional Organic Carbon	1.2				%	1		D2974	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: 240-114831-1

Method	Method Description	Protocol	Laboratory
Lloyd Kahn	Organic Carbon, Total (TOC)	EPA	TAL BUR
D2937	Density of Soil in Place by the Drive-Cylinder Method	ASTM	TAL BUR
D2974	Moisture, Ash and Organic Matter	ASTM	TAL BUR

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

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

Job ID: 240-114831-1

General Chemistry

Client Sample ID: S-12607-062019-SK-002
Date Collected: 06/20/19 10:10
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-1
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1000	U	1000		mg/Kg			06/25/19 16:53	1

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

Job ID: 240-114831-1

General Chemistry

Client Sample ID: S-12607-062019-SK-005
Date Collected: 06/20/19 10:40
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-2
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1700		1000		mg/Kg			06/25/19 16:57	1

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

Job ID: 240-114831-1

General Chemistry

Client Sample ID: S-12607-062019-SK-006
Date Collected: 06/20/19 13:20
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-3
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1000	U	1000		mg/Kg			06/25/19 17:02	1

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

Job ID: 240-114831-1

General Chemistry

Client Sample ID: S-12607-062019-SK-007
Date Collected: 06/20/19 13:25
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-4
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1300		1000		mg/Kg			06/25/19 17:06	1

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

Job ID: 240-114831-1

General Chemistry

Client Sample ID: S-12607-062019-SK-008
Date Collected: 06/20/19 13:35
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-5
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	3600		1000		mg/Kg			06/25/19 17:10	1

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

Job ID: 240-114831-1

General Chemistry

Client Sample ID: S-12607-062019-SK-012
Date Collected: 06/20/19 14:40
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-6
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	5800		1000		mg/Kg			06/25/19 17:14	1

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

Job ID: 240-114831-1

Method: D2937 - Density of Soil in Place by the Drive-Cylinder Method

Client Sample ID: S-12607-062019-SK-002
Date Collected: 06/20/19 10:10
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-1
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
In Place Density	1.73				g/cc			06/25/19 21:53	1

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

Job ID: 240-114831-1

Method: D2937 - Density of Soil in Place by the Drive-Cylinder Method

Client Sample ID: S-12607-062019-SK-005
Date Collected: 06/20/19 10:40
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-2
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
In Place Density	1.57				g/cc			06/25/19 21:53	1

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

Job ID: 240-114831-1

Method: D2937 - Density of Soil in Place by the Drive-Cylinder Method

Client Sample ID: S-12607-062019-SK-006
Date Collected: 06/20/19 13:20
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-3
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
In Place Density	1.72				g/cc			06/25/19 21:53	1

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

Job ID: 240-114831-1

Method: D2937 - Density of Soil in Place by the Drive-Cylinder Method

Client Sample ID: S-12607-062019-SK-007
Date Collected: 06/20/19 13:25
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-4
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
In Place Density	1.85				g/cc			06/25/19 21:53	1

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

Job ID: 240-114831-1

Method: D2937 - Density of Soil in Place by the Drive-Cylinder Method

Client Sample ID: S-12607-062019-SK-008
Date Collected: 06/20/19 13:35
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-5
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
In Place Density	1.62				g/cc			06/25/19 21:53	1

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

Job ID: 240-114831-1

Method: D2937 - Density of Soil in Place by the Drive-Cylinder Method

Client Sample ID: S-12607-062019-SK-012
Date Collected: 06/20/19 14:40
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-6
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
In Place Density	1.57				g/cc			06/25/19 21:53	1

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

Job ID: 240-114831-1

Method: D2974 - Moisture, Ash and Organic Matter

Client Sample ID: S-12607-062019-SK-002
Date Collected: 06/20/19 10:10
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-1
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Fractional Organic Carbon	0.3				%			06/25/19 21:54	1

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

Job ID: 240-114831-1

Method: D2974 - Moisture, Ash and Organic Matter

Client Sample ID: S-12607-062019-SK-005
Date Collected: 06/20/19 10:40
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-2
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Fractional Organic Carbon	0.3				%			06/25/19 21:54	1

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

Job ID: 240-114831-1

Method: D2974 - Moisture, Ash and Organic Matter

Client Sample ID: S-12607-062019-SK-006
Date Collected: 06/20/19 13:20
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-3
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Fractional Organic Carbon	0.4				%			06/25/19 21:54	1

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

Job ID: 240-114831-1

Method: D2974 - Moisture, Ash and Organic Matter

Client Sample ID: S-12607-062019-SK-007
Date Collected: 06/20/19 13:25
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-4
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Fractional Organic Carbon	0.4				%			06/25/19 21:54	1

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

Job ID: 240-114831-1

Method: D2974 - Moisture, Ash and Organic Matter

Client Sample ID: S-12607-062019-SK-008
Date Collected: 06/20/19 13:35
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-5
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Fractional Organic Carbon	0.2				%			06/25/19 21:54	1

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

Job ID: 240-114831-1

Method: D2974 - Moisture, Ash and Organic Matter

Client Sample ID: S-12607-062019-SK-012
Date Collected: 06/20/19 14:40
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-6
Matrix: Solid

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Fractional Organic Carbon	1.2				%			06/25/19 21:54	1

QC Association Summary

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

Job ID: 240-114831-1

General Chemistry

Analysis Batch: 144482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114831-1	S-12607-062019-SK-002	Total/NA	Solid	Lloyd Kahn	
240-114831-2	S-12607-062019-SK-005	Total/NA	Solid	Lloyd Kahn	
240-114831-3	S-12607-062019-SK-006	Total/NA	Solid	Lloyd Kahn	
240-114831-4	S-12607-062019-SK-007	Total/NA	Solid	Lloyd Kahn	
240-114831-5	S-12607-062019-SK-008	Total/NA	Solid	Lloyd Kahn	
240-114831-6	S-12607-062019-SK-012	Total/NA	Solid	Lloyd Kahn	
MB 200-144482/29	Method Blank	Total/NA	Solid	Lloyd Kahn	
LCS 200-144482/30	Lab Control Sample	Total/NA	Solid	Lloyd Kahn	

Geotechnical

Analysis Batch: 144486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114831-1	S-12607-062019-SK-002	Total/NA	Solid	D2937	
240-114831-2	S-12607-062019-SK-005	Total/NA	Solid	D2937	
240-114831-3	S-12607-062019-SK-006	Total/NA	Solid	D2937	
240-114831-4	S-12607-062019-SK-007	Total/NA	Solid	D2937	
240-114831-5	S-12607-062019-SK-008	Total/NA	Solid	D2937	
240-114831-6	S-12607-062019-SK-012	Total/NA	Solid	D2937	

Analysis Batch: 144487

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114831-1	S-12607-062019-SK-002	Total/NA	Solid	D2974	
240-114831-2	S-12607-062019-SK-005	Total/NA	Solid	D2974	
240-114831-3	S-12607-062019-SK-006	Total/NA	Solid	D2974	
240-114831-4	S-12607-062019-SK-007	Total/NA	Solid	D2974	
240-114831-5	S-12607-062019-SK-008	Total/NA	Solid	D2974	
240-114831-6	S-12607-062019-SK-012	Total/NA	Solid	D2974	

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

Job ID: 240-114831-1

Method: Lloyd Kahn - Organic Carbon, Total (TOC)

Lab Sample ID: MB 200-144482/29
Matrix: Solid
Analysis Batch: 144482

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

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1000	U	1000		mg/Kg			06/25/19 16:28	1

Lab Sample ID: LCS 200-144482/30
Matrix: Solid
Analysis Batch: 144482

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			9260	9280		mg/Kg		100	75 - 125		

Lab Chronicle

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

Job ID: 240-114831-1

Client Sample ID: S-12607-062019-SK-002
Lab Sample ID: 240-114831-1
Date Collected: 06/20/19 10:10
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		1	144482	06/25/19 16:53	MJZ	TAL BUR
Total/NA	Analysis	D2937		1	144486	06/25/19 21:53	MAP	TAL BUR
Total/NA	Analysis	D2974		1	144487	06/25/19 21:54	MAP	TAL BUR

Client Sample ID: S-12607-062019-SK-005
Lab Sample ID: 240-114831-2
Date Collected: 06/20/19 10:40
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		1	144482	06/25/19 16:57	MJZ	TAL BUR
Total/NA	Analysis	D2937		1	144486	06/25/19 21:53	MAP	TAL BUR
Total/NA	Analysis	D2974		1	144487	06/25/19 21:54	MAP	TAL BUR

Client Sample ID: S-12607-062019-SK-006
Lab Sample ID: 240-114831-3
Date Collected: 06/20/19 13:20
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		1	144482	06/25/19 17:02	MJZ	TAL BUR
Total/NA	Analysis	D2937		1	144486	06/25/19 21:53	MAP	TAL BUR
Total/NA	Analysis	D2974		1	144487	06/25/19 21:54	MAP	TAL BUR

Client Sample ID: S-12607-062019-SK-007
Lab Sample ID: 240-114831-4
Date Collected: 06/20/19 13:25
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		1	144482	06/25/19 17:06	MJZ	TAL BUR
Total/NA	Analysis	D2937		1	144486	06/25/19 21:53	MAP	TAL BUR
Total/NA	Analysis	D2974		1	144487	06/25/19 21:54	MAP	TAL BUR

Client Sample ID: S-12607-062019-SK-008
Lab Sample ID: 240-114831-5
Date Collected: 06/20/19 13:35
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		1	144482	06/25/19 17:10	MJZ	TAL BUR
Total/NA	Analysis	D2937		1	144486	06/25/19 21:53	MAP	TAL BUR
Total/NA	Analysis	D2974		1	144487	06/25/19 21:54	MAP	TAL BUR

Lab Chronicle

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

Job ID: 240-114831-1

Client Sample ID: S-12607-062019-SK-012

Date Collected: 06/20/19 14:40
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114831-6

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		1	144482	06/25/19 17:14	MJZ	TAL BUR
Total/NA	Analysis	D2937		1	144486	06/25/19 21:53	MAP	TAL BUR
Total/NA	Analysis	D2974		1	144487	06/25/19 21:54	MAP	TAL BUR

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-114831-1
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	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19 *
Florida	NELAP		E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-19
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-114831-1
Project/Site: 12607, RACER Eckles Rd

Laboratory: Eurofins TestAmerica, Burlington

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

Authority	Program	EPA Region	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP		L2336	02-25-20
ANAB	DoD		L2336	02-25-20
Connecticut	State Program	1	PH-0751	09-30-19
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	NA	02-01-20
Florida	NELAP	4	E87467	06-30-19 *
Minnesota	NELAP	5	050-999-436	12-31-19
New Hampshire	NELAP	1	2006	12-18-19
New Jersey	NELAP	2	VT972	06-30-19 *
New York	NELAP	2	10391	04-01-20
Pennsylvania	NELAP	3	68-00489	04-30-20
Pennsylvania	NELAP		68-00489	04-30-20
Rhode Island	State Program	1	LAO00298	12-30-19
US Fish & Wildlife	Federal		LE-058448-0	07-31-19
USDA	Federal		P330-11-00093	07-24-20
Vermont	State Program	1	VT-4000	12-31-19
Virginia	NELAP	3	460209	12-14-19

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

4.0/4.1

Chain of Custody Record

322270

T.A # 24005880

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

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

Client Contact	Project Manager: Chris Meincke	Site Contact: S. Kippen	Date: 6-20-19	COC No:
Company Name: GHD	Tel/Fax: (248) 935-7346	Lab Contact: J. Abston	Carrier: FedEx	1 of 1 COCs
Address: 26850 Haggerty Rd.	Analysis Turnaround Time			Sampler: S. Kippen
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: chem.det@ghd.com	X (2 weeks) / ☐ 1 week / ☐ 2 days / ☐ 1 day			Lab Sampling:
Project Name: Eckles Rd, Racer				Job / SDG No.:
Site: Livonia, MI.				
PO # SSOW:				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	TOC/FOC	Sample Specific Notes:
S-12607-062019-SK-002	6-20-19	10:10	G	Soil	1			X	
-005		10:40			1			X	
-006		13:20			1			X	
-007		13:25			1			X	
-008		13:35			1			X	
-012		14:40			1			X	

240-114831 Chain of Custody

SK

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. Luttrell	GHD	6-20-19 18:00		TA	6/21/19 935
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

6/28/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 114831

Client GFD Site Name

Cooler unpacked by:

Cooler Received on 6/21/19 Opened on 6/21/19

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-8 (CF +0.1 °C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.1 °C

IR GUN #36 (CF +0.6°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 be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC984738
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #____	Yes	No
16. 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 ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: JS

18. 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)

19. 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

240-114831 Chain of Custody

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	COC No: 240-105533.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: denise.heckler@testamericainc.com	State of Origin: Michigan
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):	Page: Page 1 of 1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 7/3/2019		Job #: 240-114831-1
City: South Burlington	TAT Requested (days):		
State, Zip: VT, 05403			
Phone: 802-660-1990(Tel) 802-660-1919(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)	Lloyd_Kahn/ TOC	D2937/ Density of Soil	D_2974/ (MOD) FOC	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
S-12607-062019-SK-002 (240-114831-1)	6/20/19	10:10 Eastern		Solid			X	X	X	1	
S-12607-062019-SK-005 (240-114831-2)	6/20/19	10:40 Eastern		Solid			X	X	X	1	
S-12607-062019-SK-006 (240-114831-3)	6/20/19	13:20 Eastern		Solid			X	X	X	1	
S-12607-062019-SK-007 (240-114831-4)	6/20/19	13:25 Eastern		Solid			X	X	X	1	
S-12607-062019-SK-008 (240-114831-5)	6/20/19	13:35 Eastern		Solid			X	X	X	1	
S-12607-062019-SK-012 (240-114831-6)	6/20/19	14:40 Eastern		Solid			X	X	X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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 TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *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: 6-21-19.	Company TA-24	Received by: Taylor Mohn	Date/Time: 6/22/19 0916	Company MBurl
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.: NA	Cooler Temperature(s) °C and Other Remarks: 5.8, 0.4

Ver: 01/16/2019



EUROFINS TESTAMERICA CANTON
4101 SHUFFEL STREET NW

NORTH CANTON, OH 447206900
UNITED STATES US

CAD: 0562057/CAFE3211

BILL RECIPIENT

TO ENVIRONMENTAL SAMPLE RECEIPT
TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE

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

FedEx Express

1 of 2

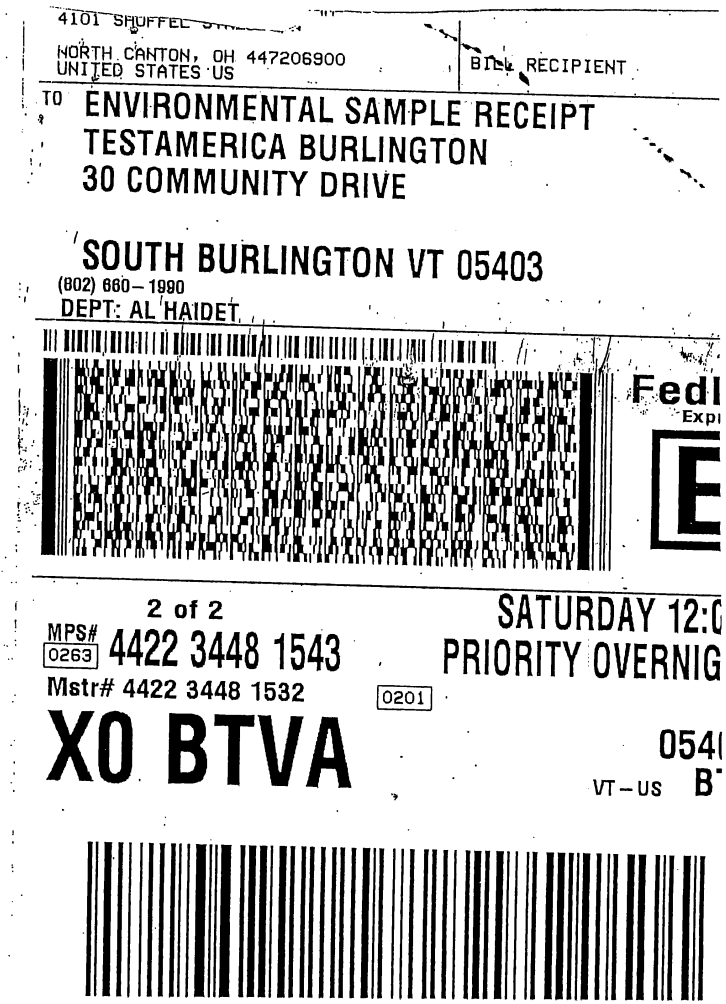
TRK# 0201 4422 3448 1532

MASTER

XO BTVA

SATURDAY 12:00P
PRIORITY OVERNIGHT

05403
VT-US BTV



4101 SHUFFEL

NORTH CANTON, OH 447206900
UNITED STATES US

BILL RECIPIENT

TO ENVIRONMENTAL SAMPLE RECEIPT
TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE

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

Fedl Expr

2 of 2

MPS# 0263 4422 3448 1543

Mstr# 4422 3448 1532

0201

XO BTVA

SATURDAY 12:0
PRIORITY OVERNIG

054
VT-US B

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-114831-1

Login Number: 114831
List Number: 2
Creator: McNabb, Robert W

List Source: Eurofins TestAmerica, Burlington
List Creation: 06/22/19 12:10 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	Not present
Sample custody seals, if present, are intact.	True	
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	5.8ºC, 0.4ºC
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?	N/A	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.	N/A	
Sample Preservation Verified.	True	
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	

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ANALYTICAL REPORT

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

Laboratory Job ID: 240-115181-1
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:
7/28/2019 10:16:50 AM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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: 240-115181-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-115181-1

Comments
No additional comments.

Receipt
The samples were received on 6/28/2019 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.9º C.

LCMS
Method(s) 537 (modified): The “I” qualifier means the transition mass ratio for Perfluorohexanesulfonic acid (PFHxS) 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(s) 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C4 PFBA: 012607A-LEACHATE FLUID (240-115181-13), 012607A-LEACH-SOIL 004 (240-115181-14), 012607A-LEACH-SOIL 005 (240-115181-15), 012607A-LEACH-SOIL 007 (240-115181-16) and 012607A-LEACH-SOIL 008 (240-115181-17). The samples were re-analyzed with concurring results. 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). All detection limits are below the lower calibration.

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

General Chemistry
Method(s) Moisture: There is no regulatory holding time for percent moisture analysis. The H flag for the following samples,S-12607-062019-SK-001 (240-115181-1), S-12607-062019-SK-002 (240-115181-2), S-12607-062019-SK-003 (240-115181-3), S-12607-062019-SK-004 (240-115181-4), S-12607-062019-SK-005 (240-115181-5), S-12607-062019-SK-006 (240-115181-6), S-12607-062019-SK-007 (240-115181-7), S-12607-062019-SK-008 (240-115181-8), S-12607-062019-SK-009 (240-115181-9), S-12607-062019-SK-010 (240-115181-10), S-12607-062019-SK-011 (240-115181-11) and S-12607-062019-SK-012 (240-115181-12), have been removed in analytical batch 320-306825. This Non-conformance indicates that the samples were analyzed out of 14 days of collection.

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

Organic Prep
Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-304755.

Method(s) 3535: The following sample is slightly green with particulates at the bottom of the bottle prior to extraction: 012607A-LEACH-SOIL 007 (240-115181-16).

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, RACER Eckles Rd

Job ID: 240-115181-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

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

Job ID: 240-115181-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115181-1	S-12607-062019-SK-001	Solid	06/20/19 10:05	06/28/19 09:15	
240-115181-2	S-12607-062019-SK-002	Solid	06/20/19 10:10	06/28/19 09:15	
240-115181-3	S-12607-062019-SK-003	Solid	06/20/19 10:20	06/28/19 09:15	
240-115181-4	S-12607-062019-SK-004	Solid	06/20/19 10:25	06/28/19 09:15	
240-115181-5	S-12607-062019-SK-005	Solid	06/20/19 10:40	06/28/19 09:15	
240-115181-6	S-12607-062019-SK-006	Solid	06/20/19 13:20	06/28/19 09:15	
240-115181-7	S-12607-062019-SK-007	Solid	06/20/19 13:25	06/28/19 09:15	
240-115181-8	S-12607-062019-SK-008	Solid	06/20/19 13:35	06/28/19 09:15	
240-115181-9	S-12607-062019-SK-009	Solid	06/20/19 13:45	06/28/19 09:15	
240-115181-10	S-12607-062019-SK-010	Solid	06/20/19 14:00	06/28/19 09:15	
240-115181-11	S-12607-062019-SK-011	Solid	06/20/19 14:05	06/28/19 09:15	
240-115181-12	S-12607-062019-SK-012	Solid	06/20/19 14:40	06/28/19 09:15	
240-115181-13	012607A-LEACHATE FLUID	Water	06/27/19 14:00	06/28/19 09:15	
240-115181-14	012607A-LEACH-SOIL 004	Water	06/27/19 14:00	06/28/19 09:15	
240-115181-15	012607A-LEACH-SOIL 005	Water	06/27/19 14:00	06/28/19 09:15	
240-115181-16	012607A-LEACH-SOIL 007	Water	06/27/19 14:00	06/28/19 09:15	
240-115181-17	012607A-LEACH-SOIL 008	Water	06/27/19 14:00	06/28/19 09:15	
240-115181-18	012607A-LEACH-SOIL 012	Water	06/27/19 14:00	06/28/19 09:15	

Detection Summary

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

Job ID: 240-115181-1

Client Sample ID: S-12607-062019-SK-001 — Lab Sample ID: 240-115181-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.052	J	0.21	0.029	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: S-12607-062019-SK-002 — Lab Sample ID: 240-115181-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.11	J	0.26	0.036	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.035	J	0.26	0.028	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: S-12607-062019-SK-003 — Lab Sample ID: 240-115181-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.081	J	0.23	0.032	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: S-12607-062019-SK-004 — Lab Sample ID: 240-115181-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.057	J	0.22	0.030	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.032	J I	0.22	0.022	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.16	J I	0.22	0.033	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: S-12607-062019-SK-005 — Lab Sample ID: 240-115181-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.083	J	0.24	0.033	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: S-12607-062019-SK-006 — Lab Sample ID: 240-115181-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.072	J	0.21	0.029	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: S-12607-062019-SK-007 — Lab Sample ID: 240-115181-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.045	J	0.23	0.032	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: S-12607-062019-SK-008 — Lab Sample ID: 240-115181-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.065	J	0.22	0.030	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.040	J I	0.22	0.034	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.74	I	0.54	0.22	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: S-12607-062019-SK-009 — Lab Sample ID: 240-115181-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.053	J	0.22	0.031	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.037	J I	0.22	0.035	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.58		0.56	0.22	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: S-12607-062019-SK-010 — Lab Sample ID: 240-115181-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.072	J	0.23	0.032	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.24	J I	0.56	0.23	ug/Kg	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, RACER Eckles Rd

Job ID: 240-115181-1

Client Sample ID: S-12607-062019-SK-011 — Lab Sample ID: 240-115181-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.099	J	0.23	0.033	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.044	J I	0.23	0.036	ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.35	J	0.58	0.23	ug/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: S-12607-062019-SK-012 — Lab Sample ID: 240-115181-12

No Detections.

Client Sample ID: 012607A-LEACHATE FLUID — Lab Sample ID: 240-115181-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.77	J	1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.29	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 004 — Lab Sample ID: 240-115181-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.64	J	1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.48	J I B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 005 — Lab Sample ID: 240-115181-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.60	J	1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.38	J I	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.26	J I	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.44	J	1.9	0.29	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 007 — Lab Sample ID: 240-115181-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.5	J	2.1	0.36	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.37	J B	2.1	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.3	I	2.1	0.56	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 008 — Lab Sample ID: 240-115181-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.9		1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.39	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.7	I	1.9	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 012 — Lab Sample ID: 240-115181-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.52	J I B	1.9	0.16	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, RACER Eckles Rd

Job ID: 240-115181-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

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: S-12607-062019-SK-001
Date Collected: 06/20/19 10:05
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-1
Matrix: Solid
Percent Solids: 87.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.052**	**J**	0.21	0.029	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluoropentanoic acid (PFPeA)	0.21	U	0.21	0.080	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorohexanoic acid (PFHxA)	0.21	U	0.21	0.044	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluoroheptanoic acid (PFHpA)	0.21	U	0.21	0.030	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorooctanoic acid (PFOA)	0.21	U	0.21	0.089	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorononanoic acid (PFNA)	0.21	U	0.21	0.037	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorodecanoic acid (PFDA)	0.21	U	0.21	0.023	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluoroundecanoic acid (PFUnA)	0.21	U	0.21	0.037	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorododecanoic acid (PFDoA)	0.21	U	0.21	0.069	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorotridecanoic acid (PFTriA)	0.21	U	0.21	0.053	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorotetradecanoic acid (PFTeA)	0.21	U	0.21	0.056	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorobutanesulfonic acid (PFBS)	0.21	U	0.21	0.026	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluoropentanesulfonic acid (PFPeS)	0.21	U	0.21	0.021	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorohexanesulfonic acid (PFHxS)	0.21	U	0.21	0.032	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.21	U	0.21	0.036	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorooctanesulfonic acid (PFOS)	0.52	U	0.52	0.21	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorononanesulfonic acid (PFNS)	0.21	U	0.21	0.021	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorodecanesulfonic acid (PFDS)	0.21	U	0.21	0.040	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
Perfluorooctanesulfonamide (FOSA)	0.21	U	0.21	0.085	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.1	U	2.1	0.40	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.1	U	2.1	0.38	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
4:2 FTS	2.1	U	2.1	0.38	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
6:2 FTS	2.1	U	2.1	0.16	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1
8:2 FTS	2.1	U	2.1	0.26	ug/Kg	☼	07/01/19 12:55	07/06/19 00:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*75*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C5 PFPeA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C2 PFHxA	*80*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C4 PFHpA	*79*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C4 PFOA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C5 PFNA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C2 PFDA	*84*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C2 PFUnA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C2 PFDoA	*81*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C2 PFTeDA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C3 PFBS	*77*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
18O2 PFHxS	*76*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C4 PFOS	*79*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
13C8 FOSA	*60*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
d5-NEtFOSAA	*89*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
M2-6:2 FTS	*91*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
M2-8:2 FTS	*89*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*
M2-4:2 FTS	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:09*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-002
Date Collected: 06/20/19 10:10
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-2
Matrix: Solid
Percent Solids: 80.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.11**	**J**	0.26	0.036	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluoropentanoic acid (PFPeA)	0.26	U	0.26	0.099	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorohexanoic acid (PFHxA)	0.26	U	0.26	0.054	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluoroheptanoic acid (PFHpA)	0.26	U	0.26	0.037	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorooctanoic acid (PFOA)	0.26	U	0.26	0.11	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorononanoic acid (PFNA)	0.26	U	0.26	0.046	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorodecanoic acid (PFDA)	**0.035**	**J**	0.26	0.028	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluoroundecanoic acid (PFUnA)	0.26	U	0.26	0.046	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorododecanoic acid (PFDoA)	0.26	U	0.26	0.086	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorotridecanoic acid (PFTriA)	0.26	U	0.26	0.066	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorotetradecanoic acid (PFTeA)	0.26	U	0.26	0.070	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorobutanesulfonic acid (PFBS)	0.26	U	0.26	0.032	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluoropentanesulfonic acid (PFPeS)	0.26	U	0.26	0.026	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	U	0.26	0.040	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.26	U	0.26	0.045	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorooctanesulfonic acid (PFOS)	0.64	U	0.64	0.26	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorononanesulfonic acid (PFNS)	0.26	U	0.26	0.026	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorodecanesulfonic acid (PFDS)	0.26	U	0.26	0.050	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
Perfluorooctanesulfonamide (FOSA)	0.26	U	0.26	0.11	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.6	U	2.6	0.50	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.6	U	2.6	0.48	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
4:2 FTS	2.6	U	2.6	0.48	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
6:2 FTS	2.6	U	2.6	0.19	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1
8:2 FTS	2.6	U	2.6	0.32	ug/Kg	☼	07/01/19 12:55	07/06/19 00:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*72*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C5 PFPeA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C2 PFHxA	*74*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C4 PFHpA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C4 PFOA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C5 PFNA	*84*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C2 PFDA	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C2 PFUnA	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C2 PFDoA	*84*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C2 PFTeDA	*91*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C3 PFBS	*80*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
18O2 PFHxS	*75*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C4 PFOS	*76*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
13C8 FOSA	*70*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
M2-6:2 FTS	*93*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
M2-8:2 FTS	*89*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*
M2-4:2 FTS	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:17*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-003
Date Collected: 06/20/19 10:20
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-3
Matrix: Solid
Percent Solids: 80.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.081**	**J**	0.23	0.032	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluoropentanoic acid (PFPeA)	0.23	U	0.23	0.089	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorohexanoic acid (PFHxA)	0.23	U	0.23	0.048	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluoroheptanoic acid (PFHpA)	0.23	U	0.23	0.033	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorooctanoic acid (PFOA)	0.23	U	0.23	0.099	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorononanoic acid (PFNA)	0.23	U	0.23	0.042	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorodecanoic acid (PFDA)	0.23	U	0.23	0.025	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluoroundecanoic acid (PFUnA)	0.23	U	0.23	0.042	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorododecanoic acid (PFDoA)	0.23	U	0.23	0.077	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorotridecanoic acid (PFTriA)	0.23	U	0.23	0.059	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorotetradecanoic acid (PFTeA)	0.23	U	0.23	0.062	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.23	0.029	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluoropentanesulfonic acid (PFPeS)	0.23	U	0.23	0.023	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorohexanesulfonic acid (PFHxS)	0.23	U	0.23	0.036	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.23	U	0.23	0.040	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorooctanesulfonic acid (PFOS)	0.58	U	0.58	0.23	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorononanesulfonic acid (PFNS)	0.23	U	0.23	0.023	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorodecanesulfonic acid (PFDS)	0.23	U	0.23	0.045	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
Perfluorooctanesulfonamide (FOSA)	0.23	U	0.23	0.095	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.3	U	2.3	0.45	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.3	U	2.3	0.43	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
4:2 FTS	2.3	U	2.3	0.43	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
6:2 FTS	2.3	U	2.3	0.17	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1
8:2 FTS	2.3	U	2.3	0.29	ug/Kg	☼	07/01/19 12:55	07/06/19 00:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*70*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C5 PFPeA	*75*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C2 PFHxA	*71*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C4 PFHpA	*81*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C4 PFOA	*81*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C5 PFNA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C2 PFDA	*86*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C2 PFUnA	*86*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C2 PFDoA	*81*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C3 PFBS	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
18O2 PFHxS	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C4 PFOS	*79*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
13C8 FOSA	*72*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
d3-NMeFOSAA	*84*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
d5-NEtFOSAA	*88*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
M2-6:2 FTS	*115*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
M2-8:2 FTS	*88*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*
M2-4:2 FTS	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:25*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-004
Date Collected: 06/20/19 10:25
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-4
Matrix: Solid
Percent Solids: 83.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.057**	**J**	0.22	0.030	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluoropentanoic acid (PFPeA)	0.22	U	0.22	0.083	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorohexanoic acid (PFHxA)	0.22	U	0.22	0.045	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluoroheptanoic acid (PFHpA)	0.22	U	0.22	0.031	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorooctanoic acid (PFOA)	0.22	U	0.22	0.092	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorononanoic acid (PFNA)	0.22	U	0.22	0.039	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorodecanoic acid (PFDA)	0.22	U	0.22	0.024	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluoroundecanoic acid (PFUnA)	0.22	U	0.22	0.039	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorododecanoic acid (PFDoA)	0.22	U	0.22	0.072	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorotridecanoic acid (PFTriA)	0.22	U	0.22	0.055	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorotetradecanoic acid (PFTeA)	0.22	U	0.22	0.058	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorobutanesulfonic acid (PFBS)	0.22	U	0.22	0.027	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluoropentanesulfonic acid (PFPeS)	**0.032**	**J I**	0.22	0.022	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorohexanesulfonic acid (PFHxS)	**0.16**	**J I**	0.22	0.033	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.22	U	0.22	0.038	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorooctanesulfonic acid (PFOS)	0.54	U	0.54	0.22	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorononanesulfonic acid (PFNS)	0.22	U	0.22	0.022	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorodecanesulfonic acid (PFDS)	0.22	U	0.22	0.042	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
Perfluorooctanesulfonamide (FOSA)	0.22	U	0.22	0.088	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.2	U	2.2	0.42	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.2	U	2.2	0.40	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
4:2 FTS	2.2	U	2.2	0.40	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
6:2 FTS	2.2	U	2.2	0.16	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1
8:2 FTS	2.2	U	2.2	0.27	ug/Kg	☼	07/01/19 12:55	07/06/19 00:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*73*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C5 PFPeA	*80*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C2 PFHxA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C4 PFHpA	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C4 PFOA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C5 PFNA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C2 PFDA	*87*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C2 PFUnA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C2 PFDoA	*90*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C2 PFTeDA	*96*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C3 PFBS	*80*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
18O2 PFHxS	*81*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C4 PFOS	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
13C8 FOSA	*72*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
d3-NMeFOSAA	*86*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
d5-NEtFOSAA	*90*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
M2-6:2 FTS	*97*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
M2-8:2 FTS	*90*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:33*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-005
Date Collected: 06/20/19 10:40
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-5
Matrix: Solid
Percent Solids: 83.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.083**	**J**	0.24	0.033	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluoropentanoic acid (PFPeA)	0.24	U	0.24	0.091	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorohexanoic acid (PFHxA)	0.24	U	0.24	0.050	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluoroheptanoic acid (PFHpA)	0.24	U	0.24	0.034	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorooctanoic acid (PFOA)	0.24	U	0.24	0.10	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorononanoic acid (PFNA)	0.24	U	0.24	0.043	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorodecanoic acid (PFDA)	0.24	U	0.24	0.026	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluoroundecanoic acid (PFUnA)	0.24	U	0.24	0.043	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorododecanoic acid (PFDoA)	0.24	U	0.24	0.079	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorotridecanoic acid (PFTriA)	0.24	U	0.24	0.060	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorotetradecanoic acid (PFTeA)	0.24	U	0.24	0.064	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorobutanesulfonic acid (PFBS)	0.24	U	0.24	0.030	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluoropentanesulfonic acid (PFPeS)	0.24	U	0.24	0.024	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorohexanesulfonic acid (PFHxS)	0.24	U	0.24	0.037	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.24	U	0.24	0.041	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorooctanesulfonic acid (PFOS)	0.59	U	0.59	0.24	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorononanesulfonic acid (PFNS)	0.24	U	0.24	0.024	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorodecanesulfonic acid (PFDS)	0.24	U	0.24	0.046	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
Perfluorooctanesulfonamide (FOSA)	0.24	U	0.24	0.097	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.4	U	2.4	0.46	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.4	U	2.4	0.44	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
4:2 FTS	2.4	U	2.4	0.44	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
6:2 FTS	2.4	U	2.4	0.18	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1
8:2 FTS	2.4	U	2.4	0.30	ug/Kg	☼	07/01/19 12:55	07/06/19 00:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*80*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C5 PFPeA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C2 PFHxA	*84*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C4 PFHpA	*92*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C4 PFOA	*91*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C5 PFNA	*91*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C2 PFDA	*93*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C2 PFUnA	*96*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C2 PFDoA	*87*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C2 PFTeDA	*95*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C3 PFBS	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
18O2 PFHxS	*88*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C4 PFOS	*90*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
13C8 FOSA	*73*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
d5-NEtFOSAA	*88*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
M2-6:2 FTS	*104*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
M2-8:2 FTS	*112*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*
M2-4:2 FTS	*98*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:41*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-006
Date Collected: 06/20/19 13:20
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-6
Matrix: Solid
Percent Solids: 92.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.072**	**J**	0.21	0.029	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluoropentanoic acid (PFPeA)	0.21	U	0.21	0.080	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorohexanoic acid (PFHxA)	0.21	U	0.21	0.043	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluoroheptanoic acid (PFHpA)	0.21	U	0.21	0.030	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorooctanoic acid (PFOA)	0.21	U	0.21	0.089	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorononanoic acid (PFNA)	0.21	U	0.21	0.037	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorodecanoic acid (PFDA)	0.21	U	0.21	0.023	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluoroundecanoic acid (PFUnA)	0.21	U	0.21	0.037	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorododecanoic acid (PFDoA)	0.21	U	0.21	0.069	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorotridecanoic acid (PFTriA)	0.21	U	0.21	0.053	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorotetradecanoic acid (PFTeA)	0.21	U	0.21	0.056	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorobutanesulfonic acid (PFBS)	0.21	U	0.21	0.026	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluoropentanesulfonic acid (PFPeS)	0.21	U	0.21	0.021	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorohexanesulfonic acid (PFHxS)	0.21	U	0.21	0.032	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.21	U	0.21	0.036	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorooctanesulfonic acid (PFOS)	0.52	U	0.52	0.21	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorononanesulfonic acid (PFNS)	0.21	U	0.21	0.021	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorodecanesulfonic acid (PFDS)	0.21	U	0.21	0.040	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
Perfluorooctanesulfonamide (FOSA)	0.21	U	0.21	0.085	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.1	U	2.1	0.40	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.1	U	2.1	0.38	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
4:2 FTS	2.1	U	2.1	0.38	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
6:2 FTS	2.1	U	2.1	0.15	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1
8:2 FTS	2.1	U	2.1	0.26	ug/Kg	☼	07/01/19 12:55	07/06/19 00:49	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*73*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C5 PFPeA	*81*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C2 PFHxA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C4 PFHpA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C4 PFOA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C5 PFNA	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C2 PFDA	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C2 PFUnA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C2 PFDoA	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C3 PFBS	*72*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
18O2 PFHxS	*71*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C4 PFOS	*69*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
13C8 FOSA	*58*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
d3-NMeFOSAA	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
M2-6:2 FTS	*84*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
M2-8:2 FTS	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*
M2-4:2 FTS	*70*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:49*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-007
Date Collected: 06/20/19 13:25
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-7
Matrix: Solid
Percent Solids: 89.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.045**	**J**	0.23	0.032	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluoropentanoic acid (PFPeA)	0.23	U	0.23	0.088	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorohexanoic acid (PFHxA)	0.23	U	0.23	0.048	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluoroheptanoic acid (PFHpA)	0.23	U	0.23	0.033	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorooctanoic acid (PFOA)	0.23	U	0.23	0.098	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorononanoic acid (PFNA)	0.23	U	0.23	0.041	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorodecanoic acid (PFDA)	0.23	U	0.23	0.025	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluoroundecanoic acid (PFUnA)	0.23	U	0.23	0.041	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorododecanoic acid (PFDoA)	0.23	U	0.23	0.076	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorotridecanoic acid (PFTriA)	0.23	U	0.23	0.058	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorotetradecanoic acid (PFTeA)	0.23	U	0.23	0.062	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.23	0.029	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluoropentanesulfonic acid (PFPeS)	0.23	U	0.23	0.023	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorohexanesulfonic acid (PFHxS)	0.23	U	0.23	0.035	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.23	U	0.23	0.040	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorooctanesulfonic acid (PFOS)	0.57	U	0.57	0.23	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorononanesulfonic acid (PFNS)	0.23	U	0.23	0.023	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorodecanesulfonic acid (PFDS)	0.23	U	0.23	0.045	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
Perfluorooctanesulfonamide (FOSA)	0.23	U	0.23	0.094	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.3	U	2.3	0.45	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.3	U	2.3	0.42	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
4:2 FTS	2.3	U	2.3	0.42	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
6:2 FTS	2.3	U	2.3	0.17	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1
8:2 FTS	2.3	U	2.3	0.29	ug/Kg	☼	07/01/19 12:55	07/06/19 00:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C5 PFPeA	*82*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C2 PFHxA	*77*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C4 PFHpA	*87*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C4 PFOA	*82*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C5 PFNA	*80*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C2 PFDA	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C2 PFUnA	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C2 PFDoA	*82*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C3 PFBS	*75*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
18O2 PFHxS	*76*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C4 PFOS	*76*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
13C8 FOSA	*59*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
M2-6:2 FTS	*108*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
M2-8:2 FTS	*100*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*
M2-4:2 FTS	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 00:57*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-008
Date Collected: 06/20/19 13:35
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-8
Matrix: Solid
Percent Solids: 84.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.065**	**J**	0.22	0.030	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluoropentanoic acid (PFPeA)	0.22	U	0.22	0.083	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorohexanoic acid (PFHxA)	0.22	U	0.22	0.046	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluoroheptanoic acid (PFHpA)	0.22	U	0.22	0.031	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorooctanoic acid (PFOA)	0.22	U	0.22	0.093	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorononanoic acid (PFNA)	0.22	U	0.22	0.039	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorodecanoic acid (PFDA)	0.22	U	0.22	0.024	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluoroundecanoic acid (PFUnA)	0.22	U	0.22	0.039	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorododecanoic acid (PFDoA)	0.22	U	0.22	0.073	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorotridecanoic acid (PFTriA)	0.22	U	0.22	0.055	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorotetradecanoic acid (PFTeA)	0.22	U	0.22	0.059	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorobutanesulfonic acid (PFBS)	0.22	U	0.22	0.027	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluoropentanesulfonic acid (PFPeS)	0.22	U	0.22	0.022	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorohexanesulfonic acid (PFHxS)	**0.040**	**J I**	0.22	0.034	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.22	U	0.22	0.038	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorooctanesulfonic acid (PFOS)	**0.74**	**I**	0.54	0.22	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorononanesulfonic acid (PFNS)	0.22	U	0.22	0.022	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorodecanesulfonic acid (PFDS)	0.22	U	0.22	0.042	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
Perfluorooctanesulfonamide (FOSA)	0.22	U	0.22	0.089	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.2	U	2.2	0.42	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.2	U	2.2	0.40	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
4:2 FTS	2.2	U	2.2	0.40	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
6:2 FTS	2.2	U	2.2	0.16	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1
8:2 FTS	2.2	U	2.2	0.27	ug/Kg	☼	07/01/19 12:55	07/06/19 01:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*69*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C5 PFPeA	*75*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C2 PFHxA	*67*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C4 PFHpA	*76*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C4 PFOA	*76*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C5 PFNA	*76*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C2 PFDA	*76*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C2 PFUnA	*77*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C2 PFDoA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C2 PFTeDA	*80*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C3 PFBS	*79*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
18O2 PFHxS	*79*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C4 PFOS	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
13C8 FOSA	*61*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
d3-NMeFOSAA	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
d5-NEtFOSAA	*85*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
M2-6:2 FTS	*95*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
M2-8:2 FTS	*98*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*
M2-4:2 FTS	*80*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:05*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-009
Date Collected: 06/20/19 13:45
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-9
Matrix: Solid
Percent Solids: 82.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.053**	**J**	0.22	0.031	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluoropentanoic acid (PFPeA)	0.22	U	0.22	0.086	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorohexanoic acid (PFHxA)	0.22	U	0.22	0.047	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluoroheptanoic acid (PFHpA)	0.22	U	0.22	0.032	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorooctanoic acid (PFOA)	0.22	U	0.22	0.096	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorononanoic acid (PFNA)	0.22	U	0.22	0.040	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorodecanoic acid (PFDA)	0.22	U	0.22	0.025	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluoroundecanoic acid (PFUnA)	0.22	U	0.22	0.040	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorododecanoic acid (PFDoA)	0.22	U	0.22	0.075	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorotridecanoic acid (PFTriA)	0.22	U	0.22	0.057	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorotetradecanoic acid (PFTeA)	0.22	U	0.22	0.060	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorobutanesulfonic acid (PFBS)	0.22	U	0.22	0.028	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluoropentanesulfonic acid (PFPeS)	0.22	U	0.22	0.022	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorohexanesulfonic acid (PFHxS)	**0.037**	**J I**	0.22	0.035	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.22	U	0.22	0.039	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorooctanesulfonic acid (PFOS)	**0.58**		0.56	0.22	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorononanesulfonic acid (PFNS)	0.22	U	0.22	0.022	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorodecanesulfonic acid (PFDS)	0.22	U	0.22	0.043	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
Perfluorooctanesulfonamide (FOSA)	0.22	U	0.22	0.091	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.2	U	2.2	0.43	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.2	U	2.2	0.41	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
4:2 FTS	2.2	U	2.2	0.41	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
6:2 FTS	2.2	U	2.2	0.17	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1
8:2 FTS	2.2	U	2.2	0.28	ug/Kg	☼	07/01/19 12:55	07/06/19 01:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*62*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C5 PFPeA	*64*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C2 PFHxA	*66*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C4 PFHpA	*69*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C4 PFOA	*68*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C5 PFNA	*68*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C2 PFDA	*68*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C2 PFUnA	*67*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C2 PFDoA	*70*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C2 PFTeDA	*76*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C3 PFBS	*73*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
18O2 PFHxS	*69*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C4 PFOS	*70*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
13C8 FOSA	*50*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
d3-NMeFOSAA	*73*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
d5-NEtFOSAA	*74*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
M2-6:2 FTS	*79*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
M2-8:2 FTS	*83*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*
M2-4:2 FTS	*72*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:29*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-010
Date Collected: 06/20/19 14:00
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-10
Matrix: Solid
Percent Solids: 76.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.072**	**J**	0.23	0.032	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluoropentanoic acid (PFPeA)	0.23	U	0.23	0.087	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorohexanoic acid (PFHxA)	0.23	U	0.23	0.047	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluoroheptanoic acid (PFHpA)	0.23	U	0.23	0.033	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorooctanoic acid (PFOA)	0.23	U	0.23	0.097	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorononanoic acid (PFNA)	0.23	U	0.23	0.041	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorodecanoic acid (PFDA)	0.23	U	0.23	0.025	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluoroundecanoic acid (PFUnA)	0.23	U	0.23	0.041	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorododecanoic acid (PFDoA)	0.23	U	0.23	0.076	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorotridecanoic acid (PFTriA)	0.23	U	0.23	0.058	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorotetradecanoic acid (PFTeA)	0.23	U	0.23	0.061	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.23	0.028	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluoropentanesulfonic acid (PFPeS)	0.23	U	0.23	0.023	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorohexanesulfonic acid (PFHxS)	0.23	U	0.23	0.035	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.23	U	0.23	0.040	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorooctanesulfonic acid (PFOS)	**0.24**	**J I**	0.56	0.23	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorononanesulfonic acid (PFNS)	0.23	U	0.23	0.023	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorodecanesulfonic acid (PFDS)	0.23	U	0.23	0.044	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
Perfluorooctanesulfonamide (FOSA)	0.23	U	0.23	0.093	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.3	U	2.3	0.44	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.3	U	2.3	0.42	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
4:2 FTS	2.3	U	2.3	0.42	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
6:2 FTS	2.3	U	2.3	0.17	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1
8:2 FTS	2.3	U	2.3	0.28	ug/Kg	☼	07/01/19 12:55	07/06/19 01:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C5 PFPeA	*82*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C2 PFHxA	*81*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C4 PFHpA	*86*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C4 PFOA	*88*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C5 PFNA	*89*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C2 PFDA	*88*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C2 PFUnA	*87*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C2 PFDoA	*94*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C3 PFBS	*88*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
18O2 PFHxS	*91*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C4 PFOS	*89*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
13C8 FOSA	*79*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
d3-NMeFOSAA	*92*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
d5-NEtFOSAA	*97*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
M2-6:2 FTS	*102*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
M2-8:2 FTS	*112*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*
M2-4:2 FTS	*92*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:37*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-011
Date Collected: 06/20/19 14:05
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-11
Matrix: Solid
Percent Solids: 79.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.099**	**J**	0.23	0.033	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluoropentanoic acid (PFPeA)	0.23	U	0.23	0.089	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorohexanoic acid (PFHxA)	0.23	U	0.23	0.049	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluoroheptanoic acid (PFHpA)	0.23	U	0.23	0.034	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorooctanoic acid (PFOA)	0.23	U	0.23	0.10	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorononanoic acid (PFNA)	0.23	U	0.23	0.042	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorodecanoic acid (PFDA)	0.23	U	0.23	0.026	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluoroundecanoic acid (PFUnA)	0.23	U	0.23	0.042	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorododecanoic acid (PFDoA)	0.23	U	0.23	0.078	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorotridecanoic acid (PFTriA)	0.23	U	0.23	0.059	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorotetradecanoic acid (PFTeA)	0.23	U	0.23	0.063	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorobutanesulfonic acid (PFBS)	0.23	U	0.23	0.029	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluoropentanesulfonic acid (PFPeS)	0.23	U	0.23	0.023	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorohexanesulfonic acid (PFHxS)	**0.044**	**J I**	0.23	0.036	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.23	U	0.23	0.041	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorooctanesulfonic acid (PFOS)	**0.35**	**J**	0.58	0.23	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorononanesulfonic acid (PFNS)	0.23	U	0.23	0.023	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorodecanesulfonic acid (PFDS)	0.23	U	0.23	0.045	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
Perfluorooctanesulfonamide (FOSA)	0.23	U	0.23	0.095	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.3	U	2.3	0.45	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.3	U	2.3	0.43	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
4:2 FTS	2.3	U	2.3	0.43	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
6:2 FTS	2.3	U	2.3	0.17	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1
8:2 FTS	2.3	U	2.3	0.29	ug/Kg	☼	07/01/19 12:55	07/06/19 01:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*58*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C5 PFPeA	*61*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C2 PFHxA	*56*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C4 PFHpA	*65*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C4 PFOA	*61*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C5 PFNA	*66*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C2 PFDA	*64*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C2 PFUnA	*65*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C2 PFDoA	*66*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C2 PFTeDA	*74*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C3 PFBS	*66*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
18O2 PFHxS	*64*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C4 PFOS	*62*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
13C8 FOSA	*48*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
d3-NMeFOSAA	*62*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
d5-NEtFOSAA	*67*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
M2-6:2 FTS	*72*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
M2-8:2 FTS	*71*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*
M2-4:2 FTS	*64*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:45*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: S-12607-062019-SK-012
Date Collected: 06/20/19 14:40
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-12
Matrix: Solid
Percent Solids: 84.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.26	U	0.26	0.036	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluoropentanoic acid (PFPeA)	0.26	U	0.26	0.10	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorohexanoic acid (PFHxA)	0.26	U	0.26	0.055	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluoroheptanoic acid (PFHpA)	0.26	U	0.26	0.038	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorooctanoic acid (PFOA)	0.26	U	0.26	0.11	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorononanoic acid (PFNA)	0.26	U	0.26	0.047	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorodecanoic acid (PFDA)	0.26	U	0.26	0.029	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluoroundecanoic acid (PFUnA)	0.26	U	0.26	0.047	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorododecanoic acid (PFDoA)	0.26	U	0.26	0.087	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorotridecanoic acid (PFTriA)	0.26	U	0.26	0.066	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorotetradecanoic acid (PFTeA)	0.26	U	0.26	0.070	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorobutanesulfonic acid (PFBS)	0.26	U	0.26	0.033	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluoropentanesulfonic acid (PFPeS)	0.26	U	0.26	0.026	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	U	0.26	0.040	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.26	U	0.26	0.046	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorooctanesulfonic acid (PFOS)	0.65	U	0.65	0.26	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorononanesulfonic acid (PFNS)	0.26	U	0.26	0.026	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorodecanesulfonic acid (PFDS)	0.26	U	0.26	0.051	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
Perfluorooctanesulfonamide (FOSA)	0.26	U	0.26	0.11	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.6	U	2.6	0.51	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.6	U	2.6	0.48	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
4:2 FTS	2.6	U	2.6	0.48	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
6:2 FTS	2.6	U	2.6	0.20	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1
8:2 FTS	2.6	U	2.6	0.33	ug/Kg	☼	07/01/19 12:55	07/06/19 01:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*68*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C5 PFPeA	*72*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C2 PFHxA	*68*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C4 PFHpA	*77*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C4 PFOA	*77*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C5 PFNA	*78*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C2 PFDA	*79*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C2 PFUnA	*81*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C2 PFDoA	*82*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C3 PFBS	*74*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
18O2 PFHxS	*73*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C4 PFOS	*70*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
13C8 FOSA	*59*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
d3-NMeFOSAA	*82*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
d5-NEtFOSAA	*81*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
M2-6:2 FTS	*91*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
M2-8:2 FTS	*101*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*
M2-4:2 FTS	*71*		*25 - 150*	*07/01/19 12:55*	*07/06/19 01:53*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACHATE FLUID
Date Collected: 06/27/19 14:00
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-13
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.77**	**J**	1.9	0.33	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.54	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.23	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.79	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorohexanesulfonic acid (PFHxS)	**0.29**	**J B**	1.9	0.16	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.51	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		07/01/19 05:53	07/04/19 00:03	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/01/19 05:53	07/04/19 00:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/01/19 05:53	07/04/19 00:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/01/19 05:53	07/04/19 00:03	1
4:2 FTS	19	U	19	4.9	ng/L		07/01/19 05:53	07/04/19 00:03	1
8:2 FTS	19	U	19	1.9	ng/L		07/01/19 05:53	07/04/19 00:03	1
6:2 FTS	19	U	19	1.9	ng/L		07/01/19 05:53	07/04/19 00:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*90*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C4 PFBA	*15*	*	*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C2 PFHxA	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C4 PFOA	*88*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C5 PFNA	*83*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C2 PFDA	*87*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C2 PFUnA	*87*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C2 PFDoA	*89*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C2 PFTeDA	*86*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C3 PFBS	*87*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
18O2 PFHxS	*90*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C4 PFOS	*90*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C4 PFHpA	*86*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
13C5 PFPeA	*83*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
d3-NMeFOSAA	*84*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
d5-NEtFOSAA	*89*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
M2-8:2 FTS	*100*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
M2-4:2 FTS	*102*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*
M2-6:2 FTS	*114*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:03*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 004
Date Collected: 06/27/19 14:00
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-14
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.64**	**J**	1.9	0.33	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.47	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.55	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.24	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.81	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorohexanesulfonic acid (PFHxS)	**0.48**	**J I B**	1.9	0.16	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.51	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		07/01/19 05:53	07/04/19 00:11	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/01/19 05:53	07/04/19 00:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/01/19 05:53	07/04/19 00:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/01/19 05:53	07/04/19 00:11	1
4:2 FTS	19	U	19	4.9	ng/L		07/01/19 05:53	07/04/19 00:11	1
8:2 FTS	19	U	19	1.9	ng/L		07/01/19 05:53	07/04/19 00:11	1
6:2 FTS	19	U	19	1.9	ng/L		07/01/19 05:53	07/04/19 00:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*93*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C4 PFBA	*19*	*	*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C2 PFHxA	*94*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C4 PFOA	*93*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C5 PFNA	*89*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C2 PFDA	*95*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C2 PFUnA	*89*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C2 PFDoA	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C2 PFTeDA	*95*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C3 PFBS	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
18O2 PFHxS	*98*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C4 PFOS	*96*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C4 PFHpA	*94*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
13C5 PFPeA	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
d3-NMeFOSAA	*88*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
d5-NEtFOSAA	*88*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
M2-8:2 FTS	*112*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
M2-4:2 FTS	*113*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*
M2-6:2 FTS	*118*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:11*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 005
Date Collected: 06/27/19 14:00
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-15
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.60**	**J**	1.9	0.33	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.47	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.55	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluoroheptanoic acid (PFHpA)	**0.38**	**J I**	1.9	0.24	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.81	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U	1.9	0.16	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.26**	**J I**	1.9	0.18	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.51	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluoropentanesulfonic acid (PFPeS)	**0.44**	**J**	1.9	0.29	ng/L		07/01/19 05:53	07/04/19 00:35	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/01/19 05:53	07/04/19 00:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		07/01/19 05:53	07/04/19 00:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/01/19 05:53	07/04/19 00:35	1
4:2 FTS	19	U	19	5.0	ng/L		07/01/19 05:53	07/04/19 00:35	1
8:2 FTS	19	U	19	1.9	ng/L		07/01/19 05:53	07/04/19 00:35	1
6:2 FTS	19	U	19	1.9	ng/L		07/01/19 05:53	07/04/19 00:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*90*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C4 PFBA	*21*	*	*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C2 PFHxA	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C4 PFOA	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C5 PFNA	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C2 PFDA	*97*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C2 PFUnA	*88*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C2 PFDoA	*88*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C2 PFTeDA	*85*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C3 PFBS	*93*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
18O2 PFHxS	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C4 PFOS	*93*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C4 PFHpA	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
13C5 PFPeA	*94*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
d3-NMeFOSAA	*85*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
d5-NEtFOSAA	*88*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
M2-8:2 FTS	*103*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
M2-4:2 FTS	*99*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*
M2-6:2 FTS	*105*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:35*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 007
Date Collected: 06/27/19 14:00
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-16
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.5**	**J**	2.1	0.36	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluoropentanoic acid (PFPeA)	2.1	U	2.1	0.50	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorohexanoic acid (PFHxA)	2.1	U	2.1	0.60	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluoroheptanoic acid (PFHpA)	2.1	U	2.1	0.26	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorooctanoic acid (PFOA)	2.1	U	2.1	0.87	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorononanoic acid (PFNA)	2.1	U	2.1	0.28	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorodecanoic acid (PFDA)	2.1	U	2.1	0.32	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluoroundecanoic acid (PFUnA)	2.1	U	2.1	1.1	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorododecanoic acid (PFDoA)	2.1	U	2.1	0.57	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorotridecanoic acid (PFTriA)	2.1	U	2.1	1.3	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorotetradecanoic acid (PFTeA)	2.1	U	2.1	0.30	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorobutanesulfonic acid (PFBS)	2.1	U	2.1	0.21	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorohexanesulfonic acid (PFHxS)	**0.37**	**J B**	2.1	0.17	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.1	U	2.1	0.20	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorodecanesulfonic acid (PFDS)	2.1	U	2.1	0.33	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorooctanesulfonic acid (PFOS)	**2.3**	**I**	2.1	0.56	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorooctanesulfonamide (FOSA)	2.1	U	2.1	0.36	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluoropentanesulfonic acid (PFPeS)	2.1	U	2.1	0.31	ng/L		07/01/19 05:53	07/04/19 00:43	1
Perfluorononanesulfonic acid (PFNS)	2.1	U	2.1	0.16	ng/L		07/01/19 05:53	07/04/19 00:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	21	U	21	3.2	ng/L		07/01/19 05:53	07/04/19 00:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	21	U	21	2.0	ng/L		07/01/19 05:53	07/04/19 00:43	1
4:2 FTS	21	U	21	5.3	ng/L		07/01/19 05:53	07/04/19 00:43	1
8:2 FTS	21	U	21	2.1	ng/L		07/01/19 05:53	07/04/19 00:43	1
6:2 FTS	21	U	21	2.1	ng/L		07/01/19 05:53	07/04/19 00:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C4 PFBA	*21*	*	*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C2 PFHxA	*96*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C4 PFOA	*93*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C5 PFNA	*90*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C2 PFDA	*96*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C2 PFUnA	*86*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C2 PFDoA	*87*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C2 PFTeDA	*83*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C3 PFBS	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
18O2 PFHxS	*94*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C4 PFOS	*90*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C4 PFHpA	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
13C5 PFPeA	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
d3-NMeFOSAA	*85*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
d5-NEtFOSAA	*83*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
M2-8:2 FTS	*100*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
M2-4:2 FTS	*110*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*
M2-6:2 FTS	*109*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:43*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 008
Date Collected: 06/27/19 14:00
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-17
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.9**		1.9	0.33	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.54	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.23	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.79	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorohexanesulfonic acid (PFHxS)	**0.39**	**J B**	1.9	0.16	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorooctanesulfonic acid (PFOS)	**7.7**	**I**	1.9	0.50	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		07/01/19 05:53	07/04/19 00:51	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/01/19 05:53	07/04/19 00:51	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/01/19 05:53	07/04/19 00:51	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/01/19 05:53	07/04/19 00:51	1
4:2 FTS	19	U	19	4.9	ng/L		07/01/19 05:53	07/04/19 00:51	1
8:2 FTS	19	U	19	1.9	ng/L		07/01/19 05:53	07/04/19 00:51	1
6:2 FTS	19	U	19	1.9	ng/L		07/01/19 05:53	07/04/19 00:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C4 PFBA	*17*	*	*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C2 PFHxA	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C4 PFOA	*90*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C5 PFNA	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C2 PFDA	*93*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C2 PFUnA	*88*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C2 PFDoA	*89*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C2 PFTeDA	*84*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C3 PFBS	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
18O2 PFHxS	*93*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C4 PFOS	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C4 PFHpA	*90*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
13C5 PFPeA	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
d3-NMeFOSAA	*87*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
M2-8:2 FTS	*108*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
M2-4:2 FTS	*105*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*
M2-6:2 FTS	*108*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:51*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 012
Date Collected: 06/27/19 14:00
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-18
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.9	U	1.9	0.34	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.47	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.56	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.24	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.82	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorohexanesulfonic acid (PFHxS)	**0.52**	**J I B**	1.9	0.16	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.52	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.34	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.29	ng/L		07/01/19 05:53	07/04/19 00:59	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/01/19 05:53	07/04/19 00:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		07/01/19 05:53	07/04/19 00:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/01/19 05:53	07/04/19 00:59	1
4:2 FTS	19	U	19	5.0	ng/L		07/01/19 05:53	07/04/19 00:59	1
8:2 FTS	19	U	19	1.9	ng/L		07/01/19 05:53	07/04/19 00:59	1
6:2 FTS	19	U	19	1.9	ng/L		07/01/19 05:53	07/04/19 00:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*88*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C4 PFBA	*58*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C2 PFHxA	*94*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C4 PFOA	*93*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C5 PFNA	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C2 PFDA	*94*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C2 PFUnA	*88*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C2 PFDoA	*91*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C2 PFTeDA	*87*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C3 PFBS	*94*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
18O2 PFHxS	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C4 PFOS	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C4 PFHpA	*94*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
13C5 PFPeA	*97*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
M2-8:2 FTS	*99*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
M2-4:2 FTS	*110*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*
M2-6:2 FTS	*112*		*25 - 150*	*07/01/19 05:53*	*07/04/19 00:59*	*1*

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-001
Date Collected: 06/20/19 10:05
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-1
Matrix: Solid
Percent Solids: 87.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	12.3		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	87.7		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-002
Date Collected: 06/20/19 10:10
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-2
Matrix: Solid
Percent Solids: 80.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	19.6		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	80.4		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-003
Date Collected: 06/20/19 10:20
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-3
Matrix: Solid
Percent Solids: 80.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	19.5		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	80.5		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-004
Date Collected: 06/20/19 10:25
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-4
Matrix: Solid
Percent Solids: 83.2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	16.8		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	83.2		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-005
Date Collected: 06/20/19 10:40
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-5
Matrix: Solid
Percent Solids: 83.7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	16.3		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	83.7		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-006
Date Collected: 06/20/19 13:20
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-6
Matrix: Solid
Percent Solids: 92.6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	7.4		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	92.6		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-007
Date Collected: 06/20/19 13:25
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-7
Matrix: Solid
Percent Solids: 89.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	10.6		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	89.4		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-008
Date Collected: 06/20/19 13:35
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-8
Matrix: Solid
Percent Solids: 84.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	16.0		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	84.0		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-009
Date Collected: 06/20/19 13:45
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-9
Matrix: Solid
Percent Solids: 82.3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	17.7		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	82.3		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-010
Date Collected: 06/20/19 14:00
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-10
Matrix: Solid
Percent Solids: 76.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	23.5		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	76.5		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-011
Date Collected: 06/20/19 14:05
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-11
Matrix: Solid
Percent Solids: 79.1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	20.9		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	79.1		0.1	0.1	%			07/10/19 14:56	1

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

Job ID: 240-115181-1

General Chemistry

Client Sample ID: S-12607-062019-SK-012
Date Collected: 06/20/19 14:40
Date Received: 06/28/19 09:15

Lab Sample ID: 240-115181-12
Matrix: Solid
Percent Solids: 84.5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	15.5		0.1	0.1	%			07/10/19 14:56	1
Percent Solids	84.5		0.1	0.1	%			07/10/19 14:56	1

LCMS

Prep Batch: 304755

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115181-13	012607A-LEACHATE FLUID	Total/NA	Water	3535	
240-115181-14	012607A-LEACH-SOIL 004	Total/NA	Water	3535	
240-115181-15	012607A-LEACH-SOIL 005	Total/NA	Water	3535	
240-115181-16	012607A-LEACH-SOIL 007	Total/NA	Water	3535	
240-115181-17	012607A-LEACH-SOIL 008	Total/NA	Water	3535	
240-115181-18	012607A-LEACH-SOIL 012	Total/NA	Water	3535	
MB 320-304755/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-304755/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-304755/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 304954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115181-1	S-12607-062019-SK-001	Total/NA	Solid	SHAKE	
240-115181-2	S-12607-062019-SK-002	Total/NA	Solid	SHAKE	
240-115181-3	S-12607-062019-SK-003	Total/NA	Solid	SHAKE	
240-115181-4	S-12607-062019-SK-004	Total/NA	Solid	SHAKE	
240-115181-5	S-12607-062019-SK-005	Total/NA	Solid	SHAKE	
240-115181-6	S-12607-062019-SK-006	Total/NA	Solid	SHAKE	
240-115181-7	S-12607-062019-SK-007	Total/NA	Solid	SHAKE	
240-115181-8	S-12607-062019-SK-008	Total/NA	Solid	SHAKE	
240-115181-9	S-12607-062019-SK-009	Total/NA	Solid	SHAKE	
240-115181-10	S-12607-062019-SK-010	Total/NA	Solid	SHAKE	
240-115181-11	S-12607-062019-SK-011	Total/NA	Solid	SHAKE	
240-115181-12	S-12607-062019-SK-012	Total/NA	Solid	SHAKE	
MB 320-304954/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-304954/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
240-115181-12 MS	S-12607-062019-SK-012	Total/NA	Solid	SHAKE	
240-115181-12 MSD	S-12607-062019-SK-012	Total/NA	Solid	SHAKE	

Analysis Batch: 305921

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115181-1	S-12607-062019-SK-001	Total/NA	Solid	537 (modified)	304954
240-115181-2	S-12607-062019-SK-002	Total/NA	Solid	537 (modified)	304954
240-115181-3	S-12607-062019-SK-003	Total/NA	Solid	537 (modified)	304954
240-115181-4	S-12607-062019-SK-004	Total/NA	Solid	537 (modified)	304954
240-115181-5	S-12607-062019-SK-005	Total/NA	Solid	537 (modified)	304954
240-115181-6	S-12607-062019-SK-006	Total/NA	Solid	537 (modified)	304954
240-115181-7	S-12607-062019-SK-007	Total/NA	Solid	537 (modified)	304954
240-115181-8	S-12607-062019-SK-008	Total/NA	Solid	537 (modified)	304954
240-115181-9	S-12607-062019-SK-009	Total/NA	Solid	537 (modified)	304954
240-115181-10	S-12607-062019-SK-010	Total/NA	Solid	537 (modified)	304954
240-115181-11	S-12607-062019-SK-011	Total/NA	Solid	537 (modified)	304954
240-115181-12	S-12607-062019-SK-012	Total/NA	Solid	537 (modified)	304954
MB 320-304954/1-A	Method Blank	Total/NA	Solid	537 (modified)	304954
LCS 320-304954/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	304954
240-115181-12 MS	S-12607-062019-SK-012	Total/NA	Solid	537 (modified)	304954
240-115181-12 MSD	S-12607-062019-SK-012	Total/NA	Solid	537 (modified)	304954

Analysis Batch: 305969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115181-13	012607A-LEACHATE FLUID	Total/NA	Water	537 (modified)	304755

LCMS (Continued)

Analysis Batch: 305969 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115181-14	012607A-LEACH-SOIL 004	Total/NA	Water	537 (modified)	304755
240-115181-15	012607A-LEACH-SOIL 005	Total/NA	Water	537 (modified)	304755
240-115181-16	012607A-LEACH-SOIL 007	Total/NA	Water	537 (modified)	304755
240-115181-17	012607A-LEACH-SOIL 008	Total/NA	Water	537 (modified)	304755
240-115181-18	012607A-LEACH-SOIL 012	Total/NA	Water	537 (modified)	304755
MB 320-304755/1-A	Method Blank	Total/NA	Water	537 (modified)	304755
LCS 320-304755/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	304755
LCSD 320-304755/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	304755

General Chemistry

Analysis Batch: 306825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115181-1	S-12607-062019-SK-001	Total/NA	Solid	D 2216	
240-115181-2	S-12607-062019-SK-002	Total/NA	Solid	D 2216	
240-115181-3	S-12607-062019-SK-003	Total/NA	Solid	D 2216	
240-115181-4	S-12607-062019-SK-004	Total/NA	Solid	D 2216	
240-115181-5	S-12607-062019-SK-005	Total/NA	Solid	D 2216	
240-115181-6	S-12607-062019-SK-006	Total/NA	Solid	D 2216	
240-115181-7	S-12607-062019-SK-007	Total/NA	Solid	D 2216	
240-115181-8	S-12607-062019-SK-008	Total/NA	Solid	D 2216	
240-115181-9	S-12607-062019-SK-009	Total/NA	Solid	D 2216	
240-115181-10	S-12607-062019-SK-010	Total/NA	Solid	D 2216	
240-115181-11	S-12607-062019-SK-011	Total/NA	Solid	D 2216	
240-115181-12	S-12607-062019-SK-012	Total/NA	Solid	D 2216	
240-115181-1 DU	S-12607-062019-SK-001	Total/NA	Solid	D 2216	

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-304755/1-A
Matrix: Water
Analysis Batch: 305969

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 304755

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.0	U	2.0	0.35	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorotetradecanoic acid (PFTeA)	0.310	J	2.0	0.29	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorohexanesulfonic acid (PFHxS)	0.333	J I	2.0	0.17	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		07/01/19 05:53	07/03/19 23:07	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/01/19 05:53	07/03/19 23:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		07/01/19 05:53	07/03/19 23:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/01/19 05:53	07/03/19 23:07	1
4:2 FTS	20	U	20	5.2	ng/L		07/01/19 05:53	07/03/19 23:07	1
8:2 FTS	20	U	20	2.0	ng/L		07/01/19 05:53	07/03/19 23:07	1
6:2 FTS	20	U	20	2.0	ng/L		07/01/19 05:53	07/03/19 23:07	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C2 PFHxA	*89*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C4 PFOA	*88*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C4 PFHpA	*90*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C5 PFNA	*85*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C2 PFDA	*89*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C5 PFPeA	*90*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C2 PFUnA	*83*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C2 PFDoA	*86*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C2 PFTeDA	*82*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C3 PFBS	*86*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
18O2 PFHxS	*89*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C4 PFOS	*86*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
13C8 FOSA	*83*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
d3-NMeFOSAA	*81*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
d5-NEtFOSAA	*83*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
M2-8:2 FTS	*95*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
M2-4:2 FTS	*92*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*
M2-6:2 FTS	*107*		*25 - 150*	*07/01/19 05:53*	*07/03/19 23:07*	*1*

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

Lab Sample ID: LCS 320-304755/2-A
Matrix: Water
Analysis Batch: 305969

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 304755

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	44.2		ng/L		110	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	41.0		ng/L		102	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	41.1		ng/L		103	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	39.4		ng/L		99	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	41.0		ng/L		102	64 - 124
Perfluorononanoic acid (PFNA)	40.0	41.6		ng/L		104	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	40.7		ng/L		102	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.6		ng/L		101	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	42.0		ng/L		105	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	41.3		ng/L		103	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	38.7		ng/L		97	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	35.6		ng/L		101	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.9		ng/L		93	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.8		ng/L		104	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	37.4		ng/L		101	67 - 127
Perfluorodecanesulfonic acid (PFDS)	38.6	39.2		ng/L		102	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	43.9		ng/L		110	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	37.5	38.0		ng/L		101	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	39.6		ng/L		103	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.5		ng/L		101	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.8		ng/L		94	65 - 125
4:2 FTS	37.4	38.8		ng/L		104	70 - 130
8:2 FTS	38.3	43.2		ng/L		113	67 - 127
6:2 FTS	37.9	39.1		ng/L		103	66 - 126

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*89*		*25 - 150*
13C2 PFHxA	*89*		*25 - 150*
13C4 PFOA	*87*		*25 - 150*
13C4 PFHpA	*90*		*25 - 150*
13C5 PFNA	*86*		*25 - 150*
13C2 PFDA	*90*		*25 - 150*
13C5 PFPeA	*91*		*25 - 150*
13C2 PFUnA	*80*		*25 - 150*
13C2 PFDoA	*85*		*25 - 150*
13C2 PFTeDA	*85*		*25 - 150*
13C3 PFBS	*88*		*25 - 150*
18O2 PFHxS	*88*		*25 - 150*

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

Lab Sample ID: LCS 320-304755/2-A
Matrix: Water
Analysis Batch: 305969

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 304755

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFOS	87		25 - 150
13C8 FOSA	79		25 - 150
d3-NMeFOSAA	79		25 - 150
d5-NEtFOSAA	81		25 - 150
M2-8:2 FTS	96		25 - 150
M2-4:2 FTS	97		25 - 150
M2-6:2 FTS	108		25 - 150

Lab Sample ID: LCSD 320-304755/3-A
Matrix: Water
Analysis Batch: 305969

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 304755

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	41.4		ng/L		104	70 - 130	6	30
Perfluoropentanoic acid (PFPeA)			40.0	40.4		ng/L		101	66 - 126	1	30
Perfluorohexanoic acid (PFHxA)			40.0	40.2		ng/L		100	66 - 126	2	30
Perfluoroheptanoic acid (PFHpA)			40.0	39.0		ng/L		98	66 - 126	1	30
Perfluorooctanoic acid (PFOA)			40.0	40.3		ng/L		101	64 - 124	2	30
Perfluorononanoic acid (PFNA)			40.0	40.9		ng/L		102	68 - 128	2	30
Perfluorodecanoic acid (PFDA)			40.0	41.3		ng/L		103	69 - 129	1	30
Perfluoroundecanoic acid (PFUnA)			40.0	36.6		ng/L		92	60 - 120	10	30
Perfluorododecanoic acid (PFDoA)			40.0	39.9		ng/L		100	71 - 131	5	30
Perfluorotridecanoic acid (PFTriA)			40.0	40.0		ng/L		100	72 - 132	3	30
Perfluorotetradecanoic acid (PFTeA)			40.0	40.4		ng/L		101	68 - 128	4	30
Perfluorobutanesulfonic acid (PFBS)			35.4	36.1		ng/L		102	73 - 133	1	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	33.5		ng/L		92	63 - 123	1	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	38.1		ng/L		100	68 - 128	4	30
Perfluorooctanesulfonic acid (PFOS)			37.1	36.1		ng/L		97	67 - 127	3	30
Perfluorodecanesulfonic acid (PFDS)			38.6	38.1		ng/L		99	68 - 128	3	30
Perfluorooctanesulfonamide (FOSA)			40.0	43.1		ng/L		108	70 - 130	2	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	37.6		ng/L		100	70 - 130	1	30
Perfluorononanesulfonic acid (PFNS)			38.4	41.0		ng/L		107	70 - 130	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	40.4		ng/L		101	67 - 127	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	36.9		ng/L		92	65 - 125	2	30
4:2 FTS			37.4	38.1		ng/L		102	70 - 130	2	30
8:2 FTS			38.3	42.4		ng/L		111	67 - 127	2	30
6:2 FTS			37.9	40.1		ng/L		106	66 - 126	2	30

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

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4 PFBA	93		25 - 150
13C2 PFHxA	93		25 - 150
13C4 PFOA	90		25 - 150
13C4 PFHpA	93		25 - 150
13C5 PFNA	91		25 - 150
13C2 PFDA	93		25 - 150
13C5 PFPeA	95		25 - 150
13C2 PFUnA	88		25 - 150
13C2 PFDoA	89		25 - 150
13C2 PFTeDA	87		25 - 150
13C3 PFBS	90		25 - 150
18O2 PFHxS	91		25 - 150
13C4 PFOS	91		25 - 150
13C8 FOSA	81		25 - 150
d3-NMeFOSAA	86		25 - 150
d5-NEtFOSAA	92		25 - 150
M2-8:2 FTS	99		25 - 150
M2-4:2 FTS	96		25 - 150
M2-6:2 FTS	110		25 - 150

Lab Sample ID: MB 320-304954/1-A
Matrix: Solid
Analysis Batch: 305921

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 304954

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.20	U	0.20	0.028	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluoropentanoic acid (PFPeA)	0.20	U	0.20	0.077	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorohexanoic acid (PFHxA)	0.20	U	0.20	0.042	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluoroheptanoic acid (PFHpA)	0.20	U I	0.20	0.029	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorooctanoic acid (PFOA)	0.20	U	0.20	0.086	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorononanoic acid (PFNA)	0.20	U	0.20	0.036	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorodecanoic acid (PFDA)	0.20	U	0.20	0.022	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluoroundecanoic acid (PFUnA)	0.20	U	0.20	0.036	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorododecanoic acid (PFDoA)	0.20	U	0.20	0.067	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorotridecanoic acid (PFTriA)	0.20	U	0.20	0.051	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorotetradecanoic acid (PFTeA)	0.20	U	0.20	0.054	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorobutanesulfonic acid (PFBS)	0.20	U	0.20	0.025	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorohexanesulfonic acid (PFHxS)	0.20	U	0.20	0.031	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.20	U	0.20	0.035	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorooctanesulfonic acid (PFOS)	0.50	U	0.50	0.20	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorodecanesulfonic acid (PFDS)	0.20	U	0.20	0.039	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorooctanesulfonamide (FOSA)	0.20	U	0.20	0.082	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluoropentanesulfonic acid (PFPeS)	0.20	U	0.20	0.020	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
Perfluorononanesulfonic acid (PFNS)	0.20	U	0.20	0.020	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.0	U	2.0	0.39	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.0	U	2.0	0.37	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
4:2 FTS	2.0	U	2.0	0.37	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
8:2 FTS	2.0	U	2.0	0.25	ug/Kg		07/01/19 12:55	07/05/19 22:33	1
6:2 FTS	2.0	U	2.0	0.15	ug/Kg		07/01/19 12:55	07/05/19 22:33	1

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

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	60		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C2 PFHxA	64		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C4 PFOA	68		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C4 PFHpA	71		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C5 PFNA	68		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C2 PFDA	72		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C5 PFPeA	63		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C2 PFUnA	69		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C2 PFDoA	74		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C2 PFTeDA	75		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C3 PFBS	69		25 - 150	07/01/19 12:55	07/05/19 22:33	1
18O2 PFHxS	70		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C4 PFOS	67		25 - 150	07/01/19 12:55	07/05/19 22:33	1
13C8 FOSA	54		25 - 150	07/01/19 12:55	07/05/19 22:33	1
d3-NMeFOSAA	68		25 - 150	07/01/19 12:55	07/05/19 22:33	1
d5-NEtFOSAA	70		25 - 150	07/01/19 12:55	07/05/19 22:33	1
M2-8:2 FTS	74		25 - 150	07/01/19 12:55	07/05/19 22:33	1
M2-4:2 FTS	82		25 - 150	07/01/19 12:55	07/05/19 22:33	1
M2-6:2 FTS	86		25 - 150	07/01/19 12:55	07/05/19 22:33	1

Lab Sample ID: LCS 320-304954/2-A
Matrix: Solid
Analysis Batch: 305921

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 304954

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	2.00	2.07		ug/Kg		103	81 - 133
Perfluoropentanoic acid (PFPeA)	2.00	1.86		ug/Kg		93	79 - 120
Perfluorohexanoic acid (PFHxA)	2.00	1.89		ug/Kg		94	75 - 125
Perfluoroheptanoic acid (PFHpA)	2.00	2.01		ug/Kg		100	76 - 124
Perfluorooctanoic acid (PFOA)	2.00	1.92		ug/Kg		96	76 - 121
Perfluorononanoic acid (PFNA)	2.00	2.03		ug/Kg		102	74 - 126
Perfluorodecanoic acid (PFDA)	2.00	1.97		ug/Kg		98	74 - 124
Perfluoroundecanoic acid (PFUnA)	2.00	1.96		ug/Kg		98	74 - 114
Perfluorododecanoic acid (PFDoA)	2.00	2.13		ug/Kg		107	75 - 123
Perfluorotridecanoic acid (PFTriA)	2.00	2.12		ug/Kg		106	43 - 116
Perfluorotetradecanoic acid (PFTeA)	2.00	2.00		ug/Kg		100	22 - 129
Perfluorobutanesulfonic acid (PFBS)	1.77	1.81		ug/Kg		102	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.77		ug/Kg		97	75 - 121
Perfluoroheptanesulfonic Acid (PFHpS)	1.90	1.88		ug/Kg		98	78 - 146
Perfluorooctanesulfonic acid (PFOS)	1.86	1.66		ug/Kg		90	69 - 131
Perfluorodecanesulfonic acid (PFDS)	1.93	1.89		ug/Kg		98	54 - 113
Perfluorooctanesulfonamide (FOSA)	2.00	2.31		ug/Kg		116	62 - 135
Perfluoropentanesulfonic acid (PFPeS)	1.88	1.80		ug/Kg		96	70 - 130

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

Lab Sample ID: LCS 320-304954/2-A
Matrix: Solid
Analysis Batch: 305921

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 304954

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorononanesulfonic acid (PFNS)			1.92	1.76		ug/Kg		91	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			2.00	2.00		ug/Kg		100	65 - 135		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			2.00	2.06		ug/Kg		103	65 - 135		
4:2 FTS			1.87	1.78	J	ug/Kg		95	50 - 150		
8:2 FTS			1.92	2.13		ug/Kg		111	65 - 135		
6:2 FTS			1.90	1.89	J	ug/Kg		100	65 - 135		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*63*		*25 - 150*
13C2 PFHxA	*69*		*25 - 150*
13C4 PFOA	*70*		*25 - 150*
13C4 PFHpA	*71*		*25 - 150*
13C5 PFNA	*70*		*25 - 150*
13C2 PFDA	*73*		*25 - 150*
13C5 PFPeA	*67*		*25 - 150*
13C2 PFUnA	*75*		*25 - 150*
13C2 PFDoA	*73*		*25 - 150*
13C2 PFTeDA	*79*		*25 - 150*
13C3 PFBS	*70*		*25 - 150*
18O2 PFHxS	*72*		*25 - 150*
13C4 PFOS	*73*		*25 - 150*
13C8 FOSA	*53*		*25 - 150*
d3-NMeFOSAA	*73*		*25 - 150*
d5-NEtFOSAA	*72*		*25 - 150*
M2-8:2 FTS	*67*		*25 - 150*
M2-4:2 FTS	*77*		*25 - 150*
M2-6:2 FTS	*80*		*25 - 150*

Lab Sample ID: 240-115181-12 MS
Matrix: Solid
Analysis Batch: 305921

Client Sample ID: S-12607-062019-SK-012
Prep Type: Total/NA
Prep Batch: 304954

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorobutanoic acid (PFBA)	0.26	U	2.36	2.73		ug/Kg	☼	115	81 - 133		
Perfluoropentanoic acid (PFPeA)	0.26	U	2.36	2.38		ug/Kg	☼	101	79 - 120		
Perfluorohexanoic acid (PFHxA)	0.26	U	2.36	2.35		ug/Kg	☼	100	75 - 125		
Perfluoroheptanoic acid (PFHpA)	0.26	U	2.36	2.41		ug/Kg	☼	102	76 - 124		
Perfluorooctanoic acid (PFOA)	0.26	U	2.36	2.37		ug/Kg	☼	100	76 - 121		
Perfluorononanoic acid (PFNA)	0.26	U	2.36	2.58		ug/Kg	☼	109	74 - 126		
Perfluorodecanoic acid (PFDA)	0.26	U	2.36	2.58		ug/Kg	☼	109	74 - 124		
Perfluoroundecanoic acid (PFUnA)	0.26	U	2.36	2.28		ug/Kg	☼	97	74 - 114		
Perfluorododecanoic acid (PFDoA)	0.26	U	2.36	2.57		ug/Kg	☼	109	75 - 123		
Perfluorotridecanoic acid (PFTriA)	0.26	U	2.36	2.44		ug/Kg	☼	103	43 - 116		
Perfluorotetradecanoic acid (PFTeA)	0.26	U	2.36	2.37		ug/Kg	☼	100	22 - 129		

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

Lab Sample ID: 240-115181-12 MS
Matrix: Solid
Analysis Batch: 305921

Client Sample ID: S-12607-062019-SK-012
Prep Type: Total/NA
Prep Batch: 304954

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	0.26	U	2.09	2.09		ug/Kg	☼	100	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	0.26	U	2.15	2.06		ug/Kg	☼	96	75 - 121
Perfluoroheptanesulfonic Acid (PFHpS)	0.26	U	2.25	2.26		ug/Kg	☼	100	78 - 146
Perfluorooctanesulfonic acid (PFOS)	0.65	U	2.19	2.15		ug/Kg	☼	98	69 - 131
Perfluorodecanesulfonic acid (PFDS)	0.26	U	2.28	2.27		ug/Kg	☼	100	54 - 113
Perfluorooctanesulfonamide (FOSA)	0.26	U	2.36	2.54		ug/Kg	☼	108	62 - 135
Perfluoropentanesulfonic acid (PFPeS)	0.26	U	2.22	2.29		ug/Kg	☼	103	70 - 130
Perfluorononanesulfonic acid (PFNS)	0.26	U	2.27	2.13		ug/Kg	☼	94	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.6	U	2.36	2.35	J	ug/Kg	☼	99	65 - 135
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.6	U	2.36	2.38	J	ug/Kg	☼	101	65 - 135
4:2 FTS	2.6	U	2.21	2.62		ug/Kg	☼	119	50 - 150
8:2 FTS	2.6	U	2.26	2.36	J	ug/Kg	☼	104	65 - 135
6:2 FTS	2.6	U	2.24	2.37	J	ug/Kg	☼	106	65 - 135

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFBA	*69*		*25 - 150*
13C2 PFHxA	*70*		*25 - 150*
13C4 PFOA	*77*		*25 - 150*
13C4 PFHpA	*78*		*25 - 150*
13C5 PFNA	*75*		*25 - 150*
13C2 PFDA	*78*		*25 - 150*
13C5 PFPeA	*73*		*25 - 150*
13C2 PFUnA	*80*		*25 - 150*
13C2 PFDoA	*81*		*25 - 150*
13C2 PFTeDA	*84*		*25 - 150*
13C3 PFBS	*73*		*25 - 150*
18O2 PFHxS	*74*		*25 - 150*
13C4 PFOS	*74*		*25 - 150*
13C8 FOSA	*57*		*25 - 150*
d3-NMeFOSAA	*79*		*25 - 150*
d5-NEtFOSAA	*83*		*25 - 150*
M2-8:2 FTS	*97*		*25 - 150*
M2-4:2 FTS	*65*		*25 - 150*
M2-6:2 FTS	*79*		*25 - 150*

Lab Sample ID: 240-115181-12 MSD
Matrix: Solid
Analysis Batch: 305921

Client Sample ID: S-12607-062019-SK-012
Prep Type: Total/NA
Prep Batch: 304954

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	0.26	U	2.66	3.07		ug/Kg	☼	116	81 - 133	12	30

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

Lab Sample ID: 240-115181-12 MSD
Matrix: Solid
Analysis Batch: 305921

Client Sample ID: S-12607-062019-SK-012
Prep Type: Total/NA
Prep Batch: 304954

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)	0.26	U	2.66	2.59		ug/Kg	☼	98	79 - 120	9	30
Perfluorohexanoic acid (PFHxA)	0.26	U	2.66	2.88		ug/Kg	☼	108	75 - 125	20	30
Perfluoroheptanoic acid (PFHpA)	0.26	U	2.66	2.71		ug/Kg	☼	102	76 - 124	12	30
Perfluorooctanoic acid (PFOA)	0.26	U	2.66	2.68		ug/Kg	☼	101	76 - 121	12	30
Perfluorononanoic acid (PFNA)	0.26	U	2.66	2.74		ug/Kg	☼	103	74 - 126	6	30
Perfluorodecanoic acid (PFDA)	0.26	U	2.66	2.77		ug/Kg	☼	104	74 - 124	7	30
Perfluoroundecanoic acid (PFUnA)	0.26	U	2.66	2.54		ug/Kg	☼	96	74 - 114	11	30
Perfluorododecanoic acid (PFDoA)	0.26	U	2.66	2.83		ug/Kg	☼	106	75 - 123	10	30
Perfluorotridecanoic acid (PFTriA)	0.26	U	2.66	2.79		ug/Kg	☼	105	43 - 116	13	30
Perfluorotetradecanoic acid (PFTeA)	0.26	U	2.66	2.61		ug/Kg	☼	98	22 - 129	10	30
Perfluorobutanesulfonic acid (PFBS)	0.26	U	2.35	2.38		ug/Kg	☼	101	73 - 142	13	30
Perfluorohexanesulfonic acid (PFHxS)	0.26	U	2.42	2.48		ug/Kg	☼	102	75 - 121	18	30
Perfluoroheptanesulfonic Acid (PFHpS)	0.26	U	2.53	2.61		ug/Kg	☼	103	78 - 146	15	30
Perfluorooctanesulfonic acid (PFOS)	0.65	U	2.47	2.30		ug/Kg	☼	93	69 - 131	7	30
Perfluorodecanesulfonic acid (PFDS)	0.26	U	2.56	2.54		ug/Kg	☼	99	54 - 113	11	30
Perfluorooctanesulfonamide (FOSA)	0.26	U	2.66	2.68		ug/Kg	☼	101	62 - 135	5	30
Perfluoropentanesulfonic acid (PFPeS)	0.26	U	2.50	2.34		ug/Kg	☼	94	70 - 130	2	30
Perfluorononanesulfonic acid (PFNS)	0.26	U	2.55	2.44		ug/Kg	☼	95	70 - 130	14	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.6	U	2.66	2.89		ug/Kg	☼	109	65 - 135	21	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.6	U	2.66	2.51	J	ug/Kg	☼	94	65 - 135	5	30
4:2 FTS	2.6	U	2.48	2.54	J	ug/Kg	☼	102	50 - 150	3	30
8:2 FTS	2.6	U	2.55	2.54	J	ug/Kg	☼	100	65 - 135	7	30
6:2 FTS	2.6	U	2.52	2.42	J	ug/Kg	☼	96	65 - 135	2	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFBA	*72*		*25 - 150*
13C2 PFHxA	*71*		*25 - 150*
13C4 PFOA	*78*		*25 - 150*
13C4 PFHpA	*80*		*25 - 150*
13C5 PFNA	*77*		*25 - 150*
13C2 PFDA	*76*		*25 - 150*
13C5 PFPeA	*79*		*25 - 150*
13C2 PFUnA	*78*		*25 - 150*
13C2 PFDoA	*77*		*25 - 150*
13C2 PFTeDA	*84*		*25 - 150*
13C3 PFBS	*79*		*25 - 150*
18O2 PFHxS	*76*		*25 - 150*
13C4 PFOS	*78*		*25 - 150*

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

Lab Sample ID: 240-115181-12 MSD
Matrix: Solid
Analysis Batch: 305921

Client Sample ID: S-12607-062019-SK-012
Prep Type: Total/NA
Prep Batch: 304954

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C8 FOSA	*59*		*25 - 150*
d3-NMeFOSAA	*79*		*25 - 150*
d5-NEtFOSAA	*83*		*25 - 150*
M2-8:2 FTS	*91*		*25 - 150*
M2-4:2 FTS	*72*		*25 - 150*
M2-6:2 FTS	*94*		*25 - 150*

Method: D 2216 - Percent Moisture

Lab Sample ID: 240-115181-1 DU
Matrix: Solid
Analysis Batch: 306825

Client Sample ID: S-12607-062019-SK-001
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	12.3			12.1		%				2	20
Percent Solids	87.7			87.9		%				0.3	20

Client Sample ID: S-12607-062019-SK-001 — **Lab Sample ID: 240-115181-1**
Date Collected: 06/20/19 10:05 — **Matrix: Solid**
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Client Sample ID: S-12607-062019-SK-001 — **Lab Sample ID: 240-115181-1**
Date Collected: 06/20/19 10:05 — **Matrix: Solid**
Date Received: 06/28/19 09:15 — **Percent Solids: 87.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 00:09	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-002 — **Lab Sample ID: 240-115181-2**
Date Collected: 06/20/19 10:10 — **Matrix: Solid**
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Client Sample ID: S-12607-062019-SK-002 — **Lab Sample ID: 240-115181-2**
Date Collected: 06/20/19 10:10 — **Matrix: Solid**
Date Received: 06/28/19 09:15 — **Percent Solids: 80.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 00:17	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-003 — **Lab Sample ID: 240-115181-3**
Date Collected: 06/20/19 10:20 — **Matrix: Solid**
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Client Sample ID: S-12607-062019-SK-003 — **Lab Sample ID: 240-115181-3**
Date Collected: 06/20/19 10:20 — **Matrix: Solid**
Date Received: 06/28/19 09:15 — **Percent Solids: 80.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 00:25	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-004 — **Lab Sample ID: 240-115181-4**
Date Collected: 06/20/19 10:25 — **Matrix: Solid**
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Lab Chronicle

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

Job ID: 240-115181-1

Client Sample ID: S-12607-062019-SK-004
Lab Sample ID: 240-115181-4
Date Collected: 06/20/19 10:25
Matrix: Solid
Date Received: 06/28/19 09:15
Percent Solids: 83.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 00:33	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-005
Lab Sample ID: 240-115181-5
Date Collected: 06/20/19 10:40
Matrix: Solid
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Client Sample ID: S-12607-062019-SK-005
Lab Sample ID: 240-115181-5
Date Collected: 06/20/19 10:40
Matrix: Solid
Date Received: 06/28/19 09:15
Percent Solids: 83.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 00:41	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-006
Lab Sample ID: 240-115181-6
Date Collected: 06/20/19 13:20
Matrix: Solid
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Client Sample ID: S-12607-062019-SK-006
Lab Sample ID: 240-115181-6
Date Collected: 06/20/19 13:20
Matrix: Solid
Date Received: 06/28/19 09:15
Percent Solids: 92.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 00:49	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-007
Lab Sample ID: 240-115181-7
Date Collected: 06/20/19 13:25
Matrix: Solid
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Lab Chronicle

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

Job ID: 240-115181-1

Client Sample ID: S-12607-062019-SK-007
Lab Sample ID: 240-115181-7
Date Collected: 06/20/19 13:25
Matrix: Solid
Date Received: 06/28/19 09:15
Percent Solids: 89.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 00:57	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-008
Lab Sample ID: 240-115181-8
Date Collected: 06/20/19 13:35
Matrix: Solid
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Client Sample ID: S-12607-062019-SK-008
Lab Sample ID: 240-115181-8
Date Collected: 06/20/19 13:35
Matrix: Solid
Date Received: 06/28/19 09:15
Percent Solids: 84.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 01:05	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-009
Lab Sample ID: 240-115181-9
Date Collected: 06/20/19 13:45
Matrix: Solid
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Client Sample ID: S-12607-062019-SK-009
Lab Sample ID: 240-115181-9
Date Collected: 06/20/19 13:45
Matrix: Solid
Date Received: 06/28/19 09:15
Percent Solids: 82.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 01:29	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-010
Lab Sample ID: 240-115181-10
Date Collected: 06/20/19 14:00
Matrix: Solid
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Lab Chronicle

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

Job ID: 240-115181-1

Client Sample ID: S-12607-062019-SK-010
Lab Sample ID: 240-115181-10
Date Collected: 06/20/19 14:00
Matrix: Solid
Date Received: 06/28/19 09:15
Percent Solids: 76.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 01:37	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-011
Lab Sample ID: 240-115181-11
Date Collected: 06/20/19 14:05
Matrix: Solid
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Client Sample ID: S-12607-062019-SK-011
Lab Sample ID: 240-115181-11
Date Collected: 06/20/19 14:05
Matrix: Solid
Date Received: 06/28/19 09:15
Percent Solids: 79.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 01:45	D1R	TAL SAC

Client Sample ID: S-12607-062019-SK-012
Lab Sample ID: 240-115181-12
Date Collected: 06/20/19 14:40
Matrix: Solid
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	306825	07/10/19 14:56	SAD	TAL SAC

Client Sample ID: S-12607-062019-SK-012
Lab Sample ID: 240-115181-12
Date Collected: 06/20/19 14:40
Matrix: Solid
Date Received: 06/28/19 09:15
Percent Solids: 84.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			304954	07/01/19 12:55	CGF	TAL SAC
Total/NA	Analysis	537 (modified)		1	305921	07/06/19 01:53	D1R	TAL SAC

Client Sample ID: 012607A-LEACHATE FLUID
Lab Sample ID: 240-115181-13
Date Collected: 06/27/19 14:00
Matrix: Water
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			304755	07/01/19 05:53	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	305969	07/04/19 00:03	D1R	TAL SAC

Lab Chronicle

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

Job ID: 240-115181-1

Client Sample ID: 012607A-LEACH-SOIL 004
Lab Sample ID: 240-115181-14
Date Collected: 06/27/19 14:00
Matrix: Water
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			304755	07/01/19 05:53	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	305969	07/04/19 00:11	D1R	TAL SAC

Client Sample ID: 012607A-LEACH-SOIL 005
Lab Sample ID: 240-115181-15
Date Collected: 06/27/19 14:00
Matrix: Water
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			304755	07/01/19 05:53	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	305969	07/04/19 00:35	D1R	TAL SAC

Client Sample ID: 012607A-LEACH-SOIL 007
Lab Sample ID: 240-115181-16
Date Collected: 06/27/19 14:00
Matrix: Water
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			304755	07/01/19 05:53	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	305969	07/04/19 00:43	D1R	TAL SAC

Client Sample ID: 012607A-LEACH-SOIL 008
Lab Sample ID: 240-115181-17
Date Collected: 06/27/19 14:00
Matrix: Water
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			304755	07/01/19 05:53	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	305969	07/04/19 00:51	D1R	TAL SAC

Client Sample ID: 012607A-LEACH-SOIL 012
Lab Sample ID: 240-115181-18
Date Collected: 06/27/19 14:00
Matrix: Water
Date Received: 06/28/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			304755	07/01/19 05:53	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	305969	07/04/19 00:59	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: 240-115181-1
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	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kansas	NELAP		E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-21
Nevada	State		OH00048	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-115181-1
Project/Site: 12607, 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	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD		L2468	01-20-21
ANAB	DOE		L2468.01	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-20
California	State Program	9	2897	01-31-20
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State		PH-0691	06-30-21
Connecticut	State Program	1	PH-0691	06-30-21
Florida	NELAP	4	E87570	06-30-20
Florida	NELAP		E87570	06-30-20
Hawaii	State Program	9	N/A	01-29-20
Illinois	NELAP	5	200060	03-17-20 *
Kansas	NELAP	7	E-10375	10-31-19
Louisiana	NELAP	6	30612	06-30-20
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-20-20
New York	NELAP	2	11666	04-01-20
Oregon	NELAP	10	4040	01-29-20
Oregon	NELAP		4040	01-29-20
Pennsylvania	NELAP	3	68-01272	03-31-20
Pennsylvania	NELAP		68-01272	03-31-20
Texas	NELAP	6	T104704399	05-31-20
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	12-31-20
Utah	NELAP	8	CA00044	02-29-20
Vermont	State Program	1	VT-4040	04-16-20
Virginia	NELAP	3	460278	03-14-20
Washington	State Program	10	C581	05-05-20
West Virginia (DW)	State Program	3	9930C	12-31-19
Wyoming	State Program	8	8TMS-L	01-28-19 *

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

4.8/4.9

CHAIN OF CUSTODY RECORD

COC NO.: 59075

Address: 2055 Niagara Falls Blvd., Niagara Falls, NY 14304 PAGE 1 OF 2

Phone: (716) 297-6150 Fax:

Project No/ Phase/Task Code: 012607A-T31Y19	Laboratory Name: Test America	Lab Location: TA-North Canton	SSOW ID:
Project Name: RACER Eckles Rd.	Lab Contact: Denise Heckler		Cooler No:
Project Location: Livonia, MI			Carrier:
GHD Chemistry Contact: Ruth Mickle			Airbill No:
Sampler(s): Ryan Thomas			Total # of Containers: 24

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd//yy)	Time (hh:mm)	Sample Type: Matrix Code (see back of COC)	Sample Type: Grab (G) or Comp (C)	Sample Type: Filtered (Y/N)	Analysis Requested (See Back of COC for Definitions): PFAS - Per SSOW	Total Containers/sample	MS/MSD Request	Comments/ Special Instructions:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)									
1	S-12607-062019-SK-001	06/20/19	10:05	SO	G		✓	1		
2	S-12607-062019-SK-002		10:10				✓	1		
3	S-12607-062019-SK-003		10:20				✓	1		
4	S-12607-062019-SK-004		10:25				✓	1		
5	S-12607-062019-SK-005		10:40				✓	1		
6	S-12607-062019-SK-006		13:20				✓	1		
7	S-12607-062019-SK-007		13:25				✓	1		
8	S-12607-062019-SK-008		13:35				✓	1		
9	S-12607-062019-SK-009		13:45				✓	1		
10	S-12607-062019-SK-010		14:00				✓	1		
11	S-12607-062019-SK-011		14:05				✓	1		
12	S-12607-062019-SK-012		14:40				✓	1		

240-115181 Chain of Custody

TAT Required in business days (use separate COCs for different TATs):

☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other:

Notes/ Special Requirements:

	Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1.	Ryan	GHD	6/27/19	1530	1.	TA	6/28/19	915
2.					2.			
3.					3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

GOLDENROD Sampling Crew CHD Form: COC 10R (20110804)

7/28/2019

CHAIN OF CUSTODY RECORD

COC NO.: 59076

Address: 2055 Niagara Falls Blvd., Niagara Falls, NY 14304 PAGE 2 OF 2
Phone: (716) 297-6150 Fax:

Project No/ Phase/Task Code: 012607A-T31Y1G	Laboratory Name: Test America	Lab Location: TA-North Canton	SSOW ID:
Project Name: RACER Eckles Rd.	Lab Contact: Denise Heckler		Cooler No:
Project Location: Livonia, MI			Carrier:
GHD Chemistry Contact: Ruth Mickle			Airbill No:
Sampler(s): Ryan Thomas			Total # of Containers: 24

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd//yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	PFAS - per SSOW	Total Containers/sample	MS/MSD Request	Comments/ Special Instructions:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)									
1	012607A-Leachate Fluid	6/27/19	1400				✓	2		
2	012607A-Leach-Soil 004						✓	2		
3	012607A-Leach-Soil 005						✓	2		
4	012607A-Leach-Soil 007						✓	2		
5	012607A-Leach-Soil 008						✓	2		
6	012607A-Leach-Soil 012						✓	2		
7										
8										
9										
10										
11										
12										

TAT Required in business days (use separate COCs for different TATs):

☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other:

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. Ryan Thomas	GHD	6/27/19	1530	1.	TAL	6/28/19	915
2.				2.			
3.				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

GHD Form: COC-10B (20110804)

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 115181**
Canton Facility

Client GAI Site Name _____ Cooler unpacked by:

Cooler Received on 6/28/19 Opened on 6/28/19

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

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

TestAmerica Cooler # 17 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-8 (CF +0.1 °C) Observed Cooler Temp. 4.8 °C Corrected Cooler Temp. 4.9 °C

IR GUN #36 (CF +0.6°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 be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC984738
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
16. 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 _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: DR

18. 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)

19. 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 TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-105914.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: denise.heckler@testamericainc.com	State of Origin: Michigan	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-115181-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 7/17/2019			
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#:			

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:

Analysis Requested

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)	Moisture/ Percent Moisture	PFC_IDA/Shake_Bath_14D PFAS, Standard List (24 Analytes)	PFC_IDA/3535_PFC (MOD) PFAS	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
S-12607-062019-SK-001 (240-115181-1)	6/20/19	10:05 Eastern		Solid			X	X		1	
S-12607-062019-SK-002 (240-115181-2)	6/20/19	10:10 Eastern		Solid			X	X		1	
S-12607-062019-SK-003 (240-115181-3)	6/20/19	10:20 Eastern		Solid			X	X		1	
S-12607-062019-SK-004 (240-115181-4)	6/20/19	10:25 Eastern		Solid			X	X		1	
S-12607-062019-SK-005 (240-115181-5)	6/20/19	10:40 Eastern		Solid			X	X		1	
S-12607-062019-SK-006 (240-115181-6)	6/20/19	13:20 Eastern		Solid			X	X		1	
S-12607-062019-SK-007 (240-115181-7)	6/20/19	13:25 Eastern		Solid			X	X		1	
S-12607-062019-SK-008 (240-115181-8)	6/20/19	13:35 Eastern		Solid			X	X		1	
S-12607-062019-SK-009 (240-115181-9)	6/20/19	13:45 Eastern		Solid			X	X		1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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 TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

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	Charles M	6-28-19 1637	240	[illegible]	6/29/19 930	ETASAC
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: 1-6

Ver: 01/16/2019

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 TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-105914.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: denise.heckler@testamericainc.com	State of Origin: Michigan	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-115181-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 7/17/2019			
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)	Moisture/ Percent Moisture	PFC_IDA/Shake_Bath_14D PFAS, Standard List (24 Analytes)	PFC_IDA/3535_PFC (MOD) PFAS	Total Number of containers	Special Instructions/Note:
			Preservation Code:								
S-12607-062019-SK-010 (240-115181-10)	6/20/19	14:00 Eastern		Solid			X	X		1	
S-12607-062019-SK-011 (240-115181-11)	6/20/19	14:05 Eastern		Solid			X	X		1	
S-12607-062019-SK-012 (240-115181-12)	6/20/19	14:40 Eastern		Solid			X	X		1	
012607A-LEACHATE FLUID (240-115181-13)	6/27/19	14:00 Eastern		Water					X	2	
012607A-LEACH-SOIL 004 (240-115181-14)	6/27/19	14:00 Eastern		Water					X	2	
012607A-LEACH-SOIL 005 (240-115181-15)	6/27/19	14:00 Eastern		Water					X	2	
012607A-LEACH-SOIL 007 (240-115181-16)	6/27/19	14:00 Eastern		Water					X	2	
012607A-LEACH-SOIL 008 (240-115181-17)	6/27/19	14:00 Eastern		Water					X	2	
012607A-LEACH-SOIL 012 (240-115181-18)	6/27/19	14:00 Eastern		Water					X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

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: Charles Ellis	6-28-19 1637	240	Isabella Capps	6/29/19 930	ESPSE
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
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: 1.6

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-115181-1

Login Number: 115181
List Number: 2
Creator: Long, Tyrel W

List Source: Eurofins TestAmerica, Sacramento
List Creation: 06/29/19 12:09 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	1.6c
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?	N/A	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, RACER Eckles Rd

Job ID: 240-115181-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

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)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-115181-1	S-12607-062019-SK-001	75	78	80	79	78	78	84	78
240-115181-2	S-12607-062019-SK-002	72	78	74	85	85	84	83	83
240-115181-3	S-12607-062019-SK-003	70	75	71	81	81	85	86	86
240-115181-4	S-12607-062019-SK-004	73	80	78	83	85	85	87	85
240-115181-5	S-12607-062019-SK-005	80	85	84	92	91	91	93	96
240-115181-6	S-12607-062019-SK-006	73	81	78	85	85	83	83	85
240-115181-7	S-12607-062019-SK-007	78	82	77	87	82	80	83	83
240-115181-8	S-12607-062019-SK-008	69	75	67	76	76	76	76	77
240-115181-9	S-12607-062019-SK-009	62	64	66	69	68	68	68	67
240-115181-10	S-12607-062019-SK-010	78	82	81	86	88	89	88	87
240-115181-11	S-12607-062019-SK-011	58	61	56	65	61	66	64	65
240-115181-12	S-12607-062019-SK-012	68	72	68	77	77	78	79	81
240-115181-12 MS	S-12607-062019-SK-012	69	73	70	78	77	75	78	80
240-115181-12 MSD	S-12607-062019-SK-012	72	79	71	80	78	77	76	78
LCS 320-304954/2-A	Lab Control Sample	63	67	69	71	70	70	73	75
MB 320-304954/1-A	Method Blank	60	63	64	71	68	68	72	69

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	NMeFOSA (25-150)	NEtFOSA (25-150)
240-115181-1	S-12607-062019-SK-001	81	85	77	76	79	60	89	89
240-115181-2	S-12607-062019-SK-002	84	91	80	75	76	70	90	86
240-115181-3	S-12607-062019-SK-003	81	89	78	83	79	72	84	88
240-115181-4	S-12607-062019-SK-004	90	96	80	81	85	72	86	90
240-115181-5	S-12607-062019-SK-005	87	95	85	88	90	73	89	88
240-115181-6	S-12607-062019-SK-006	83	89	72	71	69	58	83	86
240-115181-7	S-12607-062019-SK-007	82	89	75	76	76	59	91	92
240-115181-8	S-12607-062019-SK-008	78	80	79	79	78	61	83	85
240-115181-9	S-12607-062019-SK-009	70	76	73	69	70	50	73	74
240-115181-10	S-12607-062019-SK-010	94	98	88	91	89	79	92	97
240-115181-11	S-12607-062019-SK-011	66	74	66	64	62	48	62	67
240-115181-12	S-12607-062019-SK-012	82	90	74	73	70	59	82	81
240-115181-12 MS	S-12607-062019-SK-012	81	84	73	74	74	57	79	83
240-115181-12 MSD	S-12607-062019-SK-012	77	84	79	76	78	59	79	83
LCS 320-304954/2-A	Lab Control Sample	73	79	70	72	73	53	73	72
MB 320-304954/1-A	Method Blank	74	75	69	70	67	54	68	70

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)					
240-115181-1	S-12607-062019-SK-001	91	89	78					
240-115181-2	S-12607-062019-SK-002	93	89	85					
240-115181-3	S-12607-062019-SK-003	115	88	85					
240-115181-4	S-12607-062019-SK-004	97	90	90					
240-115181-5	S-12607-062019-SK-005	104	112	98					
240-115181-6	S-12607-062019-SK-006	84	78	70					
240-115181-7	S-12607-062019-SK-007	108	100	85					
240-115181-8	S-12607-062019-SK-008	95	98	80					
240-115181-9	S-12607-062019-SK-009	79	83	72					
240-115181-10	S-12607-062019-SK-010	102	112	92					
240-115181-11	S-12607-062019-SK-011	72	71	64					

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

Matrix: Solid **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)							
240-115181-12	S-12607-062019-SK-012	91	101	71							
240-115181-12 MS	S-12607-062019-SK-012	79	97	65							
240-115181-12 MSD	S-12607-062019-SK-012	94	91	72							
LCS 320-304954/2-A	Lab Control Sample	80	67	77							
MB 320-304954/1-A	Method Blank	86	74	82							

Surrogate Legend

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

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOSA (25-150)	PFBA (25-150)	PFHxA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDoA (25-150)
240-115181-13	012607A-LEACHATE FLUID	90	15 *	91	88	83	87	87	89
240-115181-14	012607A-LEACH-SOIL 004	93	19 *	94	93	89	95	89	92
240-115181-15	012607A-LEACH-SOIL 005	90	21 *	92	92	91	97	88	88
240-115181-16	012607A-LEACH-SOIL 007	91	21 *	96	93	90	96	86	87
240-115181-17	012607A-LEACH-SOIL 008	91	17 *	92	90	91	93	88	89
240-115181-18	012607A-LEACH-SOIL 012	88	58	94	93	91	94	88	91
LCS 320-304755/2-A	Lab Control Sample	79	89	89	87	86	90	80	85
LCSD 320-304755/3-A	Lab Control Sample Dup	81	93	93	90	91	93	88	89
MB 320-304755/1-A	Method Blank	83	88	89	88	85	89	83	86

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFHpA (25-150)	PFPeA (25-150)	-NMeFOSA (25-150)	-NEtFOSA (25-150)
240-115181-13	012607A-LEACHATE FLUID	86	87	90	90	86	83	84	89
240-115181-14	012607A-LEACH-SOIL 004	95	92	98	96	94	91	88	88
240-115181-15	012607A-LEACH-SOIL 005	85	93	91	93	92	94	85	88
240-115181-16	012607A-LEACH-SOIL 007	83	91	94	90	91	91	85	83
240-115181-17	012607A-LEACH-SOIL 008	84	92	93	92	90	92	87	92
240-115181-18	012607A-LEACH-SOIL 012	87	94	92	92	94	97	93	92

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 240-115181-1
Project/Site: 12607, RACER Eckles Rd

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

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFHpA (25-150)	PFPeA (25-150)	d3-NMeFOSAA (25-150)	d5-NEtFOSAA (25-150)
LCS 320-304755/2-A	Lab Control Sample	85	88	88	87	90	91	79	81
LCSD 320-304755/3-A	Lab Control Sample Dup	87	90	91	91	93	95	86	92
MB 320-304755/1-A	Method Blank	82	86	89	86	90	90	81	83

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	M262FTS (25-150)
240-115181-13	012607A-LEACHATE FLUID	100	102	114
240-115181-14	012607A-LEACH-SOIL 004	112	113	118
240-115181-15	012607A-LEACH-SOIL 005	103	99	105
240-115181-16	012607A-LEACH-SOIL 007	100	110	109
240-115181-17	012607A-LEACH-SOIL 008	108	105	108
240-115181-18	012607A-LEACH-SOIL 012	99	110	112
LCS 320-304755/2-A	Lab Control Sample	96	97	108
LCSD 320-304755/3-A	Lab Control Sample Dup	99	96	110
MB 320-304755/1-A	Method Blank	95	92	107

Surrogate Legend

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

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Sacramento
Sample Receiving Notes

240-115181 Field Sheet

Tracking # : 1103 6122 3375

SO / PO / FO / 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.

Notes:_____

Therm. ID: AK7 Corr. Factor: +0.5

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: —

Sample Custody Seal: —

Cooler ID: —

Temp Observed: 1.1°C Corrected: 1.6°C

From: Temp Blank ☐ Sample ☐

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Cooler compromised/tampered with?	☐	☑	☐
Samples compromised/tampered with?	☐	☑	☐
Samples w/o discrepancies?	☑	☐	☐
Sample containers have legible labels?	☑	☐	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided.	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
Sample temp OK?	☑	☐	☐
Sample out of temp?	☐	☑	☐

Initials: SO Date: 6/29/19

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

w/OA

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ANALYTICAL REPORT

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

Laboratory Job ID: 240-115297-1
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:
7/18/2019 3:56:43 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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: 240-115297-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-115297-1

Comments
No additional comments.

Receipt
The samples were received on 7/2/2019 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.9º C.

LCMS
Method(s) 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 judgement was used to positively identify the analyte(s).

Method(s) 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C4 PFBA: 012607A-LEACH-SOIL 001 (240-115297-1), 012607A-LEACH-SOIL 002 (240-115297-2), 012607A-LEACH-SOIL 003 (240-115297-3), 012607A-LEACH-SOIL 006 (240-115297-4), 012607A-LEACH-SOIL 009 (240-115297-5) and 012607A-LEACH-SOIL 010 (240-115297-6). The samples were re-analyzed with concurring results. 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). All detection limits are below the lower calibration.

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

Organic Prep
Method(s) 3535: Samples are dark brown to grayish-green in color. Extracts are opaque: 012607A-LEACH-SOIL 001 (240-115297-1), 012607A-LEACH-SOIL 002 (240-115297-2), 012607A-LEACH-SOIL 003 (240-115297-3), 012607A-LEACH-SOIL 006 (240-115297-4), 012607A-LEACH-SOIL 009 (240-115297-5) and 012607A-LEACH-SOIL 011 (240-115297-7)

Method(s) 3535: Sample is tan in color and contains a small amount of brown sediment: 012607A-LEACH-SOIL 010 (240-115297-6)

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-305646.

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, RACER Eckles Rd

Job ID: 240-115297-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

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

Job ID: 240-115297-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-115297-1	012607A-LEACH-SOIL 001	Water	07/01/19 14:00	07/02/19 09:40	
240-115297-2	012607A-LEACH-SOIL 002	Water	07/01/19 14:00	07/02/19 09:40	
240-115297-3	012607A-LEACH-SOIL 003	Water	07/01/19 14:00	07/02/19 09:40	
240-115297-4	012607A-LEACH-SOIL 006	Water	07/01/19 14:00	07/02/19 09:40	
240-115297-5	012607A-LEACH-SOIL 009	Water	07/01/19 14:00	07/02/19 09:40	
240-115297-6	012607A-LEACH-SOIL 010	Water	07/01/19 14:00	07/02/19 09:40	
240-115297-7	012607A-LEACH-SOIL 011	Water	07/01/19 14:00	07/02/19 09:40	

Detection Summary

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

Job ID: 240-115297-1

Client Sample ID: 012607A-LEACH-SOIL 001 — Lab Sample ID: 240-115297-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.2		2.0	0.34	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.28	J I	2.0	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.30	J	2.0	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.43	J	2.0	0.30	ng/L	1		537 (modified)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.80	J	2.0	0.54	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.26	J B	2.0	0.17	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 002 — Lab Sample ID: 240-115297-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.0	J	1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.26	J	1.9	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.83	J	1.9	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.27	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 003 — Lab Sample ID: 240-115297-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.8	J	2.0	0.35	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.30	J B	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.67	J	2.0	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 006 — Lab Sample ID: 240-115297-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.8		2.0	0.35	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.35	J B	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.85	J	2.0	0.54	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 009 — Lab Sample ID: 240-115297-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.4		2.0	0.35	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.22	J	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.47	J B	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	10		2.0	0.54	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 010 — Lab Sample ID: 240-115297-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.9	J	2.1	0.36	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.63	J I B	2.1	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.6		2.1	0.55	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 012607A-LEACH-SOIL 011 — Lab Sample ID: 240-115297-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.64	J I B	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.4		2.0	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.31	J	2.0	0.30	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Method Summary

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

Job ID: 240-115297-1

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: 012607A-LEACH-SOIL 001
Date Collected: 07/01/19 14:00
Date Received: 07/02/19 09:40

Lab Sample ID: 240-115297-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.2**		2.0	0.34	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.48	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.57	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluoroheptanoic acid (PFHpA)	**0.28**	**J I**	2.0	0.25	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.83	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorononanoic acid (PFNA)	**0.30**	**J**	2.0	0.27	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorodecanoic acid (PFDA)	**0.43**	**J**	2.0	0.30	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorododecanoic acid (PFDoA)	**0.80**	**J**	2.0	0.54	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.28	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorohexanesulfonic acid (PFHxS)	**0.26**	**J B**	2.0	0.17	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.31	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.53	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.34	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.29	ng/L		07/03/19 19:50	07/06/19 03:29	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/03/19 19:50	07/06/19 03:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.0	ng/L		07/03/19 19:50	07/06/19 03:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/03/19 19:50	07/06/19 03:29	1
4:2 FTS	20	U	20	5.1	ng/L		07/03/19 19:50	07/06/19 03:29	1
8:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 03:29	1
6:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 03:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C4 PFBA	*20*	*	*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C2 PFHxA	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C4 PFOA	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C5 PFNA	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C2 PFDA	*100*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C2 PFUnA	*97*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C2 PFDoA	*95*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C2 PFTeDA	*84*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C3 PFBS	*91*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
18O2 PFHxS	*96*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C4 PFOS	*91*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C4 PFHpA	*95*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
13C5 PFPeA	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
d3-NMeFOSAA	*110*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
d5-NEtFOSAA	*97*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
M2-8:2 FTS	*106*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
M2-4:2 FTS	*94*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*
M2-6:2 FTS	*111*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:29*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 002
Date Collected: 07/01/19 14:00
Date Received: 07/02/19 09:40

Lab Sample ID: 240-115297-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.0**	**J**	1.9	0.33	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.54	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.23	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.79	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorononanoic acid (PFNA)	**0.26**	**J**	1.9	0.25	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorodecanoic acid (PFDA)	**0.83**	**J**	1.9	0.29	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorohexanesulfonic acid (PFHxS)	**0.27**	**J B**	1.9	0.16	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.50	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		07/03/19 19:50	07/06/19 03:37	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/03/19 19:50	07/06/19 03:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/03/19 19:50	07/06/19 03:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/03/19 19:50	07/06/19 03:37	1
4:2 FTS	19	U	19	4.8	ng/L		07/03/19 19:50	07/06/19 03:37	1
8:2 FTS	19	U	19	1.9	ng/L		07/03/19 19:50	07/06/19 03:37	1
6:2 FTS	19	U	19	1.9	ng/L		07/03/19 19:50	07/06/19 03:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*86*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C4 PFBA	*14*	*	*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C2 PFHxA	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C4 PFOA	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C5 PFNA	*90*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C2 PFDA	*96*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C2 PFUnA	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C2 PFDoA	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C2 PFTeDA	*85*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C3 PFBS	*84*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
18O2 PFHxS	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C4 PFOS	*95*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C4 PFHpA	*94*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
13C5 PFPeA	*83*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
d5-NEtFOSAA	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
M2-8:2 FTS	*101*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
M2-4:2 FTS	*101*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*
M2-6:2 FTS	*103*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:37*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 003
Date Collected: 07/01/19 14:00
Date Received: 07/02/19 09:40

Lab Sample ID: 240-115297-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.8**	**J**	2.0	0.35	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.48	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.57	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.84	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.54	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorohexanesulfonic acid (PFHxS)	**0.30**	**J B**	2.0	0.17	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorooctanesulfonic acid (PFOS)	**0.67**	**J**	2.0	0.53	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		07/03/19 19:50	07/06/19 03:45	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/03/19 19:50	07/06/19 03:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		07/03/19 19:50	07/06/19 03:45	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/03/19 19:50	07/06/19 03:45	1
4:2 FTS	20	U	20	5.1	ng/L		07/03/19 19:50	07/06/19 03:45	1
8:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 03:45	1
6:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 03:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*87*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C4 PFBA	*15*	*	*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C2 PFHxA	*84*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C4 PFOA	*90*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C5 PFNA	*90*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C2 PFDA	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C2 PFUnA	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C2 PFDoA	*89*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C2 PFTeDA	*84*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C3 PFBS	*85*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
18O2 PFHxS	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C4 PFOS	*89*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C4 PFHpA	*85*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
13C5 PFPeA	*85*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
d3-NMeFOSAA	*94*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
d5-NEtFOSAA	*91*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
M2-8:2 FTS	*98*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
M2-4:2 FTS	*89*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*
M2-6:2 FTS	*108*		*25 - 150*	*07/03/19 19:50*	*07/06/19 03:45*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 006
Date Collected: 07/01/19 14:00
Date Received: 07/02/19 09:40

Lab Sample ID: 240-115297-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.8**		2.0	0.35	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorohexanesulfonic acid (PFHxS)	**0.35**	**J B**	2.0	0.17	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorooctanesulfonic acid (PFOS)	**0.85**	**J**	2.0	0.54	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		07/03/19 19:50	07/06/19 04:09	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/03/19 19:50	07/06/19 04:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		07/03/19 19:50	07/06/19 04:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/03/19 19:50	07/06/19 04:09	1
4:2 FTS	20	U	20	5.2	ng/L		07/03/19 19:50	07/06/19 04:09	1
8:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 04:09	1
6:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 04:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*82*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C4 PFBA	*16*	*	*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C2 PFHxA	*87*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C4 PFOA	*97*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C5 PFNA	*94*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C2 PFDA	*95*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C2 PFUnA	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C2 PFDoA	*91*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C2 PFTeDA	*74*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C3 PFBS	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
18O2 PFHxS	*90*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C4 PFOS	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C4 PFHpA	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
13C5 PFPeA	*82*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
d3-NMeFOSAA	*97*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
d5-NEtFOSAA	*90*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
M2-8:2 FTS	*107*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
M2-4:2 FTS	*100*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*
M2-6:2 FTS	*103*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:09*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 009
Date Collected: 07/01/19 14:00
Date Received: 07/02/19 09:40

Lab Sample ID: 240-115297-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.4**		2.0	0.35	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.86	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorobutanesulfonic acid (PFBS)	**0.22**	**J**	2.0	0.20	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorohexanesulfonic acid (PFHxS)	**0.47**	**J B**	2.0	0.17	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorooctanesulfonic acid (PFOS)	**10**		2.0	0.54	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		07/03/19 19:50	07/06/19 04:17	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/03/19 19:50	07/06/19 04:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		07/03/19 19:50	07/06/19 04:17	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/03/19 19:50	07/06/19 04:17	1
4:2 FTS	20	U	20	5.2	ng/L		07/03/19 19:50	07/06/19 04:17	1
8:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 04:17	1
6:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 04:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*85*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C4 PFBA	*20*	*	*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C2 PFHxA	*89*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C4 PFOA	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C5 PFNA	*97*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C2 PFDA	*95*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C2 PFUnA	*96*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C2 PFDoA	*94*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C3 PFBS	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
18O2 PFHxS	*89*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C4 PFOS	*96*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C4 PFHpA	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
13C5 PFPeA	*91*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
d3-NMeFOSAA	*101*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
M2-8:2 FTS	*120*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
M2-4:2 FTS	*106*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*
M2-6:2 FTS	*123*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:17*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 010
Date Collected: 07/01/19 14:00
Date Received: 07/02/19 09:40

Lab Sample ID: 240-115297-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.9**	**J**	2.1	0.36	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluoropentanoic acid (PFPeA)	2.1	U	2.1	0.50	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorohexanoic acid (PFHxA)	2.1	U	2.1	0.60	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluoroheptanoic acid (PFHpA)	2.1	U	2.1	0.26	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorooctanoic acid (PFOA)	2.1	U	2.1	0.87	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorononanoic acid (PFNA)	2.1	U	2.1	0.28	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorodecanoic acid (PFDA)	2.1	U	2.1	0.32	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluoroundecanoic acid (PFUnA)	2.1	U	2.1	1.1	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorododecanoic acid (PFDoA)	2.1	U	2.1	0.56	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorotridecanoic acid (PFTriA)	2.1	U	2.1	1.3	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorotetradecanoic acid (PFTeA)	2.1	U	2.1	0.30	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorobutanesulfonic acid (PFBS)	2.1	U	2.1	0.21	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorohexanesulfonic acid (PFHxS)	**0.63**	**J I B**	2.1	0.17	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.1	U	2.1	0.19	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorodecanesulfonic acid (PFDS)	2.1	U	2.1	0.33	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorooctanesulfonic acid (PFOS)	**7.6**		2.1	0.55	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorooctanesulfonamide (FOSA)	2.1	U	2.1	0.36	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluoropentanesulfonic acid (PFPeS)	2.1	U	2.1	0.31	ng/L		07/03/19 19:50	07/06/19 04:25	1
Perfluorononanesulfonic acid (PFNS)	2.1	U	2.1	0.16	ng/L		07/03/19 19:50	07/06/19 04:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	21	U	21	3.2	ng/L		07/03/19 19:50	07/06/19 04:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	21	U	21	1.9	ng/L		07/03/19 19:50	07/06/19 04:25	1
4:2 FTS	21	U	21	5.3	ng/L		07/03/19 19:50	07/06/19 04:25	1
8:2 FTS	21	U	21	2.1	ng/L		07/03/19 19:50	07/06/19 04:25	1
6:2 FTS	21	U	21	2.1	ng/L		07/03/19 19:50	07/06/19 04:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*87*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C4 PFBA	*17*	*	*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C2 PFHxA	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C4 PFOA	*98*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C5 PFNA	*100*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C2 PFDA	*98*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C2 PFUnA	*100*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C2 PFDoA	*96*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C3 PFBS	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
18O2 PFHxS	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C4 PFOS	*99*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C4 PFHpA	*97*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
13C5 PFPeA	*89*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
d3-NMeFOSAA	*96*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
M2-8:2 FTS	*104*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
M2-4:2 FTS	*103*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*
M2-6:2 FTS	*112*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:25*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: 012607A-LEACH-SOIL 011
Date Collected: 07/01/19 14:00
Date Received: 07/02/19 09:40

Lab Sample ID: 240-115297-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.0	U	2.0	0.35	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.86	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorohexanesulfonic acid (PFHxS)	**0.64**	**J I B**	2.0	0.17	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorooctanesulfonic acid (PFOS)	**8.4**		2.0	0.54	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluoropentanesulfonic acid (PFPeS)	**0.31**	**J**	2.0	0.30	ng/L		07/03/19 19:50	07/06/19 04:33	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/03/19 19:50	07/06/19 04:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		07/03/19 19:50	07/06/19 04:33	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/03/19 19:50	07/06/19 04:33	1
4:2 FTS	20	U	20	5.2	ng/L		07/03/19 19:50	07/06/19 04:33	1
8:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 04:33	1
6:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 04:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C4 PFBA	*25*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C2 PFHxA	*83*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C4 PFOA	*94*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C5 PFNA	*94*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C2 PFDA	*96*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C2 PFUnA	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C2 PFDoA	*96*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C2 PFTeDA	*99*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C3 PFBS	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
18O2 PFHxS	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C4 PFOS	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C4 PFHpA	*89*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
13C5 PFPeA	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
d3-NMeFOSAA	*97*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
d5-NEtFOSAA	*104*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
M2-8:2 FTS	*114*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
M2-4:2 FTS	*100*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*
M2-6:2 FTS	*109*		*25 - 150*	*07/03/19 19:50*	*07/06/19 04:33*	*1*

QC Association Summary

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

Job ID: 240-115297-1

LCMS

Prep Batch: 305646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115297-1	012607A-LEACH-SOIL 001	Total/NA	Water	3535	
240-115297-2	012607A-LEACH-SOIL 002	Total/NA	Water	3535	
240-115297-3	012607A-LEACH-SOIL 003	Total/NA	Water	3535	
240-115297-4	012607A-LEACH-SOIL 006	Total/NA	Water	3535	
240-115297-5	012607A-LEACH-SOIL 009	Total/NA	Water	3535	
240-115297-6	012607A-LEACH-SOIL 010	Total/NA	Water	3535	
240-115297-7	012607A-LEACH-SOIL 011	Total/NA	Water	3535	
MB 320-305646/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-305646/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-305646/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 305925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-115297-1	012607A-LEACH-SOIL 001	Total/NA	Water	537 (modified)	305646
240-115297-2	012607A-LEACH-SOIL 002	Total/NA	Water	537 (modified)	305646
240-115297-3	012607A-LEACH-SOIL 003	Total/NA	Water	537 (modified)	305646
240-115297-4	012607A-LEACH-SOIL 006	Total/NA	Water	537 (modified)	305646
240-115297-5	012607A-LEACH-SOIL 009	Total/NA	Water	537 (modified)	305646
240-115297-6	012607A-LEACH-SOIL 010	Total/NA	Water	537 (modified)	305646
240-115297-7	012607A-LEACH-SOIL 011	Total/NA	Water	537 (modified)	305646
MB 320-305646/1-A	Method Blank	Total/NA	Water	537 (modified)	305646
LCS 320-305646/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	305646
LCSD 320-305646/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	305646

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

Job ID: 240-115297-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-305646/1-A
Matrix: Water
Analysis Batch: 305925

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 305646

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.0	U	2.0	0.35	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorohexanesulfonic acid (PFHxS)	0.268	J	2.0	0.17	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		07/03/19 19:50	07/06/19 02:41	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/03/19 19:50	07/06/19 02:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		07/03/19 19:50	07/06/19 02:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/03/19 19:50	07/06/19 02:41	1
4:2 FTS	20	U	20	5.2	ng/L		07/03/19 19:50	07/06/19 02:41	1
8:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 02:41	1
6:2 FTS	20	U	20	2.0	ng/L		07/03/19 19:50	07/06/19 02:41	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*86*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C4 PFBA	*82*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C2 PFHxA	*88*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C4 PFOA	*95*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C5 PFNA	*95*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C2 PFDA	*97*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C2 PFUnA	*93*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C2 PFDoA	*89*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C3 PFBS	*92*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
18O2 PFHxS	*89*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C4 PFOS	*91*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C4 PFHpA	*90*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
13C5 PFPeA	*86*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
d5-NEtFOSAA	*95*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
M2-8:2 FTS	*104*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
M2-4:2 FTS	*106*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*
M2-6:2 FTS	*123*		*25 - 150*	*07/03/19 19:50*	*07/06/19 02:41*	*1*

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

Lab Sample ID: LCS 320-305646/2-A
Matrix: Water
Analysis Batch: 305925

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 305646

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	44.1		ng/L		110	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	41.8		ng/L		104	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	40.3		ng/L		101	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	42.9		ng/L		107	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	44.1		ng/L		110	64 - 124
Perfluorononanoic acid (PFNA)	40.0	43.4		ng/L		108	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	41.2		ng/L		103	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.4		ng/L		101	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	45.6		ng/L		114	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	45.7		ng/L		114	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	43.6		ng/L		109	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	39.9		ng/L		113	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.6		ng/L		101	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	41.2		ng/L		108	68 - 128
Perfluorodecanesulfonic acid (PFDS)	38.6	39.8		ng/L		103	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	37.5		ng/L		101	67 - 127
Perfluorooctanesulfonamide (FOSA)	40.0	44.4		ng/L		111	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	37.5	39.0		ng/L		104	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	39.4		ng/L		103	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.6		ng/L		102	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	42.0		ng/L		105	65 - 125
4:2 FTS	37.4	39.4		ng/L		105	70 - 130
8:2 FTS	38.3	40.2		ng/L		105	67 - 127
6:2 FTS	37.9	40.0		ng/L		105	66 - 126

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 FOSA	*80*		*25 - 150*
13C4 PFBA	*84*		*25 - 150*
13C2 PFHxA	*94*		*25 - 150*
13C4 PFOA	*93*		*25 - 150*
13C5 PFNA	*99*		*25 - 150*
13C2 PFDA	*99*		*25 - 150*
13C2 PFUnA	*101*		*25 - 150*
13C2 PFDoA	*94*		*25 - 150*
13C2 PFTeDA	*99*		*25 - 150*
13C3 PFBS	*91*		*25 - 150*
18O2 PFHxS	*95*		*25 - 150*
13C4 PFOS	*98*		*25 - 150*

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

Lab Sample ID: LCS 320-305646/2-A
Matrix: Water
Analysis Batch: 305925

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 305646

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFHpA	*96*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
d3-NMeFOSAA	*101*		*25 - 150*
d5-NEtFOSAA	*98*		*25 - 150*
M2-8:2 FTS	*104*		*25 - 150*
M2-4:2 FTS	*103*		*25 - 150*
M2-6:2 FTS	*107*		*25 - 150*

Lab Sample ID: LCSD 320-305646/3-A
Matrix: Water
Analysis Batch: 305925

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 305646

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	42.9		ng/L		107	70 - 130	3	30
Perfluoropentanoic acid (PFPeA)			40.0	41.1		ng/L		103	66 - 126	2	30
Perfluorohexanoic acid (PFHxA)			40.0	44.2		ng/L		111	66 - 126	9	30
Perfluoroheptanoic acid (PFHpA)			40.0	41.8		ng/L		105	66 - 126	3	30
Perfluorooctanoic acid (PFOA)			40.0	39.5		ng/L		99	64 - 124	11	30
Perfluorononanoic acid (PFNA)			40.0	46.0		ng/L		115	68 - 128	6	30
Perfluorodecanoic acid (PFDA)			40.0	41.0		ng/L		102	69 - 129	1	30
Perfluoroundecanoic acid (PFUnA)			40.0	41.9		ng/L		105	60 - 120	4	30
Perfluorododecanoic acid (PFDoA)			40.0	46.4		ng/L		116	71 - 131	2	30
Perfluorotridecanoic acid (PFTriA)			40.0	43.6		ng/L		109	72 - 132	5	30
Perfluorotetradecanoic acid (PFTeA)			40.0	43.2		ng/L		108	68 - 128	1	30
Perfluorobutanesulfonic acid (PFBS)			35.4	39.1		ng/L		110	73 - 133	2	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	35.4		ng/L		97	63 - 123	3	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	40.6		ng/L		107	68 - 128	1	30
Perfluorodecanesulfonic acid (PFDS)			38.6	38.0		ng/L		99	68 - 128	5	30
Perfluorooctanesulfonic acid (PFOS)			37.1	35.5		ng/L		96	67 - 127	5	30
Perfluorooctanesulfonamide (FOSA)			40.0	48.8		ng/L		122	70 - 130	9	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	38.3		ng/L		102	70 - 130	2	30
Perfluorononanesulfonic acid (PFNS)			38.4	38.4		ng/L		100	70 - 130	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	40.7		ng/L		102	67 - 127	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	40.6		ng/L		102	65 - 125	3	30
4:2 FTS			37.4	39.1		ng/L		105	70 - 130	1	30
8:2 FTS			38.3	40.9		ng/L		107	67 - 127	2	30
6:2 FTS			37.9	38.6		ng/L		102	66 - 126	4	30

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

Job ID: 240-115297-1

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

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C8 FOSA	80		25 - 150
13C4 PFBA	87		25 - 150
13C2 PFHxA	89		25 - 150
13C4 PFOA	97		25 - 150
13C5 PFNA	95		25 - 150
13C2 PFDA	98		25 - 150
13C2 PFUnA	93		25 - 150
13C2 PFDoA	92		25 - 150
13C2 PFTeDA	97		25 - 150
13C3 PFBS	89		25 - 150
18O2 PFHxS	93		25 - 150
13C4 PFOS	98		25 - 150
13C4 PFHpA	98		25 - 150
13C5 PFPeA	90		25 - 150
d3-NMeFOSAA	102		25 - 150
d5-NEtFOSAA	92		25 - 150
M2-8:2 FTS	99		25 - 150
M2-4:2 FTS	100		25 - 150
M2-6:2 FTS	120		25 - 150

Lab Chronicle

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

Job ID: 240-115297-1

Client Sample ID: 012607A-LEACH-SOIL 001
Lab Sample ID: 240-115297-1
Date Collected: 07/01/19 14:00
Matrix: Water
Date Received: 07/02/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			305646	07/03/19 19:50	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	305925	07/06/19 03:29	D1R	TAL SAC

Client Sample ID: 012607A-LEACH-SOIL 002
Lab Sample ID: 240-115297-2
Date Collected: 07/01/19 14:00
Matrix: Water
Date Received: 07/02/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			305646	07/03/19 19:50	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	305925	07/06/19 03:37	D1R	TAL SAC

Client Sample ID: 012607A-LEACH-SOIL 003
Lab Sample ID: 240-115297-3
Date Collected: 07/01/19 14:00
Matrix: Water
Date Received: 07/02/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			305646	07/03/19 19:50	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	305925	07/06/19 03:45	D1R	TAL SAC

Client Sample ID: 012607A-LEACH-SOIL 006
Lab Sample ID: 240-115297-4
Date Collected: 07/01/19 14:00
Matrix: Water
Date Received: 07/02/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			305646	07/03/19 19:50	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	305925	07/06/19 04:09	D1R	TAL SAC

Client Sample ID: 012607A-LEACH-SOIL 009
Lab Sample ID: 240-115297-5
Date Collected: 07/01/19 14:00
Matrix: Water
Date Received: 07/02/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			305646	07/03/19 19:50	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	305925	07/06/19 04:17	D1R	TAL SAC

Client Sample ID: 012607A-LEACH-SOIL 010
Lab Sample ID: 240-115297-6
Date Collected: 07/01/19 14:00
Matrix: Water
Date Received: 07/02/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			305646	07/03/19 19:50	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	305925	07/06/19 04:25	D1R	TAL SAC

Lab Chronicle

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

Job ID: 240-115297-1

Client Sample ID: 012607A-LEACH-SOIL 011

Date Collected: 07/01/19 14:00
Date Received: 07/02/19 09:40

Lab Sample ID: 240-115297-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			305646	07/03/19 19:50	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	305925	07/06/19 04:33	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: 240-115297-1
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	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State		OH00048	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-115297-1
Project/Site: 12607, 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	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD		L2468	01-20-21
ANAB	DOE		L2468.01	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-20
California	State Program	9	2897	01-31-20
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State		PH-0691	06-30-21
Connecticut	State Program	1	PH-0691	06-30-21
Florida	NELAP	4	E87570	06-30-20
Florida	NELAP		E87570	06-30-20
Hawaii	State Program	9	N/A	01-29-20
Illinois	NELAP	5	200060	03-17-19 *
Kansas	NELAP	7	E-10375	10-31-19
Louisiana	NELAP	6	30612	06-30-20
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-20-20
New York	NELAP	2	11666	04-01-20
Oregon	NELAP	10	4040	01-29-20
Oregon	NELAP		4040	01-29-20
Pennsylvania	NELAP	3	68-01272	03-31-20
Pennsylvania	NELAP		68-01272	03-31-20
Texas	NELAP	6	T104704399	05-31-20
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	12-31-20
Utah	NELAP	8	CA00044	02-29-20
Vermont	State Program	1	VT-4040	04-16-20
Virginia	NELAP	3	460278	03-14-20
Washington	State Program	10	C581	05-05-20
West Virginia (DW)	State Program	3	9930C	12-31-19
Wyoming	State Program	8	8TMS-L	01-28-19 *

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

3.8/3.9

CHAIN OF CUSTODY RECORD

COC NO.: 59077

GHD

Address: 2055 Niagara Falls Blvd, Niagara Falls, NY 14304 PAGE 1 OF 1

Phone: (716) 297-6150 Fax:

Project No/ Phase/Task Code: 012607A-T31Y19	Laboratory Name: Test America	Lab Location: TA-Nrth Canton	SSOW ID:
Project Name: RACER Eckles Rd.	Lab Contact: Denise Heckler		Cooler No:
Project Location: Livonia, MI			Carrier:
GHD Chemistry Contact: Ruth Mickle			Airbill No:
Sampler(s): Ryan Thomas			Total # of Containers: 14

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	Analysis Requested (See Back of COC for Definitions): PFAS - per SSOW	Total Containers/sample	MS/MSD Request	Comments/ Special Instructions:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)									
1	012607A-Leach-Soil 001	7/01/19	1400				✓	2		
2	012607A-Leach-Soil 002						✓	2		
3	012607A-Leach-Soil 003						✓	2		
4	012607A-Leach-Soil 006						✓	2		
5	012607A-Leach-Soil 009						✓	2		
6	012607A-Leach-Soil 010						✓	2		
7	012607A-Leach-Soil 011						✓	2		
8										
9										
10										
11										
12										

240-115297 Chain of Custody

TAT Required in business days (use separate COCs for different TATs):

☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other:

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. Ryan Thomas	GHD	7/1/19	1530	1.	TA	7/2/19	940
2.				2.			
3.				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

GHD Form: COC-10B (20110804)

7/18/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 115297**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by:

Cooler Received on 7/2/16 Opened on 7/2/16

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

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

TestAmerica Cooler # _____ 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-8 (CF **+0.1** °C) Observed Cooler Temp. 3.8 °C Corrected Cooler Temp. 3.9 °C
   IR GUN #36 (CF **+0.6**°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 be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
16. 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 _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: DL

18. 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)

19. 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 TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-106198.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: denise.heckler@testamericainc.com	State of Origin: Michigan	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-115297-1
Address: 880 Riverside Parkway,	Due Date Requested: 7/19/2019			
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	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
012607A-LEACH-SOIL 001 (240-115297-1)	7/1/19	14:00 Eastern		Water			X	2	
012607A-LEACH-SOIL 002 (240-115297-2)	7/1/19	14:00 Eastern		Water			X	2	
012607A-LEACH-SOIL 003 (240-115297-3)	7/1/19	14:00 Eastern		Water			X	2	
012607A-LEACH-SOIL 006 (240-115297-4)	7/1/19	14:00 Eastern		Water			X	2	
012607A-LEACH-SOIL 009 (240-115297-5)	7/1/19	14:00 Eastern		Water			X	2	
012607A-LEACH-SOIL 010 (240-115297-6)	7/1/19	14:00 Eastern		Water			X	2	
012607A-LEACH-SOIL 011 (240-115297-7)	7/1/19	14:00 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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 TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

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: Charles M	7-2-19 1608	240		3 Jul 19 0915	ETAWSC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
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: 4.8c corr 5.3c

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-115297-1

Login Number: 115297
List Number: 2
Creator: Darlington, Jennifer M

List Source: Eurofins TestAmerica, Sacramento
List Creation: 07/03/19 01:40 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
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	4.8c corr 5.3c
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").	N/A	
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, RACER Eckles Rd

Job ID: 240-115297-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFOSA (25-150)	PFBA (25-150)	PFHxA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDoA (25-150)
240-115297-1	012607A-LEACH-SOIL 001	88	20 *	92	92	93	100	97	95
240-115297-2	012607A-LEACH-SOIL 002	86	14 *	88	92	90	96	93	88
240-115297-3	012607A-LEACH-SOIL 003	87	15 *	84	90	90	92	93	89
240-115297-4	012607A-LEACH-SOIL 006	82	16 *	87	97	94	95	93	91
240-115297-5	012607A-LEACH-SOIL 009	85	20 *	89	92	97	95	96	94
240-115297-6	012607A-LEACH-SOIL 010	87	17 *	88	98	100	98	100	96
240-115297-7	012607A-LEACH-SOIL 011	88	25	83	94	94	96	93	96
LCS 320-305646/2-A	Lab Control Sample	80	84	94	93	99	99	101	94
LCSD 320-305646/3-A	Lab Control Sample Dup	80	87	89	97	95	98	93	92
MB 320-305646/1-A	Method Blank	86	82	88	95	95	97	93	89

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFHpA (25-150)	PFPeA (25-150)	-NMeFOSA (25-150)	-NEtFOSA (25-150)
240-115297-1	012607A-LEACH-SOIL 001	84	91	96	91	95	92	110	97
240-115297-2	012607A-LEACH-SOIL 002	85	84	92	95	94	83	98	93
240-115297-3	012607A-LEACH-SOIL 003	84	85	88	89	85	85	94	91
240-115297-4	012607A-LEACH-SOIL 006	74	88	90	93	88	82	97	90
240-115297-5	012607A-LEACH-SOIL 009	94	93	89	96	93	91	101	96
240-115297-6	012607A-LEACH-SOIL 010	94	92	92	99	97	89	96	98
240-115297-7	012607A-LEACH-SOIL 011	99	88	92	93	89	88	97	104
LCS 320-305646/2-A	Lab Control Sample	99	91	95	98	96	95	101	98
LCSD 320-305646/3-A	Lab Control Sample Dup	97	89	93	98	98	90	102	92
MB 320-305646/1-A	Method Blank	94	92	89	91	90	86	98	95

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	M262FTS (25-150)
240-115297-1	012607A-LEACH-SOIL 001	106	94	111
240-115297-2	012607A-LEACH-SOIL 002	101	101	103
240-115297-3	012607A-LEACH-SOIL 003	98	89	108
240-115297-4	012607A-LEACH-SOIL 006	107	100	103
240-115297-5	012607A-LEACH-SOIL 009	120	106	123
240-115297-6	012607A-LEACH-SOIL 010	104	103	112
240-115297-7	012607A-LEACH-SOIL 011	114	100	109
LCS 320-305646/2-A	Lab Control Sample	104	103	107
LCSD 320-305646/3-A	Lab Control Sample Dup	99	100	120
MB 320-305646/1-A	Method Blank	104	106	123

Surrogate Legend

PFOSA = 13C8 FOSA
PFBA = 13C4 PFBA
PFHxA = 13C2 PFHxA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
13C3-PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 240-115297-1
Project/Site: 12607, RACER Eckles Rd

PFOS = 13C4 PFOS
PFHpA = 13C4 PFHpA
PFPeA = 13C5 PFPeA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS

Attachment B.2
Test America
Laboratory Analytical Reports
Groundwater – PFAS

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

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

Laboratory Job ID: 240-116238-1
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:
8/5/2019 6:48:36 AM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

LINKS

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Visit us at: www.testamericainc.com

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: 240-116238-1

Job ID: 240-116238-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-116238-1

Comments
No additional comments.

Receipt
The samples were received on 7/23/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.3º C.

LCMS
Method(s) 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(s) 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-6:2 FTS and M2-8:2 FTS the following samples: GW-12607-072219-DA-007 (240-116238-7). The samples were re-analyzed with concurring results. 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(s) 3535: The following samples were observed to be contain sediment prior to extraction: GW-12607-072219-DA-004 (240-116238-4) and GW-12607-072219-DA-005 (240-116238-5).

Method(s) 3535: The following sample was observed to be a transparent light yellow/brown color and contained sediment prior to extraction: GW-12607-072219-DA-007 (240-116238-7).

Method(s) 3535: The following samples were observed to be a transparent light brown color and contained sediment prior to extraction: FB-12607-072219-DA-001 (240-116238-8) and EB-12607-072219-DA-001 (240-116238-9).

Method(s) 3535: Due to the matrix of the following sample being a dark gray color and containing many fine sediment, 20mL of the sample was diluted with water to 250mL into a new container: GW-12607-072219-DA-001 (240-116238-1) and GW-12607-072219-DA-002 (240-116238-2). After dilution, they were fortified with IDA then extracted

Method(s) 3535: The following sample was observed to be a light yellow color after final voluming: GW-12607-072219-DA-007 (240-116238-7).

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, RACER Eckles Rd

Job ID: 240-116238-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

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

Job ID: 240-116238-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-116238-1	GW-12607-072219-DA-001	Water	07/22/19 11:50	07/23/19 09:30	
240-116238-2	GW-12607-072219-DA-002	Water	07/22/19 12:45	07/23/19 09:30	
240-116238-3	GW-12607-072219-DA-003	Water	07/22/19 12:55	07/23/19 09:30	
240-116238-4	GW-12607-072219-DA-004	Water	07/22/19 12:35	07/23/19 09:30	
240-116238-5	GW-12607-072219-DA-005	Water	07/22/19 13:45	07/23/19 09:30	
240-116238-6	GW-12607-072219-DA-006	Water	07/22/19 12:25	07/23/19 09:30	
240-116238-7	GW-12607-072219-DA-007	Water	07/22/19 13:20	07/23/19 09:30	
240-116238-8	FB-12607-072219-DA-001	Water	07/22/19 13:30	07/23/19 09:30	
240-116238-9	EB-12607-072219-DA-001	Water	07/22/19 13:30	07/23/19 09:30	

Detection Summary

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

Job ID: 240-116238-1

Client Sample ID: GW-12607-072219-DA-001 — Lab Sample ID: 240-116238-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.7		2.0	0.35	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.3	J	2.0	0.48	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.2		2.0	0.57	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.0	J	2.0	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.5		2.0	0.84	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.29	J	2.0	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.3	J	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.4	I B	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.87	J I	2.0	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	72	I	2.0	0.53	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.83	J	2.0	0.30	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072219-DA-002 — Lab Sample ID: 240-116238-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	2.9	J	25	2.5	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	28	I B	25	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	5.8	J I	25	2.4	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	370	I	25	6.8	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	4.7	J I	25	3.8	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072219-DA-003 — Lab Sample ID: 240-116238-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	3.2	J I	25	3.1	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	25	I B	25	2.1	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	6.6	J I	25	2.4	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	390	I	25	6.8	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	4.9	J I	25	3.8	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072219-DA-004 — Lab Sample ID: 240-116238-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.4		1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.86	J	1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.47	J	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3	J	1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.60	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.6		1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072219-DA-005 — Lab Sample ID: 240-116238-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	6.5		1.9	0.32	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.0	J	1.9	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.62	J	1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.73	J	1.9	0.23	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, RACER Eckles Rd

Job ID: 240-116238-1

Client Sample ID: GW-12607-072219-DA-005 (Continued) — Lab Sample ID: 240-116238-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.2		1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.95	J I B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.9		1.9	0.50	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072219-DA-006 — Lab Sample ID: 240-116238-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.8		1.9	0.34	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.3	J	1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.9		1.9	0.56	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.76	J	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.41	J	1.9	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.0	J	1.9	0.30	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.42	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.9		1.9	0.52	ng/L	1		537 (modified)	Total/NA
6:2 FTS	2.3	J	19	1.9	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072219-DA-007 — Lab Sample ID: 240-116238-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	11		1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8	J	1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.4		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.64	J	1.9	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.6	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	9.3	I B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.97	J I	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	28	I	1.9	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	2.0	I	1.9	0.28	ng/L	1		537 (modified)	Total/NA

Client Sample ID: FB-12607-072219-DA-001 — Lab Sample ID: 240-116238-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.30	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EB-12607-072219-DA-001 — Lab Sample ID: 240-116238-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.35	J	1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.27	J B	1.9	0.16	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, RACER Eckles Rd

Job ID: 240-116238-1

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-12607-072219-DA-001
Date Collected: 07/22/19 11:50
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116238-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.7**		2.0	0.35	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluoropentanoic acid (PFPeA)	**1.3**	**J**	2.0	0.48	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorohexanoic acid (PFHxA)	**2.2**		2.0	0.57	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluoroheptanoic acid (PFHpA)	**1.0**	**J**	2.0	0.25	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorooctanoic acid (PFOA)	**3.5**		2.0	0.84	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorononanoic acid (PFNA)	**0.29**	**J**	2.0	0.27	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.54	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorobutanesulfonic acid (PFBS)	**1.3**	**J**	2.0	0.20	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorohexanesulfonic acid (PFHxS)	**3.4**	**I B**	2.0	0.17	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.87**	**J I**	2.0	0.19	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorooctanesulfonic acid (PFOS)	**72**	**I**	2.0	0.53	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluoropentanesulfonic acid (PFPeS)	**0.83**	**J**	2.0	0.30	ng/L		07/26/19 06:51	07/28/19 07:06	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/26/19 06:51	07/28/19 07:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		07/26/19 06:51	07/28/19 07:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/26/19 06:51	07/28/19 07:06	1
4:2 FTS	20	U	20	5.1	ng/L		07/26/19 06:51	07/28/19 07:06	1
8:2 FTS	20	U	20	2.0	ng/L		07/26/19 06:51	07/28/19 07:06	1
6:2 FTS	20	U	20	2.0	ng/L		07/26/19 06:51	07/28/19 07:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*86*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C4 PFBA	*63*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C2 PFHxA	*85*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C4 PFOA	*98*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C5 PFNA	*98*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C2 PFDA	*96*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C2 PFUnA	*85*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C2 PFDoA	*94*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C2 PFTeDA	*102*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C3 PFBS	*88*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
18O2 PFHxS	*88*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C4 PFOS	*86*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C4 PFHpA	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
13C5 PFPeA	*84*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
d3-NMeFOSAA	*85*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
d5-NEtFOSAA	*89*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
M2-8:2 FTS	*96*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
M2-4:2 FTS	*127*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*
M2-6:2 FTS	*116*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:06*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072219-DA-002
Date Collected: 07/22/19 12:45
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116238-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	25	U	25	4.4	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluoropentanoic acid (PFPeA)	25	U	25	6.1	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorohexanoic acid (PFHxA)	25	U	25	7.3	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluoroheptanoic acid (PFHpA)	25	U	25	3.1	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorooctanoic acid (PFOA)	25	U	25	11	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorononanoic acid (PFNA)	25	U	25	3.4	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorodecanoic acid (PFDA)	25	U	25	3.9	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluoroundecanoic acid (PFUnA)	25	U	25	14	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorododecanoic acid (PFDoA)	25	U	25	6.9	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorotridecanoic acid (PFTriA)	25	U	25	16	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorotetradecanoic acid (PFTeA)	25	U	25	3.6	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorobutanesulfonic acid (PFBS)	**2.9**	**J**	25	2.5	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorohexanesulfonic acid (PFHxS)	**28**	**I B**	25	2.1	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluoroheptanesulfonic Acid (PFHpS)	**5.8**	**J I**	25	2.4	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorodecanesulfonic acid (PFDS)	25	U	25	4.0	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorooctanesulfonic acid (PFOS)	**370**	**I**	25	6.8	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorooctanesulfonamide (FOSA)	25	U	25	4.4	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluoropentanesulfonic acid (PFPeS)	**4.7**	**J I**	25	3.8	ng/L		07/26/19 06:51	07/28/19 07:14	1
Perfluorononanesulfonic acid (PFNS)	25	U	25	2.0	ng/L		07/26/19 06:51	07/28/19 07:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	250	U	250	39	ng/L		07/26/19 06:51	07/28/19 07:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	250	U	250	24	ng/L		07/26/19 06:51	07/28/19 07:14	1
4:2 FTS	250	U	250	65	ng/L		07/26/19 06:51	07/28/19 07:14	1
8:2 FTS	250	U	250	25	ng/L		07/26/19 06:51	07/28/19 07:14	1
6:2 FTS	250	U	250	25	ng/L		07/26/19 06:51	07/28/19 07:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C4 PFBA	*30*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C2 PFHxA	*81*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C4 PFOA	*98*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C5 PFNA	*88*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C2 PFDA	*104*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C2 PFUnA	*96*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C2 PFDoA	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C2 PFTeDA	*105*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C3 PFBS	*95*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
18O2 PFHxS	*89*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C4 PFOS	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C4 PFHpA	*92*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
13C5 PFPeA	*84*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
d5-NEtFOSAA	*90*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
M2-8:2 FTS	*103*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
M2-4:2 FTS	*106*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*
M2-6:2 FTS	*125*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:14*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072219-DA-003
Date Collected: 07/22/19 12:55
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116238-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	25	U	25	4.4	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluoropentanoic acid (PFPeA)	25	U	25	6.1	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorohexanoic acid (PFHxA)	25	U	25	7.3	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluoroheptanoic acid (PFHpA)	**3.2**	**J I**	25	3.1	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorooctanoic acid (PFOA)	25	U	25	11	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorononanoic acid (PFNA)	25	U	25	3.4	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorodecanoic acid (PFDA)	25	U	25	3.9	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluoroundecanoic acid (PFUnA)	25	U	25	14	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorododecanoic acid (PFDoA)	25	U	25	6.9	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorotridecanoic acid (PFTriA)	25	U	25	16	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorotetradecanoic acid (PFTeA)	25	U	25	3.6	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorobutanesulfonic acid (PFBS)	25	U	25	2.5	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorohexanesulfonic acid (PFHxS)	**25**	**I B**	25	2.1	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluoroheptanesulfonic Acid (PFHpS)	**6.6**	**J I**	25	2.4	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorodecanesulfonic acid (PFDS)	25	U	25	4.0	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorooctanesulfonic acid (PFOS)	**390**	**I**	25	6.8	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorooctanesulfonamide (FOSA)	25	U	25	4.4	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluoropentanesulfonic acid (PFPeS)	**4.9**	**J I**	25	3.8	ng/L		07/26/19 06:51	07/28/19 07:22	1
Perfluorononanesulfonic acid (PFNS)	25	U	25	2.0	ng/L		07/26/19 06:51	07/28/19 07:22	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	250	U	250	39	ng/L		07/26/19 06:51	07/28/19 07:22	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	250	U	250	24	ng/L		07/26/19 06:51	07/28/19 07:22	1
4:2 FTS	250	U	250	65	ng/L		07/26/19 06:51	07/28/19 07:22	1
8:2 FTS	250	U	250	25	ng/L		07/26/19 06:51	07/28/19 07:22	1
6:2 FTS	250	U	250	25	ng/L		07/26/19 06:51	07/28/19 07:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C4 PFBA	*31*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C2 PFHxA	*82*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C4 PFOA	*95*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C5 PFNA	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C2 PFDA	*104*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C2 PFUnA	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C2 PFDoA	*95*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C2 PFTeDA	*107*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C3 PFBS	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
18O2 PFHxS	*91*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C4 PFOS	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C4 PFHpA	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
13C5 PFPeA	*85*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
d5-NEtFOSAA	*91*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
M2-8:2 FTS	*103*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
M2-4:2 FTS	*109*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*
M2-6:2 FTS	*127*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:22*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072219-DA-004
Date Collected: 07/22/19 12:35
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116238-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.4**		1.9	0.33	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluoropentanoic acid (PFPeA)	**0.86**	**J**	1.9	0.46	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.55	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluoroheptanoic acid (PFHpA)	**0.47**	**J**	1.9	0.24	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorooctanoic acid (PFOA)	**1.3**	**J**	1.9	0.81	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.9	0.19	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorohexanesulfonic acid (PFHxS)	**0.60**	**J B**	1.9	0.16	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorooctanesulfonic acid (PFOS)	**4.6**		1.9	0.51	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		07/26/19 06:51	07/28/19 07:30	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/26/19 06:51	07/28/19 07:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/26/19 06:51	07/28/19 07:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/26/19 06:51	07/28/19 07:30	1
4:2 FTS	19	U	19	4.9	ng/L		07/26/19 06:51	07/28/19 07:30	1
8:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	07/28/19 07:30	1
6:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	07/28/19 07:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*82*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C4 PFBA	*59*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C2 PFHxA	*85*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C4 PFOA	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C5 PFNA	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C2 PFDA	*100*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C2 PFUnA	*91*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C2 PFDoA	*91*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C2 PFTeDA	*100*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C3 PFBS	*90*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
18O2 PFHxS	*89*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C4 PFOS	*86*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C4 PFHpA	*89*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
13C5 PFPeA	*84*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
d3-NMeFOSAA	*85*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
d5-NEtFOSAA	*84*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
M2-8:2 FTS	*101*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
M2-4:2 FTS	*124*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*
M2-6:2 FTS	*123*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:30*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072219-DA-005
Date Collected: 07/22/19 13:45
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116238-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**6.5**		1.9	0.32	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluoropentanoic acid (PFPeA)	**1.0**	**J**	1.9	0.45	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorohexanoic acid (PFHxA)	**0.62**	**J**	1.9	0.54	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluoroheptanoic acid (PFHpA)	**0.73**	**J**	1.9	0.23	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorooctanoic acid (PFOA)	**2.2**		1.9	0.79	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorobutanesulfonic acid (PFBS)	**1.4**	**J**	1.9	0.19	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorohexanesulfonic acid (PFHxS)	**0.95**	**J I B**	1.9	0.16	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorooctanesulfonic acid (PFOS)	**5.9**		1.9	0.50	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.32	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		07/26/19 06:51	07/28/19 07:38	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/26/19 06:51	07/28/19 07:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/26/19 06:51	07/28/19 07:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/26/19 06:51	07/28/19 07:38	1
4:2 FTS	19	U	19	4.8	ng/L		07/26/19 06:51	07/28/19 07:38	1
8:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	07/28/19 07:38	1
6:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	07/28/19 07:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*88*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C4 PFBA	*49*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C2 PFHxA	*70*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C4 PFOA	*96*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C5 PFNA	*100*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C2 PFDA	*105*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C2 PFUnA	*98*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C2 PFDoA	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C2 PFTeDA	*105*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C3 PFBS	*96*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
18O2 PFHxS	*90*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C4 PFOS	*90*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C4 PFHpA	*89*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
13C5 PFPeA	*80*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
d3-NMeFOSAA	*95*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
M2-8:2 FTS	*112*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
M2-4:2 FTS	*135*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*
M2-6:2 FTS	*145*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:38*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072219-DA-006
Date Collected: 07/22/19 12:25
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116238-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.8**		1.9	0.34	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluoropentanoic acid (PFPeA)	**1.3**	**J**	1.9	0.47	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorohexanoic acid (PFHxA)	**1.9**		1.9	0.56	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluoroheptanoic acid (PFHpA)	**0.76**	**J**	1.9	0.24	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.82	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorononanoic acid (PFNA)	**0.41**	**J**	1.9	0.26	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorodecanoic acid (PFDA)	**1.0**	**J**	1.9	0.30	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.3	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.9	0.19	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorohexanesulfonic acid (PFHxS)	**0.42**	**J B**	1.9	0.16	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorooctanesulfonic acid (PFOS)	**1.9**		1.9	0.52	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.34	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.29	ng/L		07/26/19 06:51	07/28/19 07:46	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/26/19 06:51	07/28/19 07:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		07/26/19 06:51	07/28/19 07:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/26/19 06:51	07/28/19 07:46	1
4:2 FTS	19	U	19	5.0	ng/L		07/26/19 06:51	07/28/19 07:46	1
8:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	07/28/19 07:46	1
6:2 FTS	**2.3**	**J**	19	1.9	ng/L		07/26/19 06:51	07/28/19 07:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C4 PFBA	*72*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C2 PFHxA	*88*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C4 PFOA	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C5 PFNA	*96*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C2 PFDA	*95*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C2 PFUnA	*90*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C2 PFDoA	*92*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C2 PFTeDA	*106*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C3 PFBS	*92*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
18O2 PFHxS	*88*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C4 PFOS	*88*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C4 PFHpA	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
13C5 PFPeA	*91*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
d3-NMeFOSAA	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
d5-NEtFOSAA	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
M2-8:2 FTS	*101*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
M2-4:2 FTS	*111*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*
M2-6:2 FTS	*113*		*25 - 150*	*07/26/19 06:51*	*07/28/19 07:46*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072219-DA-007
Date Collected: 07/22/19 13:20
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116238-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**11**		1.9	0.33	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.54	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluoroheptanoic acid (PFHpA)	**1.8**	**J**	1.9	0.23	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorooctanoic acid (PFOA)	**2.4**		1.9	0.80	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorononanoic acid (PFNA)	**0.64**	**J**	1.9	0.25	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorobutanesulfonic acid (PFBS)	**1.6**	**J**	1.9	0.19	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorohexanesulfonic acid (PFHxS)	**9.3**	**I B**	1.9	0.16	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.97**	**J I**	1.9	0.18	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorooctanesulfonic acid (PFOS)	**28**	**I**	1.9	0.51	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluoropentanesulfonic acid (PFPeS)	**2.0**	**I**	1.9	0.28	ng/L		07/26/19 06:51	08/01/19 18:56	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/26/19 06:51	08/01/19 18:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/26/19 06:51	08/01/19 18:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/26/19 06:51	08/01/19 18:56	1
4:2 FTS	19	U	19	4.9	ng/L		07/26/19 06:51	08/01/19 18:56	1
8:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	08/01/19 18:56	1
6:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	08/01/19 18:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*88*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C4 PFBA	*28*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C2 PFHxA	*82*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C4 PFOA	*98*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C5 PFNA	*103*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C2 PFDA	*107*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C2 PFUnA	*106*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C2 PFDoA	*109*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C3 PFBS	*107*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
18O2 PFHxS	*107*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C4 PFOS	*104*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C4 PFHpA	*104*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
13C5 PFPeA	*70*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
d3-NMeFOSAA	*118*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
d5-NEtFOSAA	*117*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
M2-8:2 FTS	*180*	*	*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
M2-4:2 FTS	*121*		*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*
M2-6:2 FTS	*165*	*	*25 - 150*	*07/26/19 06:51*	*08/01/19 18:56*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: FB-12607-072219-DA-001
Date Collected: 07/22/19 13:30
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116238-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.9	U	1.9	0.33	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.54	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.23	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.80	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorohexanesulfonic acid (PFHxS)	**0.30**	**J B**	1.9	0.16	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.51	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		07/26/19 06:51	07/28/19 08:02	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/26/19 06:51	07/28/19 08:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/26/19 06:51	07/28/19 08:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/26/19 06:51	07/28/19 08:02	1
4:2 FTS	19	U	19	4.9	ng/L		07/26/19 06:51	07/28/19 08:02	1
8:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	07/28/19 08:02	1
6:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	07/28/19 08:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C4 PFBA	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C2 PFHxA	*95*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C4 PFOA	*96*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C5 PFNA	*99*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C2 PFDA	*102*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C2 PFUnA	*100*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C2 PFDoA	*98*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C2 PFTeDA	*120*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C3 PFBS	*95*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
18O2 PFHxS	*94*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C4 PFOS	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C4 PFHpA	*99*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
13C5 PFPeA	*94*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
d5-NEtFOSAA	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
M2-8:2 FTS	*100*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
M2-4:2 FTS	*90*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*
M2-6:2 FTS	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:02*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: EB-12607-072219-DA-001
Date Collected: 07/22/19 13:30
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116238-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.35**	**J**	1.9	0.33	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.55	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.24	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.80	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorohexanesulfonic acid (PFHxS)	**0.27**	**J B**	1.9	0.16	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.51	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		07/26/19 06:51	07/28/19 08:10	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/26/19 06:51	07/28/19 08:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/26/19 06:51	07/28/19 08:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/26/19 06:51	07/28/19 08:10	1
4:2 FTS	19	U	19	4.9	ng/L		07/26/19 06:51	07/28/19 08:10	1
8:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	07/28/19 08:10	1
6:2 FTS	19	U	19	1.9	ng/L		07/26/19 06:51	07/28/19 08:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C4 PFBA	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C2 PFHxA	*92*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C4 PFOA	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C5 PFNA	*94*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C2 PFDA	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C2 PFUnA	*91*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C2 PFDoA	*98*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C2 PFTeDA	*110*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C3 PFBS	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
18O2 PFHxS	*91*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C4 PFOS	*87*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C4 PFHpA	*96*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
13C5 PFPeA	*95*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
d3-NMeFOSAA	*88*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
d5-NEtFOSAA	*95*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
M2-8:2 FTS	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
M2-4:2 FTS	*94*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*
M2-6:2 FTS	*101*		*25 - 150*	*07/26/19 06:51*	*07/28/19 08:10*	*1*

QC Association Summary

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

Job ID: 240-116238-1

LCMS

Prep Batch: 310307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116238-1	GW-12607-072219-DA-001	Total/NA	Water	3535	
240-116238-2	GW-12607-072219-DA-002	Total/NA	Water	3535	
240-116238-3	GW-12607-072219-DA-003	Total/NA	Water	3535	
240-116238-4	GW-12607-072219-DA-004	Total/NA	Water	3535	
240-116238-5	GW-12607-072219-DA-005	Total/NA	Water	3535	
240-116238-6	GW-12607-072219-DA-006	Total/NA	Water	3535	
240-116238-7	GW-12607-072219-DA-007	Total/NA	Water	3535	
240-116238-8	FB-12607-072219-DA-001	Total/NA	Water	3535	
240-116238-9	EB-12607-072219-DA-001	Total/NA	Water	3535	
MB 320-310307/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-310307/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 310728

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116238-1	GW-12607-072219-DA-001	Total/NA	Water	537 (modified)	310307
240-116238-2	GW-12607-072219-DA-002	Total/NA	Water	537 (modified)	310307
240-116238-3	GW-12607-072219-DA-003	Total/NA	Water	537 (modified)	310307
240-116238-4	GW-12607-072219-DA-004	Total/NA	Water	537 (modified)	310307
240-116238-5	GW-12607-072219-DA-005	Total/NA	Water	537 (modified)	310307
240-116238-6	GW-12607-072219-DA-006	Total/NA	Water	537 (modified)	310307
240-116238-8	FB-12607-072219-DA-001	Total/NA	Water	537 (modified)	310307
240-116238-9	EB-12607-072219-DA-001	Total/NA	Water	537 (modified)	310307
MB 320-310307/1-A	Method Blank	Total/NA	Water	537 (modified)	310307
LCS 320-310307/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	310307

Analysis Batch: 311912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116238-7	GW-12607-072219-DA-007	Total/NA	Water	537 (modified)	310307

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-310307/1-A
Matrix: Water
Analysis Batch: 310728

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310307

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.0	U	2.0	0.35	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorohexanesulfonic acid (PFHxS)	0.317	J	2.0	0.17	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		07/26/19 06:51	07/28/19 05:46	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/26/19 06:51	07/28/19 05:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		07/26/19 06:51	07/28/19 05:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/26/19 06:51	07/28/19 05:46	1
4:2 FTS	20	U	20	5.2	ng/L		07/26/19 06:51	07/28/19 05:46	1
8:2 FTS	20	U	20	2.0	ng/L		07/26/19 06:51	07/28/19 05:46	1
6:2 FTS	20	U	20	2.0	ng/L		07/26/19 06:51	07/28/19 05:46	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*88*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C4 PFBA	*89*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C2 PFHxA	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C4 PFOA	*99*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C5 PFNA	*99*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C2 PFDA	*98*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C2 PFUnA	*99*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C2 PFDoA	*101*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C2 PFTeDA	*106*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C3 PFBS	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
18O2 PFHxS	*93*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C4 PFOS	*91*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C4 PFHpA	*100*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
13C5 PFPeA	*95*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
d3-NMeFOSAA	*96*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
d5-NEtFOSAA	*97*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
M2-8:2 FTS	*103*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
M2-4:2 FTS	*105*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*
M2-6:2 FTS	*103*		*25 - 150*	*07/26/19 06:51*	*07/28/19 05:46*	*1*

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

Lab Sample ID: LCS 320-310307/2-A
Matrix: Water
Analysis Batch: 310728

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310307

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	43.6		ng/L		109	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	40.1		ng/L		100	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	42.0		ng/L		105	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	41.4		ng/L		104	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	39.4		ng/L		99	64 - 124
Perfluorononanoic acid (PFNA)	40.0	40.0		ng/L		100	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	39.2		ng/L		98	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.4		ng/L		101	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	40.3		ng/L		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	42.3		ng/L		106	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	38.3		ng/L		96	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	36.6		ng/L		103	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.9		ng/L		104	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	41.6		ng/L		109	68 - 128
Perfluorodecanesulfonic acid (PFDS)	38.6	39.0		ng/L		101	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	38.0		ng/L		102	67 - 127
Perfluorooctanesulfonamide (FOSA)	40.0	42.1		ng/L		105	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	37.5	37.8		ng/L		101	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	39.9		ng/L		104	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.3		ng/L		103	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	37.6		ng/L		94	65 - 125
4:2 FTS	37.4	40.6		ng/L		109	70 - 130
8:2 FTS	38.3	41.0		ng/L		107	67 - 127
6:2 FTS	37.9	39.4		ng/L		104	66 - 126

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 FOSA	*87*		*25 - 150*
13C4 PFBA	*90*		*25 - 150*
13C2 PFHxA	*94*		*25 - 150*
13C4 PFOA	*95*		*25 - 150*
13C5 PFNA	*98*		*25 - 150*
13C2 PFDA	*103*		*25 - 150*
13C2 PFUnA	*94*		*25 - 150*
13C2 PFDoA	*96*		*25 - 150*
13C2 PFTeDA	*108*		*25 - 150*
13C3 PFBS	*96*		*25 - 150*
18O2 PFHxS	*92*		*25 - 150*
13C4 PFOS	*91*		*25 - 150*

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

Lab Sample ID: LCS 320-310307/2-A
Matrix: Water
Analysis Batch: 310728

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310307

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFHpA	97		25 - 150
13C5 PFPeA	92		25 - 150
d3-NMeFOSAA	97		25 - 150
d5-NEtFOSAA	98		25 - 150
M2-8:2 FTS	100		25 - 150
M2-4:2 FTS	100		25 - 150
M2-6:2 FTS	100		25 - 150

Lab Chronicle

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

Job ID: 240-116238-1

Client Sample ID: GW-12607-072219-DA-001
Lab Sample ID: 240-116238-1
Date Collected: 07/22/19 11:50
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310307	07/26/19 06:51	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	310728	07/28/19 07:06	D1R	TAL SAC

Client Sample ID: GW-12607-072219-DA-002
Lab Sample ID: 240-116238-2
Date Collected: 07/22/19 12:45
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310307	07/26/19 06:51	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	310728	07/28/19 07:14	D1R	TAL SAC

Client Sample ID: GW-12607-072219-DA-003
Lab Sample ID: 240-116238-3
Date Collected: 07/22/19 12:55
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310307	07/26/19 06:51	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	310728	07/28/19 07:22	D1R	TAL SAC

Client Sample ID: GW-12607-072219-DA-004
Lab Sample ID: 240-116238-4
Date Collected: 07/22/19 12:35
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310307	07/26/19 06:51	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	310728	07/28/19 07:30	D1R	TAL SAC

Client Sample ID: GW-12607-072219-DA-005
Lab Sample ID: 240-116238-5
Date Collected: 07/22/19 13:45
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310307	07/26/19 06:51	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	310728	07/28/19 07:38	D1R	TAL SAC

Client Sample ID: GW-12607-072219-DA-006
Lab Sample ID: 240-116238-6
Date Collected: 07/22/19 12:25
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310307	07/26/19 06:51	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	310728	07/28/19 07:46	D1R	TAL SAC

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-116238-1
Project/Site: 12607, RACER Eckles Rd

Client Sample ID: GW-12607-072219-DA-007
Lab Sample ID: 240-116238-7

Date Collected: 07/22/19 13:20
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310307	07/26/19 06:51	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311912	08/01/19 18:56	S1M	TAL SAC

Client Sample ID: FB-12607-072219-DA-001
Lab Sample ID: 240-116238-8

Date Collected: 07/22/19 13:30
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310307	07/26/19 06:51	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	310728	07/28/19 08:02	D1R	TAL SAC

Client Sample ID: EB-12607-072219-DA-001
Lab Sample ID: 240-116238-9

Date Collected: 07/22/19 13:30
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310307	07/26/19 06:51	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	310728	07/28/19 08:10	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: 240-116238-1
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	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-20
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kansas	NELAP		E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-21
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-116238-1
Project/Site: 12607, 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	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD		L2468	01-20-21
ANAB	DOE		L2468.01	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-20
California	State Program	9	2897	01-31-20
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State		PH-0691	06-30-21
Connecticut	State Program	1	PH-0691	06-30-21
Florida	NELAP	4	E87570	06-30-20
Florida	NELAP		E87570	06-30-20
Hawaii	State Program	9	N/A	01-29-20
Illinois	NELAP	5	200060	03-17-20 *
Kansas	NELAP	7	E-10375	10-31-19
Louisiana	NELAP	6	30612	06-30-20
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
New Hampshire	NELAP	1	2997	04-20-20
New York	NELAP	2	11666	04-01-20
Oregon	NELAP	10	4040	01-29-20
Oregon	NELAP		4040	01-29-20
Pennsylvania	NELAP	3	68-01272	03-31-20
Pennsylvania	NELAP		68-01272	03-31-20
Texas	NELAP	6	T104704399	05-31-20
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	12-31-20
Utah	NELAP	8	CA00044	02-29-20
Vermont	State Program	1	VT-4040	04-16-20
Virginia	NELAP	3	460278	03-14-20
Washington	State Program	10	C581	05-05-20
West Virginia (DW)	State Program	3	9930C	12-31-19
Wyoming	State Program	8	8TMS-L	01-28-19 *

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

MICHIGAN
190

Chain of Custody Record

313664

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

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

Client Contact	Project Manager: C. MENUKE	Site Contact: C. MENUKE	Date: 7/22/19	COC No: ~~TE014~~ 10619-01
Company Name: GHD SERVICES INC	Tel/Fax: 248 873 3408	Lab Contact: D. HECKLER	Carrier: FED EX	1 of 1 COCs
Address: 26858 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: ELKS RD	☐ 1 week			Job / SDG No.:
Site:	☐ 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)	Sample Specific Notes:
GW-12607-072219-DA-001	7/22/19	1150	G	W	2	N	Y	
-002		1245	G	W	2	N	Y	-002 pH 10.28
-003		1255	G	W	2	N	Y	
-004		1235	G	W	2	N	Y	
-005	1345	1345	G	W	2	N	Y	
-006		1225	G	W	2	N	Y	
-007		1340	G	W	2	N	Y	
FB-12607-072219-DA-001		1330	G	W	2	N	N	
EB-12607-072219-DA-001	↓	1330	G	W	2	N	N	



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:
SSOW: ~~ET~~ 012607A-T31Y19-02

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	7/22/19 1500		ETA	7-23-19 930
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

8/5/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 116238

Client GHD Site Name

Cooler unpacked by: Ryan Crabley

Cooler Received on 7-23-19 Opened on 7-23-19 930

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

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

TestAmerica Cooler # 14 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-8 (CF +0.1 °C) Observed Cooler Temp. 4.2 °C Corrected Cooler Temp. 4.3 °C
   IR GUN #36 (CF +0.6°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 be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC984738 RAC 7-23-19
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #____ Yes No
16. 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 ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: RC

18. 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)

19. 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 TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-107296.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: denise.heckler@testamericainc.com	State of Origin: Michigan	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-116238-1
Address: 880 Riverside Parkway,	Due Date Requested: 8/2/2019			
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	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GW-12607-072219-DA-001 (240-116238-1)	7/22/19	11:50 Eastern		Water			X	2	
GW-12607-072219-DA-002 (240-116238-2)	7/22/19	12:45 Eastern		Water			X	2	
GW-12607-072219-DA-003 (240-116238-3)	7/22/19	12:55 Eastern		Water			X	2	
GW-12607-072219-DA-004 (240-116238-4)	7/22/19	12:35 Eastern		Water			X	2	
GW-12607-072219-DA-005 (240-116238-5)	7/22/19	13:45 Eastern		Water			X	2	
GW-12607-072219-DA-006 (240-116238-6)	7/22/19	12:25 Eastern		Water			X	2	
GW-12607-072219-DA-007 (240-116238-7)	7/22/19	13:20 Eastern		Water			X	2	
FB-12607-072219-DA-001 (240-116238-8)	7/22/19	13:30 Eastern		Water			X	2	
EB-12607-072219-DA-001 (240-116238-9)	7/22/19	13:30 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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 TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

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		7/23 1500			07/24/19 900	ETA-SDC
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: 0.8°C

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-116238-1

Login Number: 116238
List Number: 2
Creator: Kintaudi, Pauline W

List Source: Eurofins TestAmerica, Sacramento
List Creation: 07/25/19 03:31 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	0.8c
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?	N/A	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, RACER Eckles Rd

Job ID: 240-116238-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOSA (25-150)	PFBA (25-150)	PFHxA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDoA (25-150)
240-116238-1	GW-12607-072219-DA-001	86	63	85	98	98	96	85	94
240-116238-2	GW-12607-072219-DA-002	87	30	81	98	88	104	96	97
240-116238-3	GW-12607-072219-DA-003	87	31	82	95	93	104	97	95
240-116238-4	GW-12607-072219-DA-004	82	59	85	97	93	100	91	91
240-116238-5	GW-12607-072219-DA-005	88	49	70	96	100	105	98	97
240-116238-6	GW-12607-072219-DA-006	87	72	88	97	96	95	90	92
240-116238-7	GW-12607-072219-DA-007	88	28	82	98	103	107	106	109
240-116238-8	FB-12607-072219-DA-001	87	87	95	96	99	102	100	98
240-116238-9	EB-12607-072219-DA-001	87	87	92	97	94	97	91	98
LCS 320-310307/2-A	Lab Control Sample	87	90	94	95	98	103	94	96
MB 320-310307/1-A	Method Blank	88	89	93	99	99	98	99	101

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFHpA (25-150)	PFPeA (25-150)	-NMeFOSA (25-150)	-NEtFOSA (25-150)
240-116238-1	GW-12607-072219-DA-001	102	88	88	86	93	84	85	89
240-116238-2	GW-12607-072219-DA-002	105	95	89	87	92	84	91	90
240-116238-3	GW-12607-072219-DA-003	107	93	91	87	93	85	91	91
240-116238-4	GW-12607-072219-DA-004	100	90	89	86	89	84	85	84
240-116238-5	GW-12607-072219-DA-005	105	96	90	90	89	80	95	92
240-116238-6	GW-12607-072219-DA-006	106	92	88	88	93	91	87	87
240-116238-7	GW-12607-072219-DA-007	94	107	107	104	104	70	118	117
240-116238-8	FB-12607-072219-DA-001	120	95	94	93	99	94	90	93
240-116238-9	EB-12607-072219-DA-001	110	93	91	87	96	95	88	95
LCS 320-310307/2-A	Lab Control Sample	108	96	92	91	97	92	97	98
MB 320-310307/1-A	Method Blank	106	97	93	91	100	95	96	97

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	M262FTS (25-150)
240-116238-1	GW-12607-072219-DA-001	96	127	116
240-116238-2	GW-12607-072219-DA-002	103	106	125
240-116238-3	GW-12607-072219-DA-003	103	109	127
240-116238-4	GW-12607-072219-DA-004	101	124	123
240-116238-5	GW-12607-072219-DA-005	112	135	145
240-116238-6	GW-12607-072219-DA-006	101	111	113
240-116238-7	GW-12607-072219-DA-007	180 *	121	165 *
240-116238-8	FB-12607-072219-DA-001	100	90	97
240-116238-9	EB-12607-072219-DA-001	97	94	101
LCS 320-310307/2-A	Lab Control Sample	100	100	100
MB 320-310307/1-A	Method Blank	103	105	103

Surrogate Legend

PFOSA = 13C8 FOSA
PFBA = 13C4 PFBA
PFHxA = 13C2 PFHxA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA

Isotope Dilution Summary

Client: GHD Services Inc.
Job ID: 240-116238-1
Project/Site: 12607, RACER Eckles Rd

PFTDA = 13C2 PFTeDA
13C3-PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFHpA = 13C4 PFHpA
PFPeA = 13C5 PFPeA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS

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Sacramento
Sample Receiving Notes

240-116238 Field Sheet

Tracking # : 1103 6122 9487

Job: _____

SO / PO / FO / 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.

Notes: PK 07/24/19

Therm. ID: AK10 Corr. Factor: —

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: —

Sample Custody Seal: —

Cooler ID: -

Temp Observed: 0.8 Corrected: 0.8

From: Temp Blank ☐ Sample ☑

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Cooler compromised/tampered with?	☐	☑	☐
Samples compromised/tampered with?	☐	☑	☐
Samples w/o discrepancies?	☑	☐	☐
Sample containers have legible labels?	☑	☐	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided.	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
Sample temp OK?	☑	☐	☐
Sample out of temp?	☐	☑	☐

Initials: PK Date: 07/24/19

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

W12A

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ANALYTICAL REPORT

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

Laboratory Job ID: 240-116312-1
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:
8/9/2019 8:48:58 AM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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: 240-116312-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-116312-1

Comments
No additional comments.

Receipt
The samples were received on 7/24/2019 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5º C.

LCMS
Method(s) 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(s) 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-8:2 FTS the following samples: GW-12607-072319-DA-011 (240-116312-5) and GW-12607-072319-DA-011 (240-116312-5[MS]). The samples were re-analyzed with concurring results. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method(s) 537 (modified): Results for sample GW-12607-072319-DA-008 (240-116312-2) 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(s) 537 (modified): Results for samples GW-12607-072319-DA-009 (240-116312-3) 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(s) 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit for 13C2 PFHxA: GW-12607-072319-DA-009 (240-116312-3). 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). All detection limits are below the lower calibration.

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

Organic Prep
Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-310780.

Method(s) 3535: The following sample is slightly green prior to extraction: GW-12607-072319-DA-009 (240-116312-3).

Method(s) 3535: The following samples have sediment at the bottom of the bottle prior to extraction: GW-12607-072319-DA-008 (240-116312-2), GW-12607-072319-DA-010 (240-116312-4), GW-12607-072319-DA-015 (240-116312-9) and GW-12607-072319-DA-016 (240-116312-10).

Method(s) 3535: The following samples: GW-12607-072319-DA-011 (240-116312-5), GW-12607-072319-DA-011 (240-116312-5[MS]) and GW-12607-072319-DA-011 (240-116312-5[MSD]) in preparation batch 320-311181 were observed to be slightly foamy prior to extraction, and they observed to be a light yellow color after they were brought up to final volume.

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, RACER Eckles Rd

Job ID: 240-116312-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

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

Job ID: 240-116312-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-116312-1	FB-12607-072319-DA-002	Water	07/23/19 10:00	07/24/19 09:40	
240-116312-2	GW-12607-072319-DA-008	Water	07/23/19 12:15	07/24/19 09:40	
240-116312-3	GW-12607-072319-DA-009	Water	07/23/19 13:25	07/24/19 09:40	
240-116312-4	GW-12607-072319-DA-010	Water	07/23/19 12:00	07/24/19 09:40	
240-116312-5	GW-12607-072319-DA-011	Water	07/23/19 13:00	07/24/19 09:40	
240-116312-6	GW-12607-072319-DA-012	Water	07/23/19 13:15	07/24/19 09:40	
240-116312-7	GW-12607-072319-DA-013	Water	07/23/19 13:50	07/24/19 09:40	
240-116312-8	GW-12607-072319-DA-014	Water	07/23/19 14:00	07/24/19 09:40	
240-116312-9	GW-12607-072319-DA-015	Water	07/23/19 14:00	07/24/19 09:40	
240-116312-10	GW-12607-072319-DA-016	Water	07/23/19 14:20	07/24/19 09:40	

Detection Summary

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

Job ID: 240-116312-1

Client Sample ID: FB-12607-072319-DA-002 — Lab Sample ID: 240-116312-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.24	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072319-DA-008 — Lab Sample ID: 240-116312-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.5		1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.8		1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.4		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.4		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	27		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	7.2		1.9	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.83	J	1.9	0.29	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)	4.7	B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.6	J	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.66	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	780		9.5	2.6	ng/L	5		537 (modified)	Total/NA

Client Sample ID: GW-12607-072319-DA-009 — Lab Sample ID: 240-116312-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.3	J	8.9	1.6	ng/L	5		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.5	J	8.9	1.1	ng/L	5		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.7	J	8.9	3.8	ng/L	5		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.0	J	8.9	0.89	ng/L	5		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	49	B	8.9	0.76	ng/L	5		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	22		8.9	2.4	ng/L	5		537 (modified)	Total/NA

Client Sample ID: GW-12607-072319-DA-010 — Lab Sample ID: 240-116312-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.8		1.9	0.33	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)	4.4		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.1		1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	5.1		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.4	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.3	B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.24	J	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	14		1.9	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.29	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
6:2 FTS	2.7	J	19	1.9	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072319-DA-011 — Lab Sample ID: 240-116312-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	17		1.9	0.33	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)	6.5		1.9	0.81	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, RACER Eckles Rd

Job ID: 240-116312-1

Client Sample ID: GW-12607-072319-DA-011 (Continued) — Lab Sample ID: 240-116312-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid (PFNA)	0.45	J	1.9	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	20	I B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	5.0	I	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	170	I	1.9	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	3.5	I	1.9	0.29	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072319-DA-012 — Lab Sample ID: 240-116312-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.6		1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.3	J	1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.71	J	1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.2		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.94	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.5	B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.34	J	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.1		1.9	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.52	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072319-DA-013 — Lab Sample ID: 240-116312-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.5		1.8	0.32	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.56	J	1.8	0.45	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.38	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		1.8	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.76	J	1.8	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5	J B	1.8	0.16	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.27	J	1.8	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	20		1.8	0.49	ng/L	1		537 (modified)	Total/NA
6:2 FTS	4.8	J	18	1.8	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072319-DA-014 — Lab Sample ID: 240-116312-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.6		1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.65	J	1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.60	J	1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.41	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
Perfluorononanoic acid (PFNA)	0.72	J	1.9	0.26	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.37	J	1.9	0.30	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.8	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.58	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	22		1.9	0.52	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.39	J	1.9	0.29	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample ID: GW-12607-072319-DA-014 (Continued) — Lab Sample ID: 240-116312-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
6:2 FTS	4.4	J	19	1.9	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072319-DA-015 — Lab Sample ID: 240-116312-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.4		1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.4	J	1.9	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.9		1.9	0.55	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.4	J	1.9	0.24	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.2		1.9	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.9		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.2	B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.7		1.9	0.51	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.39	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
6:2 FTS	4.8	J	19	1.9	ng/L	1		537 (modified)	Total/NA

Client Sample ID: GW-12607-072319-DA-016 — Lab Sample ID: 240-116312-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.7		1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.4	J	1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.2		1.9	0.55	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)	2.1		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.49	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.9		1.9	0.52	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, RACER Eckles Rd

Job ID: 240-116312-1

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: FB-12607-072319-DA-002
Date Collected: 07/23/19 10:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.8	U	1.8	0.32	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	0.45	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	0.53	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	0.23	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.77	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.26	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorohexanesulfonic acid (PFHxS)	**0.24**	**J B**	1.8	0.15	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.49	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.32	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.27	ng/L		07/29/19 06:03	07/29/19 19:32	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.15	ng/L		07/29/19 06:03	07/29/19 19:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	18	U	18	2.8	ng/L		07/29/19 06:03	07/29/19 19:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	18	U	18	1.7	ng/L		07/29/19 06:03	07/29/19 19:32	1
4:2 FTS	18	U	18	4.7	ng/L		07/29/19 06:03	07/29/19 19:32	1
8:2 FTS	18	U	18	1.8	ng/L		07/29/19 06:03	07/29/19 19:32	1
6:2 FTS	18	U	18	1.8	ng/L		07/29/19 06:03	07/29/19 19:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*78*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C4 PFBA	*94*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C2 PFHxA	*104*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C4 PFOA	*98*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C5 PFNA	*102*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C2 PFDA	*97*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C2 PFUnA	*89*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C2 PFDoA	*83*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C2 PFTeDA	*89*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C3 PFBS	*100*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
18O2 PFHxS	*88*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C4 PFOS	*102*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C4 PFHpA	*87*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
13C5 PFPeA	*91*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
d3-NMeFOSAA	*66*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
d5-NEtFOSAA	*73*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
M2-8:2 FTS	*87*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
M2-4:2 FTS	*95*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*
M2-6:2 FTS	*93*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:32*	*1*

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

Job ID: 240-116312-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072319-DA-008
Date Collected: 07/23/19 12:15
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.5**		1.9	0.33	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluoropentanoic acid (PFPeA)	**3.8**		1.9	0.46	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorohexanoic acid (PFHxA)	**5.4**		1.9	0.55	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluoroheptanoic acid (PFHpA)	**5.4**		1.9	0.24	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorooctanoic acid (PFOA)	**27**		1.9	0.81	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorononanoic acid (PFNA)	**7.2**		1.9	0.26	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorodecanoic acid (PFDA)	**0.83**	**J**	1.9	0.29	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorobutanesulfonic acid (PFBS)	**1.3**	**J**	1.9	0.19	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorohexanesulfonic acid (PFHxS)	**4.7**	**B**	1.9	0.16	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.6**	**J**	1.9	0.18	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluoropentanesulfonic acid (PFPeS)	**0.66**	**J**	1.9	0.28	ng/L		07/29/19 06:03	07/29/19 19:42	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/29/19 06:03	07/29/19 19:42	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/29/19 06:03	07/29/19 19:42	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/29/19 06:03	07/29/19 19:42	1
4:2 FTS	19	U	19	4.9	ng/L		07/29/19 06:03	07/29/19 19:42	1
8:2 FTS	19	U	19	1.9	ng/L		07/29/19 06:03	07/29/19 19:42	1
6:2 FTS	19	U	19	1.9	ng/L		07/29/19 06:03	07/29/19 19:42	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*74*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C4 PFBA	*36*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C2 PFHxA	*89*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C4 PFOA	*98*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C5 PFNA	*85*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C2 PFDA	*98*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C2 PFUnA	*92*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C2 PFDoA	*92*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C3 PFBS	*72*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
18O2 PFHxS	*101*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C4 PFOS	*96*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C4 PFHpA	*99*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
13C5 PFPeA	*32*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
d3-NMeFOSAA	*72*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
d5-NEtFOSAA	*85*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
M2-8:2 FTS	*116*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
M2-4:2 FTS	*120*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*
M2-6:2 FTS	*119*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:42*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072319-DA-009
Date Collected: 07/23/19 13:25
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.3**	**J**	8.9	1.6	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluoropentanoic acid (PFPeA)	8.9	U	8.9	2.2	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorohexanoic acid (PFHxA)	8.9	U	8.9	2.6	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluoroheptanoic acid (PFHpA)	**1.5**	**J**	8.9	1.1	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorooctanoic acid (PFOA)	**4.7**	**J**	8.9	3.8	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorononanoic acid (PFNA)	8.9	U	8.9	1.2	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorodecanoic acid (PFDA)	8.9	U	8.9	1.4	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluoroundecanoic acid (PFUnA)	8.9	U	8.9	4.9	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorododecanoic acid (PFDoA)	8.9	U	8.9	2.5	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorotridecanoic acid (PFTriA)	8.9	U	8.9	5.8	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorotetradecanoic acid (PFTeA)	8.9	U	8.9	1.3	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorobutanesulfonic acid (PFBS)	**3.0**	**J**	8.9	0.89	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorohexanesulfonic acid (PFHxS)	**49**	**B**	8.9	0.76	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluoroheptanesulfonic Acid (PFHpS)	8.9	U	8.9	0.85	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorodecanesulfonic acid (PFDS)	8.9	U	8.9	1.4	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorooctanesulfonic acid (PFOS)	**22**		8.9	2.4	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorooctanesulfonamide (FOSA)	8.9	U	8.9	1.6	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluoropentanesulfonic acid (PFPeS)	8.9	U	8.9	1.3	ng/L		07/29/19 06:03	08/05/19 16:53	5
Perfluorononanesulfonic acid (PFNS)	8.9	U	8.9	0.71	ng/L		07/29/19 06:03	08/05/19 16:53	5
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	89	U	89	14	ng/L		07/29/19 06:03	08/05/19 16:53	5
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	89	U	89	8.5	ng/L		07/29/19 06:03	08/05/19 16:53	5
8:2 FTS	89	U	89	8.9	ng/L		07/29/19 06:03	08/05/19 16:53	5
6:2 FTS	89	U	89	8.9	ng/L		07/29/19 06:03	08/05/19 16:53	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*94*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C4 PFBA	*46*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C2 PFHxA	*12*	*	*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C4 PFOA	*95*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C5 PFNA	*103*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C2 PFDA	*93*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C2 PFUnA	*78*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C2 PFDoA	*83*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C2 PFTeDA	*64*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C3 PFBS	*101*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
18O2 PFHxS	*94*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C4 PFOS	*112*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C4 PFHpA	*82*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
13C5 PFPeA	*53*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
d3-NMeFOSAA	*59*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
d5-NEtFOSAA	*71*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
M2-8:2 FTS	*84*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*
M2-6:2 FTS	*85*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:53*	*5*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072319-DA-010
Date Collected: 07/23/19 12:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.8**		1.9	0.33	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluoropentanoic acid (PFPeA)	**2.5**		1.9	0.46	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorohexanoic acid (PFHxA)	**4.4**		1.9	0.55	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluoroheptanoic acid (PFHpA)	**2.1**		1.9	0.24	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorooctanoic acid (PFOA)	**5.1**		1.9	0.80	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorobutanesulfonic acid (PFBS)	**1.4**	**J**	1.9	0.19	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorohexanesulfonic acid (PFHxS)	**2.3**	**B**	1.9	0.16	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.24**	**J**	1.9	0.18	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorooctanesulfonic acid (PFOS)	**14**		1.9	0.51	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluoropentanesulfonic acid (PFPeS)	**0.29**	**J**	1.9	0.28	ng/L		07/29/19 06:03	07/29/19 19:57	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/29/19 06:03	07/29/19 19:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/29/19 06:03	07/29/19 19:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/29/19 06:03	07/29/19 19:57	1
4:2 FTS	19	U	19	4.9	ng/L		07/29/19 06:03	07/29/19 19:57	1
8:2 FTS	19	U	19	1.9	ng/L		07/29/19 06:03	07/29/19 19:57	1
6:2 FTS	**2.7**	**J**	19	1.9	ng/L		07/29/19 06:03	07/29/19 19:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*81*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C4 PFBA	*50*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C2 PFHxA	*79*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C4 PFOA	*89*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C5 PFNA	*98*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C2 PFDA	*90*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C2 PFUnA	*79*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C2 PFDoA	*72*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C2 PFTeDA	*80*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C3 PFBS	*77*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
18O2 PFHxS	*83*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C4 PFOS	*91*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C4 PFHpA	*78*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
13C5 PFPeA	*54*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
d3-NMeFOSAA	*58*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
d5-NEtFOSAA	*62*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
M2-8:2 FTS	*90*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
M2-4:2 FTS	*99*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*
M2-6:2 FTS	*86*		*25 - 150*	*07/29/19 06:03*	*07/29/19 19:57*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072319-DA-011
Date Collected: 07/23/19 13:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**17**		1.9	0.33	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.47	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.55	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluoroheptanoic acid (PFHpA)	**1.3**	**J**	1.9	0.24	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorooctanoic acid (PFOA)	**6.5**		1.9	0.81	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorononanoic acid (PFNA)	**0.45**	**J**	1.9	0.26	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.9	0.19	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorohexanesulfonic acid (PFHxS)	**20**	**I B**	1.9	0.16	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluoroheptanesulfonic Acid (PFHpS)	**5.0**	**I**	1.9	0.18	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorooctanesulfonic acid (PFOS)	**170**	**I**	1.9	0.51	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluoropentanesulfonic acid (PFPeS)	**3.5**	**I**	1.9	0.29	ng/L		07/30/19 09:32	07/31/19 22:30	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/30/19 09:32	07/31/19 22:30	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		07/30/19 09:32	07/31/19 22:30	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/30/19 09:32	07/31/19 22:30	1
4:2 FTS	19	U	19	5.0	ng/L		07/30/19 09:32	07/31/19 22:30	1
8:2 FTS	19	U	19	1.9	ng/L		07/30/19 09:32	07/31/19 22:30	1
6:2 FTS	19	U	19	1.9	ng/L		07/30/19 09:32	07/31/19 22:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*99*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C4 PFBA	*68*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C2 PFHxA	*79*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C4 PFOA	*96*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C5 PFNA	*120*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C2 PFDA	*124*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C2 PFUnA	*123*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C2 PFDoA	*125*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C2 PFTeDA	*110*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C3 PFBS	*113*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
18O2 PFHxS	*117*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C4 PFOS	*121*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C4 PFHpA	*101*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
13C5 PFPeA	*77*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
d3-NMeFOSAA	*130*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
d5-NEtFOSAA	*121*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
M2-8:2 FTS	*155*	*	*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
M2-4:2 FTS	*92*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*
M2-6:2 FTS	*129*		*25 - 150*	*07/30/19 09:32*	*07/31/19 22:30*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072319-DA-012
Date Collected: 07/23/19 13:15
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.6**		1.9	0.33	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluoropentanoic acid (PFPeA)	**1.3**	**J**	1.9	0.46	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.54	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluoroheptanoic acid (PFHpA)	**0.71**	**J**	1.9	0.23	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorooctanoic acid (PFOA)	**3.2**		1.9	0.80	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorobutanesulfonic acid (PFBS)	**0.94**	**J**	1.9	0.19	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorohexanesulfonic acid (PFHxS)	**3.5**	**B**	1.9	0.16	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.34**	**J**	1.9	0.18	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorooctanesulfonic acid (PFOS)	**8.1**		1.9	0.51	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluoropentanesulfonic acid (PFPeS)	**0.52**	**J**	1.9	0.28	ng/L		07/29/19 06:03	07/29/19 20:05	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/29/19 06:03	07/29/19 20:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/29/19 06:03	07/29/19 20:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/29/19 06:03	07/29/19 20:05	1
4:2 FTS	19	U	19	4.9	ng/L		07/29/19 06:03	07/29/19 20:05	1
8:2 FTS	19	U	19	1.9	ng/L		07/29/19 06:03	07/29/19 20:05	1
6:2 FTS	19	U	19	1.9	ng/L		07/29/19 06:03	07/29/19 20:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*74*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C4 PFBA	*58*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C2 PFHxA	*76*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C4 PFOA	*93*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C5 PFNA	*111*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C2 PFDA	*90*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C2 PFUnA	*88*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C2 PFDoA	*85*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C2 PFTeDA	*96*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C3 PFBS	*103*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
18O2 PFHxS	*86*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C4 PFOS	*101*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C4 PFHpA	*77*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
13C5 PFPeA	*65*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
d3-NMeFOSAA	*65*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
d5-NEtFOSAA	*83*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
M2-8:2 FTS	*96*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
M2-4:2 FTS	*94*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*
M2-6:2 FTS	*106*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:05*	*1*

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

Job ID: 240-116312-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072319-DA-013
Date Collected: 07/23/19 13:50
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.5**		1.8	0.32	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluoropentanoic acid (PFPeA)	**0.56**	**J**	1.8	0.45	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	0.53	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluoroheptanoic acid (PFHpA)	**0.38**	**J**	1.8	0.23	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorooctanoic acid (PFOA)	**2.1**		1.8	0.78	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorononanoic acid (PFNA)	**0.76**	**J**	1.8	0.25	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.28	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.50	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorotetradecanoic acid (PFTeA)	1.8	U	1.8	0.27	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorobutanesulfonic acid (PFBS)	**1.5**	**J**	1.8	0.18	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorohexanesulfonic acid (PFHxS)	**1.5**	**J B**	1.8	0.16	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.27**	**J**	1.8	0.17	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorooctanesulfonic acid (PFOS)	**20**		1.8	0.49	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.32	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.27	ng/L		07/29/19 06:03	07/29/19 20:12	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.15	ng/L		07/29/19 06:03	07/29/19 20:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	18	U	18	2.8	ng/L		07/29/19 06:03	07/29/19 20:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	18	U	18	1.7	ng/L		07/29/19 06:03	07/29/19 20:12	1
4:2 FTS	18	U	18	4.8	ng/L		07/29/19 06:03	07/29/19 20:12	1
8:2 FTS	18	U	18	1.8	ng/L		07/29/19 06:03	07/29/19 20:12	1
6:2 FTS	**4.8**	**J**	18	1.8	ng/L		07/29/19 06:03	07/29/19 20:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*74*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C4 PFBA	*51*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C2 PFHxA	*85*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C4 PFOA	*92*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C5 PFNA	*107*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C2 PFDA	*93*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C2 PFUnA	*97*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C2 PFDoA	*97*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C2 PFTeDA	*101*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C3 PFBS	*89*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
18O2 PFHxS	*84*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C4 PFOS	*105*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C4 PFHpA	*82*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
13C5 PFPeA	*57*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
d3-NMeFOSAA	*68*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
d5-NEtFOSAA	*79*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
M2-8:2 FTS	*94*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
M2-4:2 FTS	*118*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*
M2-6:2 FTS	*119*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:12*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072319-DA-014
Date Collected: 07/23/19 14:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.6**		1.9	0.33	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluoropentanoic acid (PFPeA)	**0.65**	**J**	1.9	0.47	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorohexanoic acid (PFHxA)	**0.60**	**J**	1.9	0.55	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluoroheptanoic acid (PFHpA)	**0.41**	**J**	1.9	0.24	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorooctanoic acid (PFOA)	**2.3**		1.9	0.81	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorononanoic acid (PFNA)	**0.72**	**J**	1.9	0.26	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorodecanoic acid (PFDA)	**0.37**	**J**	1.9	0.30	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorobutanesulfonic acid (PFBS)	**1.8**	**J**	1.9	0.19	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorohexanesulfonic acid (PFHxS)	**0.58**	**J B**	1.9	0.16	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorooctanesulfonic acid (PFOS)	**22**		1.9	0.52	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluoropentanesulfonic acid (PFPeS)	**0.39**	**J**	1.9	0.29	ng/L		07/29/19 06:03	07/29/19 20:20	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/29/19 06:03	07/29/19 20:20	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		07/29/19 06:03	07/29/19 20:20	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/29/19 06:03	07/29/19 20:20	1
4:2 FTS	19	U	19	5.0	ng/L		07/29/19 06:03	07/29/19 20:20	1
8:2 FTS	19	U	19	1.9	ng/L		07/29/19 06:03	07/29/19 20:20	1
6:2 FTS	**4.4**	**J**	19	1.9	ng/L		07/29/19 06:03	07/29/19 20:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*72*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C4 PFBA	*51*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C2 PFHxA	*88*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C4 PFOA	*94*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C5 PFNA	*101*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C2 PFDA	*87*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C2 PFUnA	*94*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C2 PFDoA	*92*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C2 PFTeDA	*97*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C3 PFBS	*96*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
18O2 PFHxS	*86*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C4 PFOS	*100*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C4 PFHpA	*81*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
13C5 PFPeA	*59*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
d3-NMeFOSAA	*67*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
d5-NEtFOSAA	*72*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
M2-8:2 FTS	*95*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
M2-4:2 FTS	*119*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*
M2-6:2 FTS	*132*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:20*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072319-DA-015
Date Collected: 07/23/19 14:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.4**		1.9	0.33	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluoropentanoic acid (PFPeA)	**1.4**	**J**	1.9	0.46	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorohexanoic acid (PFHxA)	**1.9**		1.9	0.55	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluoroheptanoic acid (PFHpA)	**1.4**	**J**	1.9	0.24	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorooctanoic acid (PFOA)	**4.2**		1.9	0.80	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorobutanesulfonic acid (PFBS)	**1.9**		1.9	0.19	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorohexanesulfonic acid (PFHxS)	**3.2**	**B**	1.9	0.16	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorooctanesulfonic acid (PFOS)	**4.7**		1.9	0.51	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluoropentanesulfonic acid (PFPeS)	**0.39**	**J**	1.9	0.28	ng/L		07/29/19 06:03	07/29/19 20:28	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/29/19 06:03	07/29/19 20:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		07/29/19 06:03	07/29/19 20:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/29/19 06:03	07/29/19 20:28	1
4:2 FTS	19	U	19	4.9	ng/L		07/29/19 06:03	07/29/19 20:28	1
8:2 FTS	19	U	19	1.9	ng/L		07/29/19 06:03	07/29/19 20:28	1
6:2 FTS	**4.8**	**J**	19	1.9	ng/L		07/29/19 06:03	07/29/19 20:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*75*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C4 PFBA	*64*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C2 PFHxA	*89*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C4 PFOA	*86*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C5 PFNA	*93*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C2 PFDA	*94*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C2 PFUnA	*80*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C2 PFDoA	*74*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C2 PFTeDA	*83*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C3 PFBS	*91*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
18O2 PFHxS	*75*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C4 PFOS	*95*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C4 PFHpA	*74*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
13C5 PFPeA	*68*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
d3-NMeFOSAA	*55*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
d5-NEtFOSAA	*76*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
M2-8:2 FTS	*82*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
M2-4:2 FTS	*98*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*
M2-6:2 FTS	*94*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:28*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Client Sample ID: GW-12607-072319-DA-016
Date Collected: 07/23/19 14:20
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.7**		1.9	0.33	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluoropentanoic acid (PFPeA)	**1.4**	**J**	1.9	0.47	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorohexanoic acid (PFHxA)	**2.2**		1.9	0.55	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluoroheptanoic acid (PFHpA)	**1.2**	**J**	1.9	0.24	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorooctanoic acid (PFOA)	**2.1**		1.9	0.81	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorobutanesulfonic acid (PFBS)	**0.49**	**J**	1.9	0.19	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorohexanesulfonic acid (PFHxS)	**1.2**	**J B**	1.9	0.16	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorooctanesulfonic acid (PFOS)	**2.9**		1.9	0.52	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.29	ng/L		07/29/19 06:03	07/29/19 20:37	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		07/29/19 06:03	07/29/19 20:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		07/29/19 06:03	07/29/19 20:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		07/29/19 06:03	07/29/19 20:37	1
4:2 FTS	19	U	19	5.0	ng/L		07/29/19 06:03	07/29/19 20:37	1
8:2 FTS	19	U	19	1.9	ng/L		07/29/19 06:03	07/29/19 20:37	1
6:2 FTS	19	U	19	1.9	ng/L		07/29/19 06:03	07/29/19 20:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*74*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C4 PFBA	*46*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C2 PFHxA	*86*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C4 PFOA	*92*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C5 PFNA	*99*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C2 PFDA	*92*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C2 PFUnA	*91*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C2 PFDoA	*104*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C2 PFTeDA	*94*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C3 PFBS	*91*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
18O2 PFHxS	*99*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C4 PFOS	*109*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C4 PFHpA	*90*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
13C5 PFPeA	*53*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
d3-NMeFOSAA	*76*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
d5-NEtFOSAA	*91*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
M2-8:2 FTS	*117*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
M2-4:2 FTS	*115*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*
M2-6:2 FTS	*143*		*25 - 150*	*07/29/19 06:03*	*07/29/19 20:37*	*1*

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

Job ID: 240-116312-1

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

Client Sample ID: GW-12607-072319-DA-008
Date Collected: 07/23/19 12:15
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	780		9.5	2.6	ng/L		07/29/19 06:03	08/02/19 19:54	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*86*		*25 - 150*	*07/29/19 06:03*	*08/02/19 19:54*	*5*

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

Job ID: 240-116312-1

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

Client Sample ID: GW-12607-072319-DA-009
Date Collected: 07/23/19 13:25
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116312-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4:2 FTS	180	U	180	46	ng/L		07/29/19 06:03	08/05/19 16:45	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-4:2 FTS	*32*		*25 - 150*	*07/29/19 06:03*	*08/05/19 16:45*	*10*

QC Association Summary

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

Job ID: 240-116312-1

LCMS

Prep Batch: 310780

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116312-1	FB-12607-072319-DA-002	Total/NA	Water	3535	
240-116312-2	GW-12607-072319-DA-008	Total/NA	Water	3535	
240-116312-2 - DL	GW-12607-072319-DA-008	Total/NA	Water	3535	
240-116312-3 - DL	GW-12607-072319-DA-009	Total/NA	Water	3535	
240-116312-3	GW-12607-072319-DA-009	Total/NA	Water	3535	
240-116312-4	GW-12607-072319-DA-010	Total/NA	Water	3535	
240-116312-6	GW-12607-072319-DA-012	Total/NA	Water	3535	
240-116312-7	GW-12607-072319-DA-013	Total/NA	Water	3535	
240-116312-8	GW-12607-072319-DA-014	Total/NA	Water	3535	
240-116312-9	GW-12607-072319-DA-015	Total/NA	Water	3535	
240-116312-10	GW-12607-072319-DA-016	Total/NA	Water	3535	
MB 320-310780/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-310780/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-310780/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 311181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116312-5	GW-12607-072319-DA-011	Total/NA	Water	3535	
MB 320-311181/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-311181/2-A	Lab Control Sample	Total/NA	Water	3535	
240-116312-5 MS	GW-12607-072319-DA-011	Total/NA	Water	3535	
240-116312-5 MSD	GW-12607-072319-DA-011	Total/NA	Water	3535	

Analysis Batch: 311366

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116312-1	FB-12607-072319-DA-002	Total/NA	Water	537 (modified)	310780
240-116312-2	GW-12607-072319-DA-008	Total/NA	Water	537 (modified)	310780
240-116312-4	GW-12607-072319-DA-010	Total/NA	Water	537 (modified)	310780
240-116312-6	GW-12607-072319-DA-012	Total/NA	Water	537 (modified)	310780
240-116312-7	GW-12607-072319-DA-013	Total/NA	Water	537 (modified)	310780
240-116312-8	GW-12607-072319-DA-014	Total/NA	Water	537 (modified)	310780
240-116312-9	GW-12607-072319-DA-015	Total/NA	Water	537 (modified)	310780
240-116312-10	GW-12607-072319-DA-016	Total/NA	Water	537 (modified)	310780
MB 320-310780/1-A	Method Blank	Total/NA	Water	537 (modified)	310780
LCS 320-310780/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	310780
LCSD 320-310780/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	310780

Analysis Batch: 311642

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116312-5	GW-12607-072319-DA-011	Total/NA	Water	537 (modified)	311181
MB 320-311181/1-A	Method Blank	Total/NA	Water	537 (modified)	311181
LCS 320-311181/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	311181
240-116312-5 MS	GW-12607-072319-DA-011	Total/NA	Water	537 (modified)	311181
240-116312-5 MSD	GW-12607-072319-DA-011	Total/NA	Water	537 (modified)	311181

Analysis Batch: 312316

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116312-2 - DL	GW-12607-072319-DA-008	Total/NA	Water	537 (modified)	310780

QC Association Summary

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

Job ID: 240-116312-1

LCMS

Analysis Batch: 312639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116312-3 - DL	GW-12607-072319-DA-009	Total/NA	Water	537 (modified)	310780
240-116312-3	GW-12607-072319-DA-009	Total/NA	Water	537 (modified)	310780

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

Job ID: 240-116312-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-310780/1-A
Matrix: Water
Analysis Batch: 311366

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 310780

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.0	U	2.0	0.35	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorohexanesulfonic acid (PFHxS)	0.317	J	2.0	0.17	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		07/29/19 06:03	07/29/19 18:13	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/29/19 06:03	07/29/19 18:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		07/29/19 06:03	07/29/19 18:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/29/19 06:03	07/29/19 18:13	1
4:2 FTS	20	U	20	5.2	ng/L		07/29/19 06:03	07/29/19 18:13	1
8:2 FTS	20	U	20	2.0	ng/L		07/29/19 06:03	07/29/19 18:13	1
6:2 FTS	20	U	20	2.0	ng/L		07/29/19 06:03	07/29/19 18:13	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 FOSA	*73*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C4 PFBA	*87*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C2 PFHxA	*92*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C4 PFOA	*88*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C5 PFNA	*92*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C2 PFDA	*83*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C2 PFUnA	*82*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C2 PFDoA	*72*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C2 PFTeDA	*77*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C3 PFBS	*89*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
18O2 PFHxS	*84*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C4 PFOS	*92*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C4 PFHpA	*82*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
13C5 PFPeA	*84*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
d3-NMeFOSAA	*62*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
d5-NEtFOSAA	*69*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
M2-8:2 FTS	*85*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
M2-4:2 FTS	*92*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*
M2-6:2 FTS	*84*		*25 - 150*	*07/29/19 06:03*	*07/29/19 18:13*	*1*

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

Lab Sample ID: LCS 320-310780/2-A
Matrix: Water
Analysis Batch: 311366

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310780

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.9		ng/L		107	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	42.2		ng/L		105	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	38.5		ng/L		96	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	37.2		ng/L		93	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	41.0		ng/L		102	64 - 124
Perfluorononanoic acid (PFNA)	40.0	44.8		ng/L		112	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	39.8		ng/L		99	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	37.1		ng/L		93	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	37.0		ng/L		93	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	38.2		ng/L		96	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	39.9		ng/L		100	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	32.5		ng/L		92	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.1		ng/L		105	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	35.9		ng/L		94	68 - 128
Perfluorodecanesulfonic acid (PFDS)	38.6	36.7		ng/L		95	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	35.6		ng/L		96	67 - 127
Perfluorooctanesulfonamide (FOSA)	40.0	45.7		ng/L		114	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	37.5	38.5		ng/L		103	70 - 130
Perfluorononanesulfonic acid (PFNS)	38.4	34.8		ng/L		91	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.3		ng/L		101	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	45.9		ng/L		115	65 - 125
4:2 FTS	37.4	36.7		ng/L		98	70 - 130
8:2 FTS	38.3	38.0		ng/L		99	67 - 127
6:2 FTS	37.9	37.9		ng/L		100	66 - 126

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 FOSA	*78*		*25 - 150*
13C4 PFBA	*86*		*25 - 150*
13C2 PFHxA	*95*		*25 - 150*
13C4 PFOA	*94*		*25 - 150*
13C5 PFNA	*84*		*25 - 150*
13C2 PFDA	*86*		*25 - 150*
13C2 PFUnA	*84*		*25 - 150*
13C2 PFDoA	*80*		*25 - 150*
13C2 PFTeDA	*77*		*25 - 150*
13C3 PFBS	*97*		*25 - 150*
18O2 PFHxS	*84*		*25 - 150*
13C4 PFOS	*95*		*25 - 150*

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

Lab Sample ID: LCS 320-310780/2-A
Matrix: Water
Analysis Batch: 311366

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 310780

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFHpA	*88*		*25 - 150*
13C5 PFPeA	*86*		*25 - 150*
d3-NMeFOSAA	*63*		*25 - 150*
d5-NEtFOSAA	*67*		*25 - 150*
M2-8:2 FTS	*87*		*25 - 150*
M2-4:2 FTS	*100*		*25 - 150*
M2-6:2 FTS	*96*		*25 - 150*

Lab Sample ID: LCSD 320-310780/3-A
Matrix: Water
Analysis Batch: 311366

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 310780

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	41.6		ng/L		104	70 - 130	3	30
Perfluoropentanoic acid (PFPeA)			40.0	40.1		ng/L		100	66 - 126	5	30
Perfluorohexanoic acid (PFHxA)			40.0	36.5		ng/L		91	66 - 126	5	30
Perfluoroheptanoic acid (PFHpA)			40.0	40.7		ng/L		102	66 - 126	9	30
Perfluorooctanoic acid (PFOA)			40.0	40.2		ng/L		101	64 - 124	2	30
Perfluorononanoic acid (PFNA)			40.0	39.0		ng/L		97	68 - 128	14	30
Perfluorodecanoic acid (PFDA)			40.0	38.8		ng/L		97	69 - 129	3	30
Perfluoroundecanoic acid (PFUnA)			40.0	35.9		ng/L		90	60 - 120	3	30
Perfluorododecanoic acid (PFDoA)			40.0	43.0		ng/L		108	71 - 131	15	30
Perfluorotridecanoic acid (PFTriA)			40.0	39.1		ng/L		98	72 - 132	2	30
Perfluorotetradecanoic acid (PFTeA)			40.0	39.9		ng/L		100	68 - 128	0	30
Perfluorobutanesulfonic acid (PFBS)			35.4	37.6		ng/L		106	73 - 133	14	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	36.0		ng/L		99	63 - 123	6	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	36.4		ng/L		96	68 - 128	1	30
Perfluorodecanesulfonic acid (PFDS)			38.6	36.9		ng/L		96	68 - 128	0	30
Perfluorooctanesulfonic acid (PFOS)			37.1	35.1		ng/L		95	67 - 127	1	30
Perfluorooctanesulfonamide (FOSA)			40.0	46.4		ng/L		116	70 - 130	2	30
Perfluoropentanesulfonic acid (PFPeS)			37.5	38.3		ng/L		102	70 - 130	0	30
Perfluorononanesulfonic acid (PFNS)			38.4	38.7		ng/L		101	70 - 130	10	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	39.5		ng/L		99	67 - 127	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	39.5		ng/L		99	65 - 125	15	30
4:2 FTS			37.4	35.9		ng/L		96	70 - 130	2	30
8:2 FTS			38.3	38.5		ng/L		101	67 - 127	1	30
6:2 FTS			37.9	38.0		ng/L		100	66 - 126	0	30

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

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C8 FOSA	77		25 - 150
13C4 PFBA	93		25 - 150
13C2 PFHxA	104		25 - 150
13C4 PFOA	92		25 - 150
13C5 PFNA	97		25 - 150
13C2 PFDA	95		25 - 150
13C2 PFUnA	90		25 - 150
13C2 PFDoA	80		25 - 150
13C2 PFTeDA	83		25 - 150
13C3 PFBS	97		25 - 150
18O2 PFHxS	86		25 - 150
13C4 PFOS	95		25 - 150
13C4 PFHpA	84		25 - 150
13C5 PFPeA	90		25 - 150
d3-NMeFOSAA	66		25 - 150
d5-NEtFOSAA	74		25 - 150
M2-8:2 FTS	88		25 - 150
M2-4:2 FTS	113		25 - 150
M2-6:2 FTS	97		25 - 150

Lab Sample ID: MB 320-311181/1-A
Matrix: Water
Analysis Batch: 311642

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 311181

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.0	U	2.0	0.35	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorohexanesulfonic acid (PFHxS)	0.303	J	2.0	0.17	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		07/30/19 09:32	07/31/19 20:46	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		07/30/19 09:32	07/31/19 20:46	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		07/30/19 09:32	07/31/19 20:46	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		07/30/19 09:32	07/31/19 20:46	1
4:2 FTS	20	U	20	5.2	ng/L		07/30/19 09:32	07/31/19 20:46	1
8:2 FTS	20	U	20	2.0	ng/L		07/30/19 09:32	07/31/19 20:46	1
6:2 FTS	20	U	20	2.0	ng/L		07/30/19 09:32	07/31/19 20:46	1

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

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	76		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C4 PFBA	93		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C2 PFHxA	91		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C4 PFOA	99		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C5 PFNA	101		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C2 PFDA	101		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C2 PFUnA	96		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C2 PFDoA	97		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C2 PFTeDA	98		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C3 PFBS	98		25 - 150	07/30/19 09:32	07/31/19 20:46	1
18O2 PFHxS	97		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C4 PFOS	94		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C4 PFHpA	95		25 - 150	07/30/19 09:32	07/31/19 20:46	1
13C5 PFPeA	94		25 - 150	07/30/19 09:32	07/31/19 20:46	1
d3-NMeFOSAA	108		25 - 150	07/30/19 09:32	07/31/19 20:46	1
d5-NEtFOSAA	108		25 - 150	07/30/19 09:32	07/31/19 20:46	1
M2-8:2 FTS	117		25 - 150	07/30/19 09:32	07/31/19 20:46	1
M2-4:2 FTS	122		25 - 150	07/30/19 09:32	07/31/19 20:46	1
M2-6:2 FTS	132		25 - 150	07/30/19 09:32	07/31/19 20:46	1

Lab Sample ID: LCS 320-311181/2-A
Matrix: Water
Analysis Batch: 311642

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 311181

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.3		ng/L		106	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	39.4		ng/L		99	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	38.9		ng/L		97	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	42.2		ng/L		105	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	40.9		ng/L		102	64 - 124
Perfluorononanoic acid (PFNA)	40.0	39.6		ng/L		99	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	41.7		ng/L		104	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	38.1		ng/L		95	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	40.4		ng/L		101	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	39.5		ng/L		99	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	38.5		ng/L		96	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	35.3		ng/L		100	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.1		ng/L		94	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.2		ng/L		106	68 - 128
Perfluorodecanesulfonic acid (PFDS)	38.6	38.1		ng/L		99	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	35.6		ng/L		96	67 - 127
Perfluorooctanesulfonamide (FOSA)	40.0	42.9		ng/L		107	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	37.5	37.8		ng/L		101	70 - 130

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

Lab Sample ID: LCS 320-311181/2-A
Matrix: Water
Analysis Batch: 311642

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 311181

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorononanesulfonic acid (PFNS)			38.4	37.5		ng/L		98	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			40.0	41.6		ng/L		104	67 - 127		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	38.8		ng/L		97	65 - 125		
4:2 FTS			37.4	36.3		ng/L		97	70 - 130		
8:2 FTS			38.3	41.6		ng/L		109	67 - 127		
6:2 FTS			37.9	33.0		ng/L		87	66 - 126		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 FOSA	*79*		*25 - 150*
13C4 PFBA	*93*		*25 - 150*
13C2 PFHxA	*93*		*25 - 150*
13C4 PFOA	*99*		*25 - 150*
13C5 PFNA	*100*		*25 - 150*
13C2 PFDA	*98*		*25 - 150*
13C2 PFUnA	*96*		*25 - 150*
13C2 PFDoA	*101*		*25 - 150*
13C2 PFTeDA	*100*		*25 - 150*
13C3 PFBS	*97*		*25 - 150*
18O2 PFHxS	*99*		*25 - 150*
13C4 PFOS	*96*		*25 - 150*
13C4 PFHpA	*94*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
d3-NMeFOSAA	*102*		*25 - 150*
d5-NEtFOSAA	*102*		*25 - 150*
M2-8:2 FTS	*117*		*25 - 150*
M2-4:2 FTS	*119*		*25 - 150*
M2-6:2 FTS	*132*		*25 - 150*

Lab Sample ID: 240-116312-5 MS
Matrix: Water
Analysis Batch: 311642

Client Sample ID: GW-12607-072319-DA-011
Prep Type: Total/NA
Prep Batch: 311181

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorobutanoic acid (PFBA)	17		38.7	56.1		ng/L		101	70 - 130		
Perfluoropentanoic acid (PFPeA)	1.9	U	38.7	35.7		ng/L		92	66 - 126		
Perfluorohexanoic acid (PFHxA)	1.9	U	38.7	37.1		ng/L		96	66 - 126		
Perfluoroheptanoic acid (PFHpA)	1.3	J	38.7	39.7		ng/L		99	66 - 126		
Perfluorooctanoic acid (PFOA)	6.5		38.7	42.9		ng/L		94	64 - 124		
Perfluorononanoic acid (PFNA)	0.45	J	38.7	36.3		ng/L		93	68 - 128		
Perfluorodecanoic acid (PFDA)	1.9	U	38.7	40.8		ng/L		105	69 - 129		
Perfluoroundecanoic acid (PFUnA)	1.9	U	38.7	38.6		ng/L		100	60 - 120		
Perfluorododecanoic acid (PFDoA)	1.9	U	38.7	39.6		ng/L		102	71 - 131		
Perfluorotridecanoic acid (PFTriA)	1.9	U	38.7	38.7		ng/L		100	72 - 132		
Perfluorotetradecanoic acid (PFTeA)	1.9	U	38.7	37.0		ng/L		96	68 - 128		

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

Lab Sample ID: 240-116312-5 MS
Matrix: Water
Analysis Batch: 311642

Client Sample ID: GW-12607-072319-DA-011
Prep Type: Total/NA
Prep Batch: 311181

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	1.1	J	34.2	31.7		ng/L		89	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	20	I B	35.2	51.8		ng/L		91	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	5.0	I	36.8	40.5		ng/L		96	68 - 128
Perfluorodecanesulfonic acid (PFDS)	1.9	U	37.3	35.4		ng/L		95	68 - 128
Perfluorooctanesulfonic acid (PFOS)	170	I	35.9	205	I 4	ng/L		88	67 - 127
Perfluorooctanesulfonamide (FOSA)	1.9	U	38.7	42.8		ng/L		111	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	3.5	I	36.3	38.8		ng/L		97	70 - 130
Perfluorononanesulfonic acid (PFNS)	1.9	U	37.1	34.7		ng/L		94	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	38.7	37.0		ng/L		96	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	38.7	38.4		ng/L		99	65 - 125
4:2 FTS	19	U	36.1	37.0		ng/L		102	70 - 130
8:2 FTS	19	U	37.1	35.1		ng/L		95	67 - 127
6:2 FTS	19	U	36.7	33.2		ng/L		91	66 - 126

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C8 FOSA	*96*		*25 - 150*
13C4 PFBA	*67*		*25 - 150*
13C2 PFHxA	*78*		*25 - 150*
13C4 PFOA	*96*		*25 - 150*
13C5 PFNA	*115*		*25 - 150*
13C2 PFDA	*121*		*25 - 150*
13C2 PFUnA	*116*		*25 - 150*
13C2 PFDoA	*114*		*25 - 150*
13C2 PFTeDA	*106*		*25 - 150*
13C3 PFBS	*113*		*25 - 150*
18O2 PFHxS	*119*		*25 - 150*
13C4 PFOS	*119*		*25 - 150*
13C4 PFHpA	*104*		*25 - 150*
13C5 PFPeA	*75*		*25 - 150*
d3-NMeFOSAA	*119*		*25 - 150*
d5-NEtFOSAA	*115*		*25 - 150*
M2-8:2 FTS	*153*	*	*25 - 150*
M2-4:2 FTS	*90*		*25 - 150*
M2-6:2 FTS	*130*		*25 - 150*

Lab Sample ID: 240-116312-5 MSD
Matrix: Water
Analysis Batch: 311642

Client Sample ID: GW-12607-072319-DA-011
Prep Type: Total/NA
Prep Batch: 311181

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	17		38.1	54.5		ng/L		99	70 - 130	3	30

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

Lab Sample ID: 240-116312-5 MSD
Matrix: Water
Analysis Batch: 311642

Client Sample ID: GW-12607-072319-DA-011
Prep Type: Total/NA
Prep Batch: 311181

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)	1.9	U	38.1	39.8		ng/L		104	66 - 126	11	30
Perfluorohexanoic acid (PFHxA)	1.9	U	38.1	37.3		ng/L		98	66 - 126	1	30
Perfluoroheptanoic acid (PFHpA)	1.3	J	38.1	39.5		ng/L		100	66 - 126	0	30
Perfluorooctanoic acid (PFOA)	6.5		38.1	44.5		ng/L		100	64 - 124	4	30
Perfluorononanoic acid (PFNA)	0.45	J	38.1	37.7		ng/L		98	68 - 128	4	30
Perfluorodecanoic acid (PFDA)	1.9	U	38.1	39.2		ng/L		103	69 - 129	4	30
Perfluoroundecanoic acid (PFUnA)	1.9	U	38.1	35.8		ng/L		94	60 - 120	7	30
Perfluorododecanoic acid (PFDoA)	1.9	U	38.1	39.2		ng/L		103	71 - 131	1	30
Perfluorotridecanoic acid (PFTriA)	1.9	U	38.1	38.0		ng/L		100	72 - 132	2	30
Perfluorotetradecanoic acid (PFTeA)	1.9	U	38.1	37.4		ng/L		98	68 - 128	1	30
Perfluorobutanesulfonic acid (PFBS)	1.1	J	33.7	31.8		ng/L		91	73 - 133	0	30
Perfluorohexanesulfonic acid (PFHxS)	20	I B	34.7	48.4		ng/L		83	63 - 123	7	30
Perfluoroheptanesulfonic Acid (PFHpS)	5.0	I	36.3	37.2		ng/L		89	68 - 128	9	30
Perfluorodecanesulfonic acid (PFDS)	1.9	U	36.8	31.4		ng/L		85	68 - 128	12	30
Perfluorooctanesulfonic acid (PFOS)	170	I	35.4	202	I 4	ng/L		83	67 - 127	1	30
Perfluorooctanesulfonamide (FOSA)	1.9	U	38.1	41.9		ng/L		110	70 - 130	2	30
Perfluoropentanesulfonic acid (PFPeS)	3.5	I	35.8	38.3		ng/L		97	70 - 130	1	30
Perfluorononanesulfonic acid (PFNS)	1.9	U	36.6	32.6		ng/L		89	70 - 130	6	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	38.1	37.2		ng/L		98	67 - 127	0	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	38.1	37.9		ng/L		99	65 - 125	1	30
4:2 FTS	19	U	35.6	35.0		ng/L		98	70 - 130	6	30
8:2 FTS	19	U	36.5	35.6		ng/L		97	67 - 127	1	30
6:2 FTS	19	U	36.1	34.1		ng/L		94	66 - 126	2	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C8 FOSA	*97*		*25 - 150*
13C4 PFBA	*64*		*25 - 150*
13C2 PFHxA	*77*		*25 - 150*
13C4 PFOA	*95*		*25 - 150*
13C5 PFNA	*118*		*25 - 150*
13C2 PFDA	*125*		*25 - 150*
13C2 PFUnA	*118*		*25 - 150*
13C2 PFDoA	*119*		*25 - 150*
13C2 PFTeDA	*113*		*25 - 150*
13C3 PFBS	*110*		*25 - 150*
18O2 PFHxS	*124*		*25 - 150*
13C4 PFOS	*124*		*25 - 150*
13C4 PFHpA	*103*		*25 - 150*

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

Lab Sample ID: 240-116312-5 MSD
Matrix: Water
Analysis Batch: 311642

Client Sample ID: GW-12607-072319-DA-011
Prep Type: Total/NA
Prep Batch: 311181

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C5 PFPeA	74		25 - 150
d3-NMeFOSAA	122		25 - 150
d5-NEtFOSAA	115		25 - 150
M2-8:2 FTS	148		25 - 150
M2-4:2 FTS	87		25 - 150
M2-6:2 FTS	131		25 - 150

Lab Chronicle

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

Job ID: 240-116312-1

Client Sample ID: FB-12607-072319-DA-002
Lab Sample ID: 240-116312-1
Date Collected: 07/23/19 10:00
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311366	07/29/19 19:32	D1R	TAL SAC

Client Sample ID: GW-12607-072319-DA-008
Lab Sample ID: 240-116312-2
Date Collected: 07/23/19 12:15
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311366	07/29/19 19:42	D1R	TAL SAC
Total/NA	Prep	3535	DL		310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)	DL	5	312316	08/02/19 19:54	P1N	TAL SAC

Client Sample ID: GW-12607-072319-DA-009
Lab Sample ID: 240-116312-3
Date Collected: 07/23/19 13:25
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535	DL		310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10	312639	08/05/19 16:45	S1M	TAL SAC
Total/NA	Prep	3535			310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		5	312639	08/05/19 16:53	S1M	TAL SAC

Client Sample ID: GW-12607-072319-DA-010
Lab Sample ID: 240-116312-4
Date Collected: 07/23/19 12:00
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311366	07/29/19 19:57	D1R	TAL SAC

Client Sample ID: GW-12607-072319-DA-011
Lab Sample ID: 240-116312-5
Date Collected: 07/23/19 13:00
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			311181	07/30/19 09:32	SK	TAL SAC
Total/NA	Analysis	537 (modified)		1	311642	07/31/19 22:30	D1R	TAL SAC

Client Sample ID: GW-12607-072319-DA-012
Lab Sample ID: 240-116312-6
Date Collected: 07/23/19 13:15
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311366	07/29/19 20:05	D1R	TAL SAC

Lab Chronicle

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

Job ID: 240-116312-1

Client Sample ID: GW-12607-072319-DA-013

Lab Sample ID: 240-116312-7
Date Collected: 07/23/19 13:50
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311366	07/29/19 20:12	D1R	TAL SAC

Client Sample ID: GW-12607-072319-DA-014

Lab Sample ID: 240-116312-8
Date Collected: 07/23/19 14:00
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311366	07/29/19 20:20	D1R	TAL SAC

Client Sample ID: GW-12607-072319-DA-015

Lab Sample ID: 240-116312-9
Date Collected: 07/23/19 14:00
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311366	07/29/19 20:28	D1R	TAL SAC

Client Sample ID: GW-12607-072319-DA-016

Lab Sample ID: 240-116312-10
Date Collected: 07/23/19 14:20
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			310780	07/29/19 06:03	MNV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311366	07/29/19 20:37	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: 240-116312-1
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	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State		PH-0590	12-31-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Georgia	State Program	4	N/A	02-23-20
Illinois	NELAP	5	200004	07-31-20
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kansas	NELAP		E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State		KY98016	12-31-19
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota	NELAP		OH00048	12-31-19
Minnesota (Petrofund)	State Program	1	3506	07-31-21
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State		CL0024	06-05-21
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-19-11	08-31-20
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

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

Accreditation/Certification Summary

Client: GHD Services Inc.
Job ID: 240-116312-1
Project/Site: 12607, 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	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD		L2468	01-20-21
ANAB	DOE		L2468.01	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-20
California	State Program	9	2897	01-31-20
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State		PH-0691	06-30-21
Connecticut	State Program	1	PH-0691	06-30-21
Florida	NELAP	4	E87570	06-30-20
Florida	NELAP		E87570	06-30-20
Hawaii	State Program	9	N/A	01-29-20
Illinois	NELAP	5	200060	03-17-20 *
Kansas	NELAP	7	E-10375	10-31-19
Louisiana	NELAP	6	30612	06-30-20
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
New Hampshire	NELAP	1	2997	04-20-20
New York	NELAP	2	11666	04-01-20
Oregon	NELAP	10	4040	01-29-20
Oregon	NELAP		4040	01-29-20
Pennsylvania	NELAP	3	68-01272	03-31-20
Pennsylvania	NELAP		68-01272	03-31-20
Texas	NELAP	6	T104704399	05-31-20
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	12-31-20
Utah	NELAP	8	CA00044	02-29-20
Vermont	State Program	1	VT-4040	04-16-20
Virginia	NELAP	3	460278	03-14-20
Washington	State Program	10	C581	05-05-20
West Virginia (DW)	State Program	3	9930C	12-31-19
Wyoming	State Program	8	8TMS-L	01-28-19 *

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

Chain of Custody Record 313658

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

MICHIGAN
190

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

SSOW

Client Contact	Project Manager: C. MEINCKE	Site Contact: C. MEINCKE	Date: 7/23/19	COC No: 12607A-T31919-02
Company Name: GHD SERVICES INC.	Tel/Fax: 248 893 3400	Lab Contact: D. HECKLER	Carrier: FEDEX	1 of 1 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:	☐ 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:
FB-12607-072319-DA-002	7/23/19	1000	G	W	2			X	
GW-12607-072319-DA-008		1215	G	W	2			X	
-009		1325	G	W	2			X	
-010		1200	G	W	MS 2	MSD		X	
-011		1300	G	W	4	X		X	
-012		1315	G	W	2			X	
-013		1350	G	W	2			X	
-014		1400	G	W	2			X	
-015		1400	G	W	2			X	
-016		1420	G	W	2			X	

240-116312 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 7/23/19	1600		ETA	7-24-19 940
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 # : 116318**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: Ryan Crobler

Cooler Received on 7-24-19 Opened on 7-24-19 940

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-8 (CF **+0.1** °C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.5 °C
   IR GUN #36 (CF **+0.6**°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 be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? Yes (No)
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? Yes (No)
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No (NA)
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes (No)
16. 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 _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: [signature]

18. 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)

19. 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 TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-107323.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: denise.heckler@testamericainc.com	State of Origin: Michigan	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-116312-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 8/9/2019	Analysis Requested		Preservation Codes:
City: West Sacramento	TAT Requested (days):			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)
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			Other:
Email:	WO #:			
Project Name: 12607, RACER Eckles Rd	Project #: 24005880			
Site:	SSOW#:			

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	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
FB-12607-072319-DA-002 (240-116312-1)	7/23/19	10:00 Eastern		Water			X	2	
GW-12607-072319-DA-008 (240-116312-2)	7/23/19	12:15 Eastern		Water			X	2	
GW-12607-072319-DA-009 (240-116312-3)	7/23/19	13:25 Eastern		Water			X	2	
GW-12607-072319-DA-010 (240-116312-4)	7/23/19	12:00 Eastern		Water			X	2	
GW-12607-072319-DA-011 (240-116312-5)	7/23/19	13:00 Eastern		Water			X	4	
GW-12607-072319-DA-011 (240-116312-5MS)	7/23/19	13:00 Eastern	MS	Water			X	1	
GW-12607-072319-DA-011 (240-116312-5MSD)	7/23/19	13:00 Eastern	MSD	Water			X	1	
GW-12607-072319-DA-012 (240-116312-6)	7/23/19	13:15 Eastern		Water			X	2	
GW-12607-072319-DA-013 (240-116312-7)	7/23/19	13:50 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. 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 TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

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
Charles Ho	7-24-19 1604	240		7/25/19 930	EA TAL
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: 4.6

Ver: 01/16/2019

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 TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Heckler, Denise D	Carrier Tracking No(s):	COC No: 240-107323.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: denise.heckler@testamericainc.com	State of Origin: Michigan	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-116312-1
Address: 880 Riverside Parkway, .	Due Date Requested: 8/9/2019			
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, 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	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GW-12607-072319-DA-014 (240-116312-8)	7/23/19	14:00 Eastern		Water			X	2	
GW-12607-072319-DA-015 (240-116312-9)	7/23/19	14:00 Eastern		Water			X	2	
GW-12607-072319-DA-016 (240-116312-10)	7/23/19	14:20 Eastern		Water			X	2	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

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: Charles H	7-24-19 1604	240		7/25/19 930	ESTAT
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
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: 4.6

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 240-116312-1

Login Number: 116312
List Number: 2
Creator: Thompson, Sarah W

List Source: Eurofins TestAmerica, Sacramento
List Creation: 07/26/19 08:57 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	4.6c
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?	N/A	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, RACER Eckles Rd

Job ID: 240-116312-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOSA (25-150)	PFBA (25-150)	PFHxA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)	PFDoA (25-150)
240-116312-1	FB-12607-072319-DA-002	78	94	104	98	102	97	89	83
240-116312-2	GW-12607-072319-DA-008	74	36	89	98	85	98	92	92
240-116312-2 - DL	GW-12607-072319-DA-008								
240-116312-3 - DL	GW-12607-072319-DA-009								
240-116312-3	GW-12607-072319-DA-009	94	46	12 *	95	103	93	78	83
240-116312-4	GW-12607-072319-DA-010	81	50	79	89	98	90	79	72
240-116312-5	GW-12607-072319-DA-011	99	68	79	96	120	124	123	125
240-116312-5 MS	GW-12607-072319-DA-011	96	67	78	96	115	121	116	114
240-116312-5 MSD	GW-12607-072319-DA-011	97	64	77	95	118	125	118	119
240-116312-6	GW-12607-072319-DA-012	74	58	76	93	111	90	88	85
240-116312-7	GW-12607-072319-DA-013	74	51	85	92	107	93	97	97
240-116312-8	GW-12607-072319-DA-014	72	51	88	94	101	87	94	92
240-116312-9	GW-12607-072319-DA-015	75	64	89	86	93	94	80	74
240-116312-10	GW-12607-072319-DA-016	74	46	86	92	99	92	91	104
LCS 320-310780/2-A	Lab Control Sample	78	86	95	94	84	86	84	80
LCS 320-311181/2-A	Lab Control Sample	79	93	93	99	100	98	96	101
LCSD 320-310780/3-A	Lab Control Sample Dup	77	93	104	92	97	95	90	80
MB 320-310780/1-A	Method Blank	73	87	92	88	92	83	82	72
MB 320-311181/1-A	Method Blank	76	93	91	99	101	101	96	97

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFHpA (25-150)	PFPeA (25-150)	-NMeFOS (25-150)	-NEtFOS (25-150)
240-116312-1	FB-12607-072319-DA-002	89	100	88	102	87	91	66	73
240-116312-2	GW-12607-072319-DA-008	88	72	101	96	99	32	72	85
240-116312-2 - DL	GW-12607-072319-DA-008				86				
240-116312-3 - DL	GW-12607-072319-DA-009								
240-116312-3	GW-12607-072319-DA-009	64	101	94	112	82	53	59	71
240-116312-4	GW-12607-072319-DA-010	80	77	83	91	78	54	58	62
240-116312-5	GW-12607-072319-DA-011	110	113	117	121	101	77	130	121
240-116312-5 MS	GW-12607-072319-DA-011	106	113	119	119	104	75	119	115
240-116312-5 MSD	GW-12607-072319-DA-011	113	110	124	124	103	74	122	115
240-116312-6	GW-12607-072319-DA-012	96	103	86	101	77	65	65	83
240-116312-7	GW-12607-072319-DA-013	101	89	84	105	82	57	68	79
240-116312-8	GW-12607-072319-DA-014	97	96	86	100	81	59	67	72
240-116312-9	GW-12607-072319-DA-015	83	91	75	95	74	68	55	76
240-116312-10	GW-12607-072319-DA-016	94	91	99	109	90	53	76	91
LCS 320-310780/2-A	Lab Control Sample	77	97	84	95	88	86	63	67
LCS 320-311181/2-A	Lab Control Sample	100	97	99	96	94	95	102	102
LCSD 320-310780/3-A	Lab Control Sample Dup	83	97	86	95	84	90	66	74
MB 320-310780/1-A	Method Blank	77	89	84	92	82	84	62	69
MB 320-311181/1-A	Method Blank	98	98	97	94	95	94	108	108

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	M262FTS (25-150)					
240-116312-1	FB-12607-072319-DA-002	87	95	93					
240-116312-2	GW-12607-072319-DA-008	116	120	119					
240-116312-2 - DL	GW-12607-072319-DA-008								
240-116312-3 - DL	GW-12607-072319-DA-009		32						
240-116312-3	GW-12607-072319-DA-009	84		85					

Isotope Dilution Summary

Client: GHD Services Inc. Job ID: 240-116312-1
Project/Site: 12607, RACER Eckles Rd

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

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	M262FTS (25-150)
240-116312-4	GW-12607-072319-DA-010	90	99	86
240-116312-5	GW-12607-072319-DA-011	155 *	92	129
240-116312-5 MS	GW-12607-072319-DA-011	153 *	90	130
240-116312-5 MSD	GW-12607-072319-DA-011	148	87	131
240-116312-6	GW-12607-072319-DA-012	96	94	106
240-116312-7	GW-12607-072319-DA-013	94	118	119
240-116312-8	GW-12607-072319-DA-014	95	119	132
240-116312-9	GW-12607-072319-DA-015	82	98	94
240-116312-10	GW-12607-072319-DA-016	117	115	143
LCS 320-310780/2-A	Lab Control Sample	87	100	96
LCS 320-311181/2-A	Lab Control Sample	117	119	132
LCSD 320-310780/3-A	Lab Control Sample Dup	88	113	97
MB 320-310780/1-A	Method Blank	85	92	84
MB 320-311181/1-A	Method Blank	117	122	132

Surrogate Legend

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

eurofins | Environment Testing TestAmerica

Sacramento
Sample Receiving Notes

240-116312 Field Sheet

Tracking # : 1103 6122 9991

Job: _____

SO / RO / 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.

Notes: _____

Therm. ID: A10 Corr. Factor: —

Ice 1 Wet 1 Gel _____ Other _____

Cooler Custody Seal: —

Sample Custody Seal: —

Cooler ID: 1 of 2

Temp Observed: 4.6 Corrected: 4.6

From: Temp Blank ☐ Sample ☑

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Cooler compromised/tampered with?	☐	☑	☐
Samples compromised/tampered with?	☐	☑	☐
Samples w/o discrepancies?	☑	☐	☐
Sample containers have legible labels?	☑	☐	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided.	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
Sample temp OK?	☑	☐	☐
Sample out of temp?	☐	☑	☐

Initials: ☑ Date: 7/25/19

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

WWB

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Sacramento
Sample Receiving Notes

Tracking # : 1103 6123 0002

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.

Notes:_____

Therm. ID: AK10 Corr. Factor: NA

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: —

Sample Custody Seal: —

Cooler ID: 2 of 2

Temp Observed: 3.0 Corrected: 3.0

From: Temp Blank ☐ Sample ☑

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Cooler compromised/tampered with?	☐	☑	☐
Samples compromised/tampered with?	☐	☑	☐
Samples w/o discrepancies?	☑	☐	☐
Sample containers have legible labels?	☑	☐	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided.	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐
Sample temp OK?	☑	☐	☐
Sample out of temp?	☐	☑	☐

Initials: SD Date: 7/25/19

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Attachment B.3
Test America
Laboratory Analytical Reports
Groundwater – Metals

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ANALYTICAL REPORT

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

Laboratory Job ID: 240-116233-1
Client Project/Site: 12607, RACER Eckles Rd
Revision: 1

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

Attn: Ms. Ruth Mickle

Denise D Heckler

Authorized for release by:
8/20/2019 7:34:57 AM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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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Lab Chronicle 27
Certification Summary 29
Chain of Custody 30

Case Narrative

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

Job ID: 240-116233-1

Job ID: 240-116233-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-116233-1

Comments
A revised report was provided on August 20, 2019. The sample IDs were modified at the request of GHD.

Receipt
The samples were received on 7/23/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.3º C.

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

General Chemistry
Method(s) 7196A: The following samples were diluted due to the nature of the sample matrix: GW-12607-072219-DA-002 (240-116233-2) and GW-12607-072219-DA-003 (240-116233-3). 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.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-116233-1

Qualifiers

Metals

Qualifier	Qualifier Description
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

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

Job ID: 240-116233-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-116233-1	GW-12607-072219-DA-001	Water	07/22/19 11:50	07/23/19 09:30	
240-116233-2	GW-12607-072219-DA-002	Water	07/22/19 12:45	07/23/19 09:30	
240-116233-3	GW-12607-072219-DA-003	Water	07/22/19 12:55	07/23/19 09:30	
240-116233-4	GW-12607-072219-DA-004	Water	07/22/19 12:35	07/23/19 09:30	
240-116233-5	GW-12607-072219-DA-005	Water	07/22/19 13:45	07/23/19 09:30	
240-116233-6	GW-12607-072219-DA-006	Water	07/22/19 12:25	07/23/19 09:30	
240-116233-7	GW-12607-072219-DA-007	Water	07/22/19 13:20	07/23/19 09:30	

Detection Summary

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

Job ID: 240-116233-1

Client Sample ID: GW-12607-072219-DA-001 — Lab Sample ID: 240-116233-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	100		5.0		ug/L	1		6010B	Total Recoverable
Manganese	290		15		ug/L	1		6010B	Total Recoverable
Sodium	18000		5000		ug/L	1		6010B	Total Recoverable
Nickel	400		40		ug/L	1		6010B	Total Recoverable
Chromium, hexavalent	110		20		ug/L	2		7196A	Total/NA

Client Sample ID: GW-12607-072219-DA-002 — Lab Sample ID: 240-116233-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	9000		5.0		ug/L	1		6010B	Total Recoverable
Manganese	490		15		ug/L	1		6010B	Total Recoverable
Sodium	3100000		50000		ug/L	10		6010B	Total Recoverable
Nickel	840		40		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	9000		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072219-DA-003 — Lab Sample ID: 240-116233-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	12000		5.0		ug/L	1		6010B	Total Recoverable
Manganese	1200		15		ug/L	1		6010B	Total Recoverable
Sodium	4400000		50000		ug/L	10		6010B	Total Recoverable
Nickel	1300		40		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	12000		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072219-DA-004 — Lab Sample ID: 240-116233-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	160		15		ug/L	1		6010B	Total Recoverable
Sodium	10000		5000		ug/L	1		6010B	Total Recoverable
Nickel	84		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072219-DA-005 — Lab Sample ID: 240-116233-5

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	290		15		ug/L	1		6010B	Total Recoverable
Sodium	160000		5000		ug/L	1		6010B	Total Recoverable
Nickel	290		40		ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

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

Job ID: 240-116233-1

Client Sample ID: GW-12607-072219-DA-006 — Lab Sample ID: 240-116233-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	45		5.0		ug/L	1		6010B	Total Recoverable
Manganese	410		15		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	45		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072219-DA-007 — Lab Sample ID: 240-116233-7

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	7.7		5.0		ug/L	1		6010B	Total Recoverable
Manganese	17		15		ug/L	1		6010B	Total Recoverable
Sodium	1200000		25000		ug/L	5		6010B	Total Recoverable
Nickel	86		40		ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

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

Job ID: 240-116233-1

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, RACER Eckles Rd

Job ID: 240-116233-1

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

Client Sample ID: GW-12607-072219-DA-001
Date Collected: 07/22/19 11:50
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	100		5.0		ug/L		07/24/19 14:00	07/26/19 00:28	1
Manganese	290		15		ug/L		07/24/19 14:00	07/26/19 00:28	1
Sodium	18000		5000		ug/L		07/24/19 14:00	07/26/19 00:28	1
Nickel	400		40		ug/L		07/24/19 14:00	07/26/19 00:28	1

Client Sample Results

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

Job ID: 240-116233-1

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

Client Sample ID: GW-12607-072219-DA-002
Date Collected: 07/22/19 12:45
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	9000		5.0		ug/L		07/24/19 14:00	07/26/19 00:33	1
Manganese	490		15		ug/L		07/24/19 14:00	07/26/19 00:33	1
Sodium	3100000		50000		ug/L		07/24/19 14:00	07/26/19 13:39	10
Nickel	840		40		ug/L		07/24/19 14:00	07/26/19 00:33	1

Client Sample Results

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

Job ID: 240-116233-1

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

Client Sample ID: GW-12607-072219-DA-003
Date Collected: 07/22/19 12:55
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	12000		5.0		ug/L		07/24/19 14:00	07/26/19 00:37	1
Manganese	1200		15		ug/L		07/24/19 14:00	07/26/19 00:37	1
Sodium	4400000		50000		ug/L		07/24/19 14:00	07/26/19 13:44	10
Nickel	1300		40		ug/L		07/24/19 14:00	07/26/19 00:37	1

Client Sample Results

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

Job ID: 240-116233-1

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

Client Sample ID: GW-12607-072219-DA-004
Date Collected: 07/22/19 12:35
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/24/19 14:00	07/26/19 00:41	1
Manganese	**160**		15		ug/L		07/24/19 14:00	07/26/19 00:41	1
Sodium	**10000**		5000		ug/L		07/24/19 14:00	07/26/19 00:41	1
Nickel	**84**		40		ug/L		07/24/19 14:00	07/26/19 00:41	1

Client Sample Results

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

Job ID: 240-116233-1

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

Client Sample ID: GW-12607-072219-DA-005
Date Collected: 07/22/19 13:45
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-5
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/24/19 14:00	07/26/19 00:46	1
Manganese	**290**		15		ug/L		07/24/19 14:00	07/26/19 00:46	1
Sodium	**160000**		5000		ug/L		07/24/19 14:00	07/26/19 00:46	1
Nickel	**290**		40		ug/L		07/24/19 14:00	07/26/19 00:46	1

Client Sample Results

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

Job ID: 240-116233-1

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

Client Sample ID: GW-12607-072219-DA-006
Date Collected: 07/22/19 12:25
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-6
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**45**		5.0		ug/L		07/24/19 14:00	07/26/19 00:59	1
Manganese	**410**		15		ug/L		07/24/19 14:00	07/26/19 00:59	1
Sodium	5000	U	5000		ug/L		07/24/19 14:00	07/26/19 00:59	1
Nickel	40	U	40		ug/L		07/24/19 14:00	07/26/19 00:59	1

Client Sample Results

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

Job ID: 240-116233-1

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

Client Sample ID: GW-12607-072219-DA-007
Date Collected: 07/22/19 13:20
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-7
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	7.7		5.0		ug/L		07/24/19 14:00	07/26/19 01:03	1
Manganese	17		15		ug/L		07/24/19 14:00	07/26/19 01:03	1
Sodium	1200000		25000		ug/L		07/24/19 14:00	07/26/19 13:49	5
Nickel	86		40		ug/L		07/24/19 14:00	07/26/19 01:03	1

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

Job ID: 240-116233-1

General Chemistry

Client Sample ID: GW-12607-072219-DA-001
Date Collected: 07/22/19 11:50
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	**110**		20		ug/L			07/23/19 11:28	2
Chromium, trivalent	10	U	10		ug/L			07/30/19 10:29	1

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

Job ID: 240-116233-1

General Chemistry

Client Sample ID: GW-12607-072219-DA-002
Date Collected: 07/22/19 12:45
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	500	U	500		ug/L			07/23/19 11:31	50
Chromium, trivalent	**9000**		10		ug/L			07/30/19 10:29	1

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

Job ID: 240-116233-1

General Chemistry

Client Sample ID: GW-12607-072219-DA-003
Date Collected: 07/22/19 12:55
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	500	U	500		ug/L			07/23/19 11:32	50
Chromium, trivalent	**12000**		10		ug/L			07/30/19 10:29	1

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

Job ID: 240-116233-1

General Chemistry

Client Sample ID: GW-12607-072219-DA-004
Date Collected: 07/22/19 12:35
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/23/19 11:33	1
Chromium, trivalent	10	U	10		ug/L			07/30/19 10:29	1

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

Job ID: 240-116233-1

General Chemistry

Client Sample ID: GW-12607-072219-DA-005
Date Collected: 07/22/19 13:45
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-5
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/23/19 11:34	1
Chromium, trivalent	10	U	10		ug/L			07/30/19 10:29	1

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

Job ID: 240-116233-1

General Chemistry

Client Sample ID: GW-12607-072219-DA-006
Date Collected: 07/22/19 12:25
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-6
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/23/19 11:35	1
Chromium, trivalent	**45**		10		ug/L			07/30/19 10:29	1

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

Job ID: 240-116233-1

General Chemistry

Client Sample ID: GW-12607-072219-DA-007
Date Collected: 07/22/19 13:20
Date Received: 07/23/19 09:30

Lab Sample ID: 240-116233-7
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	500	U	500		ug/L			07/23/19 11:38	50
Chromium, trivalent	10	U	10		ug/L			07/30/19 10:29	1

Metals

Prep Batch: 392696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116233-1	GW-12607-072219-DA-001	Total Recoverable	Water	3005A	
240-116233-2	GW-12607-072219-DA-002	Total Recoverable	Water	3005A	
240-116233-3	GW-12607-072219-DA-003	Total Recoverable	Water	3005A	
240-116233-4	GW-12607-072219-DA-004	Total Recoverable	Water	3005A	
240-116233-5	GW-12607-072219-DA-005	Total Recoverable	Water	3005A	
240-116233-6	GW-12607-072219-DA-006	Total Recoverable	Water	3005A	
240-116233-7	GW-12607-072219-DA-007	Total Recoverable	Water	3005A	
MB 240-392696/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-392696/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 393069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116233-1	GW-12607-072219-DA-001	Total Recoverable	Water	6010B	392696
240-116233-2	GW-12607-072219-DA-002	Total Recoverable	Water	6010B	392696
240-116233-3	GW-12607-072219-DA-003	Total Recoverable	Water	6010B	392696
240-116233-4	GW-12607-072219-DA-004	Total Recoverable	Water	6010B	392696
240-116233-5	GW-12607-072219-DA-005	Total Recoverable	Water	6010B	392696
240-116233-6	GW-12607-072219-DA-006	Total Recoverable	Water	6010B	392696
240-116233-7	GW-12607-072219-DA-007	Total Recoverable	Water	6010B	392696
MB 240-392696/1-A	Method Blank	Total Recoverable	Water	6010B	392696
LCS 240-392696/2-A	Lab Control Sample	Total Recoverable	Water	6010B	392696

Analysis Batch: 393149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116233-2	GW-12607-072219-DA-002	Total Recoverable	Water	6010B	392696
240-116233-3	GW-12607-072219-DA-003	Total Recoverable	Water	6010B	392696
240-116233-7	GW-12607-072219-DA-007	Total Recoverable	Water	6010B	392696
MB 240-392696/1-A	Method Blank	Total Recoverable	Water	6010B	392696
LCS 240-392696/2-A	Lab Control Sample	Total Recoverable	Water	6010B	392696

General Chemistry

Analysis Batch: 392520

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116233-1	GW-12607-072219-DA-001	Total/NA	Water	7196A	
240-116233-2	GW-12607-072219-DA-002	Total/NA	Water	7196A	
240-116233-3	GW-12607-072219-DA-003	Total/NA	Water	7196A	
240-116233-4	GW-12607-072219-DA-004	Total/NA	Water	7196A	
240-116233-5	GW-12607-072219-DA-005	Total/NA	Water	7196A	
240-116233-6	GW-12607-072219-DA-006	Total/NA	Water	7196A	
240-116233-7	GW-12607-072219-DA-007	Total/NA	Water	7196A	
MB 240-392520/3	Method Blank	Total/NA	Water	7196A	
LCS 240-392520/4	Lab Control Sample	Total/NA	Water	7196A	
240-116233-1 MS	GW-12607-072219-DA-001	Total/NA	Water	7196A	
240-116233-1 MSD	GW-12607-072219-DA-001	Total/NA	Water	7196A	

Analysis Batch: 393546

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116233-1	GW-12607-072219-DA-001	Total/NA	Water	7196A	
240-116233-2	GW-12607-072219-DA-002	Total/NA	Water	7196A	
240-116233-3	GW-12607-072219-DA-003	Total/NA	Water	7196A	

General Chemistry (Continued)

Analysis Batch: 393546 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116233-4	GW-12607-072219-DA-004	Total/NA	Water	7196A	
240-116233-5	GW-12607-072219-DA-005	Total/NA	Water	7196A	
240-116233-6	GW-12607-072219-DA-006	Total/NA	Water	7196A	
240-116233-7	GW-12607-072219-DA-007	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-392696/1-A
Matrix: Water
Analysis Batch: 393069

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 392696

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/24/19 14:00	07/26/19 08:25	1
Sodium	5000	U	5000		ug/L		07/24/19 14:00	07/26/19 08:25	1
Nickel	40	U	40		ug/L		07/24/19 14:00	07/26/19 08:25	1

Lab Sample ID: MB 240-392696/1-A
Matrix: Water
Analysis Batch: 393149

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 392696

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Manganese	15	U	15		ug/L		07/24/19 14:00	07/26/19 13:26	1

Lab Sample ID: LCS 240-392696/2-A
Matrix: Water
Analysis Batch: 393069

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 392696

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium			1000	1020		ug/L		102	80 - 120		
Sodium			50000	51300		ug/L		103	80 - 120		
Nickel			1000	1040		ug/L		104	80 - 120		

Lab Sample ID: LCS 240-392696/2-A
Matrix: Water
Analysis Batch: 393149

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 392696

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Manganese			1000	1040		ug/L		104	80 - 120		

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-392520/3
Matrix: Water
Analysis Batch: 392520

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

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/23/19 11:26	1

Lab Sample ID: LCS 240-392520/4
Matrix: Water
Analysis Batch: 392520

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium, hexavalent			250	277		ug/L		111	80 - 123		

Lab Sample ID: 240-116233-1 MS
Matrix: Water
Analysis Batch: 392520

Client Sample ID: GW-12607-072219-DA-001
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium, hexavalent	110		500	669		ug/L		112	31 - 151		

Method: 7196A - Chromium, Hexavalent (Continued)

Lab Sample ID: 240-116233-1 MSD
Matrix: Water
Analysis Batch: 392520

Client Sample ID: GW-12607-072219-DA-001
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	110		500	633		ug/L		104	31 - 151	5	20

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-116233-1
Project/Site: 12607, RACER Eckles Rd

Client Sample ID: GW-12607-072219-DA-001
Lab Sample ID: 240-116233-1
Date Collected: 07/22/19 11:50
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392696	07/24/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	393069	07/26/19 00:28	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393546	07/30/19 10:29	KLC	TAL CAN
Total/NA	Analysis	7196A		2	392520	07/23/19 11:28	AMT	TAL CAN

Client Sample ID: GW-12607-072219-DA-002
Lab Sample ID: 240-116233-2
Date Collected: 07/22/19 12:45
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392696	07/24/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		10	393149	07/26/19 13:39	WKD	TAL CAN
Total Recoverable	Prep	3005A			392696	07/24/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	393069	07/26/19 00:33	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393546	07/30/19 10:29	KLC	TAL CAN
Total/NA	Analysis	7196A		50	392520	07/23/19 11:31	AMT	TAL CAN

Client Sample ID: GW-12607-072219-DA-003
Lab Sample ID: 240-116233-3
Date Collected: 07/22/19 12:55
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392696	07/24/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		10	393149	07/26/19 13:44	WKD	TAL CAN
Total Recoverable	Prep	3005A			392696	07/24/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	393069	07/26/19 00:37	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393546	07/30/19 10:29	KLC	TAL CAN
Total/NA	Analysis	7196A		50	392520	07/23/19 11:32	AMT	TAL CAN

Client Sample ID: GW-12607-072219-DA-004
Lab Sample ID: 240-116233-4
Date Collected: 07/22/19 12:35
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392696	07/24/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	393069	07/26/19 00:41	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393546	07/30/19 10:29	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392520	07/23/19 11:33	AMT	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-116233-1
Project/Site: 12607, RACER Eckles Rd

Client Sample ID: GW-12607-072219-DA-005
Lab Sample ID: 240-116233-5
Date Collected: 07/22/19 13:45
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392696	07/24/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	393069	07/26/19 00:46	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393546	07/30/19 10:29	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392520	07/23/19 11:34	AMT	TAL CAN

Client Sample ID: GW-12607-072219-DA-006
Lab Sample ID: 240-116233-6
Date Collected: 07/22/19 12:25
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392696	07/24/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	393069	07/26/19 00:59	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393546	07/30/19 10:29	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392520	07/23/19 11:35	AMT	TAL CAN

Client Sample ID: GW-12607-072219-DA-007
Lab Sample ID: 240-116233-7
Date Collected: 07/22/19 13:20
Matrix: Water
Date Received: 07/23/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392696	07/24/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		5	393149	07/26/19 13:49	WKD	TAL CAN
Total Recoverable	Prep	3005A			392696	07/24/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	393069	07/26/19 01:03	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393546	07/30/19 10:29	KLC	TAL CAN
Total/NA	Analysis	7196A		50	392520	07/23/19 11:38	AMT	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: 240-116233-1
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	02-23-20
California	State Program	2927	02-23-20
Connecticut	State	PH-0590	12-31-19
Connecticut	State Program	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Georgia	State Program	N/A	02-23-20
Illinois	NELAP	200004	07-31-20
Iowa	State Program	421	06-01-21
Kansas	NELAP	E-10336	04-30-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State Program	58	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Kentucky (WW)	State Program	98016	12-31-19
Minnesota	NELAP	039-999-348	12-31-19 *
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
Nevada	State Program	OH00048	07-31-19
New Jersey	NELAP	OH001	06-30-20
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Ohio VAP	State Program	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-19 *
Pennsylvania	NELAP	68-00340	08-31-19
Texas	NELAP	T104704517-19-11	08-31-20
Texas	NELAP	T104704517-18-10	08-31-19
USDA	Federal	P330-16-00404	12-28-19
Virginia	NELAP	460175	09-14-19 *
Virginia	NELAP	010101	09-14-19
Washington	State	C971	01-12-20
Washington	State Program	C971	01-12-20 *
West Virginia DEP	State	210	12-31-19
West Virginia DEP	State Program	210	12-31-19

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

MICHIGAN
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4.2/4.3

Chain of Custody Record

313665

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

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

Client Contact	Project Manager: C. MENZKE	Site Contact: C MEINCKE	Date: 7/22/19	COC No: 12607A-TOB19-01
Company Name: GHD	Tel/Fax: 248 865 3400	Lab Contact: D. HECKLER	Carrier: FED EX	1 of 1 COCs
Address: 26850 HAGGERTY	Analysis Turnaround Time			Sampler: D. ANTULS
City/State/Zip: FARM. HILLS, MI 48331	☐ CALENDAR DAYS ☑ WORKING DAYS			For Lab Use Only:
Phone: 248 865 3400	TAT if different from Below			Walk-in Client:
Fax:	☐ 2 weeks			Lab Sampling:
Project Name: ECKLES RD	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
PO #	☐ 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 HEX.	METALS	Sample Specific Notes:
GW-12607A-072219-DA-001	7/22/19	1150	G	W	2			X	X	
-002		1245	G	W	2			X	X	
-003		1255	G	W	2			X	X	
-004		1235	G	W	2			X	X	
-005		1345	G	W	2			X	X	
-006		1225	G	W	2			X	X	
-007		1320	G	W	2			X	X	

240-116233 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: 7/22/19 1500	Received by:	Company: FEDEX	Date/Time: 7-23-19 930
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 # : 160235**
Canton Facility

Client GHD Site Name

Cooler Received on 7-23-19 Opened on 7-23-19 930

Cooler unpacked by: Ryan Crabler

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-8 (CF **+0.1** °C) Observed Cooler Temp. 4.2 °C Corrected Cooler Temp. 4.3 °C
   IR GUN #36 (CF **+0.6**°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 be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____ Yes No
16. 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 ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: RC

18. 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)

19. SAMPLE PRESERVATION

Sample(s) -002, 003, and 007 were further preserved in the laboratory.
Time preserved: 1025 7-23-19 Preservative(s) added/Lot number(s): 216 908

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	Preservative Added (mls)	Lot #
GW-12607A-072219-DA-001	240-116233-B-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607A-072219-DA-002	240-116233-B-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607A-072219-DA-003	240-116233-B-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607A-072219-DA-004	240-116233-B-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607A-072219-DA-005	240-116233-B-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607A-072219-DA-006	240-116233-B-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607A-072219-DA-007	240-116233-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: 240-116306-1
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:
8/1/2019 3:41:25 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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: 240-116306-1

Job ID: 240-116306-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-116306-1

Comments
No additional comments.

Receipt
The samples were received on 7/24/2019 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5º C.

Metals
No analytical or quality issues were noted, other than those described 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, RACER Eckles Rd

Job ID: 240-116306-1

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

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

Job ID: 240-116306-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-116306-1	GW-12607-072319-DA-008	Water	07/23/19 12:15	07/24/19 09:40	
240-116306-2	GW-12607-072319-DA-009	Water	07/23/19 13:25	07/24/19 09:40	
240-116306-3	GW-12607-072319-DA-010	Water	07/23/19 12:00	07/24/19 09:40	
240-116306-4	GW-12607-072319-DA-011	Water	07/23/19 13:00	07/24/19 09:40	
240-116306-5	GW-12607-072319-DA-012	Water	07/23/19 13:15	07/24/19 09:40	
240-116306-6	GW-12607-072319-DA-013	Water	07/23/19 13:50	07/24/19 09:40	
240-116306-7	GW-12607-072319-DA-014	Water	07/23/19 14:00	07/24/19 09:40	
240-116306-8	GW-12607-072319-DA-015	Water	07/23/19 14:00	07/24/19 09:40	
240-116306-9	GW-12607-072319-DA-016	Water	07/23/19 14:20	07/24/19 09:40	
240-116306-10	GW-12607-072319-DA-017	Water	07/23/19 15:20	07/24/19 09:40	

Detection Summary

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

Job ID: 240-116306-1

Client Sample ID: GW-12607-072319-DA-008 — Lab Sample ID: 240-116306-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	6.2		5.0		ug/L	1		6010B	Total Recoverable
Manganese	1300		15		ug/L	1		6010B	Total Recoverable
Sodium	79000		5000		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072319-DA-009 — Lab Sample ID: 240-116306-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	5.4		5.0		ug/L	1		6010B	Total Recoverable
Manganese	3000		15		ug/L	1		6010B	Total Recoverable
Sodium	2600000		100000		ug/L	20		6010B	Total Recoverable
Nickel	560000		800		ug/L	20		6010B	Total Recoverable
Chromium, hexavalent	35		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072319-DA-010 — Lab Sample ID: 240-116306-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	69		5.0		ug/L	1		6010B	Total Recoverable
Manganese	33		15		ug/L	1		6010B	Total Recoverable
Sodium	97000		5000		ug/L	1		6010B	Total Recoverable
Chromium, hexavalent	61		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072319-DA-011 — Lab Sample ID: 240-116306-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	380		10		ug/L	2		6010B	Total Recoverable
Manganese	730		30		ug/L	2		6010B	Total Recoverable
Sodium	870000		10000		ug/L	2		6010B	Total Recoverable
Nickel	340		80		ug/L	2		6010B	Total Recoverable
Chromium, trivalent	380		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072319-DA-012 — Lab Sample ID: 240-116306-5

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	14		5.0		ug/L	1		6010B	Total Recoverable
Manganese	140		15		ug/L	1		6010B	Total Recoverable
Sodium	42000		5000		ug/L	1		6010B	Total Recoverable
Nickel	810		40		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	14		10		ug/L	1		7196A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

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

Job ID: 240-116306-1

Client Sample ID: GW-12607-072319-DA-013 — Lab Sample ID: 240-116306-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	660		15		ug/L	1		6010B	Total Recoverable
Sodium	10000		5000		ug/L	1		6010B	Total Recoverable
Nickel	89		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072319-DA-014 — Lab Sample ID: 240-116306-7

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	670		15		ug/L	1		6010B	Total Recoverable
Sodium	10000		5000		ug/L	1		6010B	Total Recoverable
Nickel	87		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072319-DA-015 — Lab Sample ID: 240-116306-8

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	24		15		ug/L	1		6010B	Total Recoverable
Sodium	45000		5000		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072319-DA-016 — Lab Sample ID: 240-116306-9

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	160		15		ug/L	1		6010B	Total Recoverable
Sodium	12000		5000		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072319-DA-017 — Lab Sample ID: 240-116306-10

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	5.6		5.0		ug/L	1		6010B	Total Recoverable
Manganese	42		15		ug/L	1		6010B	Total Recoverable
Sodium	23000		5000		ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

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

Job ID: 240-116306-1

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, RACER Eckles Rd

Job ID: 240-116306-1

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

Client Sample ID: GW-12607-072319-DA-008
Date Collected: 07/23/19 12:15
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**6.2**		5.0		ug/L		07/25/19 14:00	07/26/19 19:13	1
Manganese	**1300**		15		ug/L		07/25/19 14:00	07/26/19 19:13	1
Sodium	**79000**		5000		ug/L		07/25/19 14:00	07/26/19 19:13	1
Nickel	40	U	40		ug/L		07/25/19 14:00	07/26/19 19:13	1

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

Job ID: 240-116306-1

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

Client Sample ID: GW-12607-072319-DA-009
Date Collected: 07/23/19 13:25
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.4		5.0		ug/L		07/25/19 14:00	07/26/19 19:18	1
Manganese	3000		15		ug/L		07/25/19 14:00	07/26/19 19:18	1
Sodium	2600000		100000		ug/L		07/25/19 14:00	07/29/19 20:24	20
Nickel	560000		800		ug/L		07/25/19 14:00	07/29/19 20:24	20

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

Job ID: 240-116306-1

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

Client Sample ID: GW-12607-072319-DA-010
Date Collected: 07/23/19 12:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**69**		5.0		ug/L		07/25/19 14:00	07/26/19 19:22	1
Manganese	**33**		15		ug/L		07/25/19 14:00	07/26/19 19:22	1
Sodium	**97000**		5000		ug/L		07/25/19 14:00	07/26/19 19:22	1
Nickel	40	U	40		ug/L		07/25/19 14:00	07/26/19 19:22	1

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

Job ID: 240-116306-1

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

Client Sample ID: GW-12607-072319-DA-011
Date Collected: 07/23/19 13:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	380		10		ug/L		07/25/19 14:00	07/29/19 19:52	2
Manganese	730		30		ug/L		07/25/19 14:00	07/29/19 19:52	2
Sodium	870000		10000		ug/L		07/25/19 14:00	07/29/19 19:52	2
Nickel	340		80		ug/L		07/25/19 14:00	07/29/19 19:52	2

Client Sample Results

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

Job ID: 240-116306-1

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

Client Sample ID: GW-12607-072319-DA-012
Date Collected: 07/23/19 13:15
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-5
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	14		5.0		ug/L		07/25/19 14:00	07/26/19 19:27	1
Manganese	140		15		ug/L		07/25/19 14:00	07/26/19 19:27	1
Sodium	42000		5000		ug/L		07/25/19 14:00	07/26/19 19:27	1
Nickel	810		40		ug/L		07/25/19 14:00	07/26/19 19:27	1

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

Job ID: 240-116306-1

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

Client Sample ID: GW-12607-072319-DA-013
Date Collected: 07/23/19 13:50
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-6
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/25/19 14:00	07/26/19 19:31	1
Manganese	**660**		15		ug/L		07/25/19 14:00	07/26/19 19:31	1
Sodium	**10000**		5000		ug/L		07/25/19 14:00	07/26/19 19:31	1
Nickel	**89**		40		ug/L		07/25/19 14:00	07/26/19 19:31	1

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

Job ID: 240-116306-1

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

Client Sample ID: GW-12607-072319-DA-014
Date Collected: 07/23/19 14:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-7
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/25/19 14:00	07/26/19 19:35	1
Manganese	**670**		15		ug/L		07/25/19 14:00	07/26/19 19:35	1
Sodium	**10000**		5000		ug/L		07/25/19 14:00	07/26/19 19:35	1
Nickel	**87**		40		ug/L		07/25/19 14:00	07/26/19 19:35	1

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

Job ID: 240-116306-1

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

Client Sample ID: GW-12607-072319-DA-015
Date Collected: 07/23/19 14:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-8
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/25/19 14:00	07/26/19 19:40	1
Manganese	**24**		15		ug/L		07/25/19 14:00	07/26/19 19:40	1
Sodium	**45000**		5000		ug/L		07/25/19 14:00	07/26/19 19:40	1
Nickel	40	U	40		ug/L		07/25/19 14:00	07/26/19 19:40	1

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

Job ID: 240-116306-1

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

Client Sample ID: GW-12607-072319-DA-016
Date Collected: 07/23/19 14:20
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-9
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/25/19 14:00	07/26/19 19:44	1
Manganese	**160**		15		ug/L		07/25/19 14:00	07/26/19 19:44	1
Sodium	**12000**		5000		ug/L		07/25/19 14:00	07/26/19 19:44	1
Nickel	40	U	40		ug/L		07/25/19 14:00	07/26/19 19:44	1

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

Job ID: 240-116306-1

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

Client Sample ID: GW-12607-072319-DA-017
Date Collected: 07/23/19 15:20
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-10
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**5.6**		5.0		ug/L		07/25/19 14:00	07/26/19 19:48	1
Manganese	**42**		15		ug/L		07/25/19 14:00	07/26/19 19:48	1
Sodium	**23000**		5000		ug/L		07/25/19 14:00	07/26/19 19:48	1
Nickel	40	U	40		ug/L		07/25/19 14:00	07/26/19 19:48	1

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

Job ID: 240-116306-1

General Chemistry

Client Sample ID: GW-12607-072319-DA-008
Date Collected: 07/23/19 12:15
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/24/19 11:30	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116306-1

General Chemistry

Client Sample ID: GW-12607-072319-DA-009
Date Collected: 07/23/19 13:25
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	**35**		10		ug/L			07/24/19 11:31	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116306-1

General Chemistry

Client Sample ID: GW-12607-072319-DA-010
Date Collected: 07/23/19 12:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	**61**		10		ug/L			07/24/19 11:32	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116306-1

General Chemistry

Client Sample ID: GW-12607-072319-DA-011
Date Collected: 07/23/19 13:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/24/19 11:27	1
Chromium, trivalent	**380**		10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116306-1

General Chemistry

Client Sample ID: GW-12607-072319-DA-012
Date Collected: 07/23/19 13:15
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-5
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/24/19 11:33	1
Chromium, trivalent	**14**		10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116306-1

General Chemistry

Client Sample ID: GW-12607-072319-DA-013
Date Collected: 07/23/19 13:50
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-6
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/24/19 11:34	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116306-1

General Chemistry

Client Sample ID: GW-12607-072319-DA-014
Date Collected: 07/23/19 14:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-7
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/24/19 11:37	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116306-1

General Chemistry

Client Sample ID: GW-12607-072319-DA-015
Date Collected: 07/23/19 14:00
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-8
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/24/19 11:38	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116306-1

General Chemistry

Client Sample ID: GW-12607-072319-DA-016
Date Collected: 07/23/19 14:20
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-9
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/24/19 11:39	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116306-1

General Chemistry

Client Sample ID: GW-12607-072319-DA-017
Date Collected: 07/23/19 15:20
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-10
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/24/19 11:40	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

Metals

Prep Batch: 392900

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116306-1	GW-12607-072319-DA-008	Total Recoverable	Water	3005A	
240-116306-2	GW-12607-072319-DA-009	Total Recoverable	Water	3005A	
240-116306-3	GW-12607-072319-DA-010	Total Recoverable	Water	3005A	
240-116306-4	GW-12607-072319-DA-011	Total Recoverable	Water	3005A	
240-116306-5	GW-12607-072319-DA-012	Total Recoverable	Water	3005A	
240-116306-6	GW-12607-072319-DA-013	Total Recoverable	Water	3005A	
240-116306-7	GW-12607-072319-DA-014	Total Recoverable	Water	3005A	
240-116306-8	GW-12607-072319-DA-015	Total Recoverable	Water	3005A	
240-116306-9	GW-12607-072319-DA-016	Total Recoverable	Water	3005A	
240-116306-10	GW-12607-072319-DA-017	Total Recoverable	Water	3005A	
MB 240-392900/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-392900/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-116306-4 MS	GW-12607-072319-DA-011	Total Recoverable	Water	3005A	
240-116306-4 MSD	GW-12607-072319-DA-011	Total Recoverable	Water	3005A	

Analysis Batch: 393285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116306-1	GW-12607-072319-DA-008	Total Recoverable	Water	6010B	392900
240-116306-2	GW-12607-072319-DA-009	Total Recoverable	Water	6010B	392900
240-116306-3	GW-12607-072319-DA-010	Total Recoverable	Water	6010B	392900
240-116306-5	GW-12607-072319-DA-012	Total Recoverable	Water	6010B	392900
240-116306-6	GW-12607-072319-DA-013	Total Recoverable	Water	6010B	392900
240-116306-7	GW-12607-072319-DA-014	Total Recoverable	Water	6010B	392900
240-116306-8	GW-12607-072319-DA-015	Total Recoverable	Water	6010B	392900
240-116306-9	GW-12607-072319-DA-016	Total Recoverable	Water	6010B	392900
240-116306-10	GW-12607-072319-DA-017	Total Recoverable	Water	6010B	392900
MB 240-392900/1-A	Method Blank	Total Recoverable	Water	6010B	392900
LCS 240-392900/2-A	Lab Control Sample	Total Recoverable	Water	6010B	392900

Analysis Batch: 393482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116306-2	GW-12607-072319-DA-009	Total Recoverable	Water	6010B	392900
240-116306-4	GW-12607-072319-DA-011	Total Recoverable	Water	6010B	392900
MB 240-392900/1-A	Method Blank	Total Recoverable	Water	6010B	392900
LCS 240-392900/2-A	Lab Control Sample	Total Recoverable	Water	6010B	392900
240-116306-4 MS	GW-12607-072319-DA-011	Total Recoverable	Water	6010B	392900
240-116306-4 MSD	GW-12607-072319-DA-011	Total Recoverable	Water	6010B	392900

General Chemistry

Analysis Batch: 392729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116306-1	GW-12607-072319-DA-008	Total/NA	Water	7196A	
240-116306-2	GW-12607-072319-DA-009	Total/NA	Water	7196A	
240-116306-3	GW-12607-072319-DA-010	Total/NA	Water	7196A	
240-116306-4	GW-12607-072319-DA-011	Total/NA	Water	7196A	
240-116306-5	GW-12607-072319-DA-012	Total/NA	Water	7196A	
240-116306-6	GW-12607-072319-DA-013	Total/NA	Water	7196A	
240-116306-7	GW-12607-072319-DA-014	Total/NA	Water	7196A	
240-116306-8	GW-12607-072319-DA-015	Total/NA	Water	7196A	
240-116306-9	GW-12607-072319-DA-016	Total/NA	Water	7196A	

General Chemistry (Continued)

Analysis Batch: 392729 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116306-10	GW-12607-072319-DA-017	Total/NA	Water	7196A	
MB 240-392729/3	Method Blank	Total/NA	Water	7196A	
LCS 240-392729/4	Lab Control Sample	Total/NA	Water	7196A	
240-116306-4 MS	GW-12607-072319-DA-011	Total/NA	Water	7196A	
240-116306-4 MSD	GW-12607-072319-DA-011	Total/NA	Water	7196A	

Analysis Batch: 393934

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116306-1	GW-12607-072319-DA-008	Total/NA	Water	7196A	
240-116306-2	GW-12607-072319-DA-009	Total/NA	Water	7196A	
240-116306-3	GW-12607-072319-DA-010	Total/NA	Water	7196A	
240-116306-4	GW-12607-072319-DA-011	Total/NA	Water	7196A	
240-116306-5	GW-12607-072319-DA-012	Total/NA	Water	7196A	
240-116306-6	GW-12607-072319-DA-013	Total/NA	Water	7196A	
240-116306-7	GW-12607-072319-DA-014	Total/NA	Water	7196A	
240-116306-8	GW-12607-072319-DA-015	Total/NA	Water	7196A	
240-116306-9	GW-12607-072319-DA-016	Total/NA	Water	7196A	
240-116306-10	GW-12607-072319-DA-017	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-392900/1-A
Matrix: Water
Analysis Batch: 393285

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 392900

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/25/19 14:00	07/26/19 17:52	1
Manganese	15	U	15		ug/L		07/25/19 14:00	07/26/19 17:52	1
Sodium	5000	U	5000		ug/L		07/25/19 14:00	07/26/19 17:52	1

Lab Sample ID: MB 240-392900/1-A
Matrix: Water
Analysis Batch: 393482

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 392900

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Nickel	40	U	40		ug/L		07/25/19 14:00	07/29/19 19:43	1

Lab Sample ID: LCS 240-392900/2-A
Matrix: Water
Analysis Batch: 393285

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 392900

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium			1000	992		ug/L		99	80 - 120		
Manganese			1000	1010		ug/L		101	80 - 120		
Sodium			50000	49800		ug/L		100	80 - 120		

Lab Sample ID: LCS 240-392900/2-A
Matrix: Water
Analysis Batch: 393482

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 392900

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Nickel			1000	967		ug/L		97	80 - 120		

Lab Sample ID: 240-116306-4 MS
Matrix: Water
Analysis Batch: 393482

Client Sample ID: GW-12607-072319-DA-011
Prep Type: Total Recoverable
Prep Batch: 392900

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium	380		1000	1360		ug/L		98	75 - 125		
Manganese	730		1000	1690		ug/L		96	75 - 125		
Sodium	870000		50000	881000	4	ug/L		28	75 - 125		
Nickel	340		1000	1310		ug/L		97	75 - 125		

Lab Sample ID: 240-116306-4 MSD
Matrix: Water
Analysis Batch: 393482

Client Sample ID: GW-12607-072319-DA-011
Prep Type: Total Recoverable
Prep Batch: 392900

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	380		1000	1390		ug/L		102	75 - 125	3	20
Manganese	730		1000	1740		ug/L		101	75 - 125	3	20
Sodium	870000		50000	894000	4	ug/L		53	75 - 125	1	20
Nickel	340		1000	1350		ug/L		101	75 - 125	3	20

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

Job ID: 240-116306-1

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-392729/3
Matrix: Water
Analysis Batch: 392729

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

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/24/19 11:25	1

Lab Sample ID: LCS 240-392729/4
Matrix: Water
Analysis Batch: 392729

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium, hexavalent			250	254		ug/L		102	80 - 123		

Lab Sample ID: 240-116306-4 MS
Matrix: Water
Analysis Batch: 392729

Client Sample ID: GW-12607-072319-DA-011
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium, hexavalent	10	U	250	307		ug/L		123	31 - 151		

Lab Sample ID: 240-116306-4 MSD
Matrix: Water
Analysis Batch: 392729

Client Sample ID: GW-12607-072319-DA-011
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	10	U	250	287		ug/L		115	31 - 151	7	20

Lab Chronicle

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

Job ID: 240-116306-1

Client Sample ID: GW-12607-072319-DA-008
Lab Sample ID: 240-116306-1
Date Collected: 07/23/19 12:15
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393285	07/26/19 19:13	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392729	07/24/19 11:30	AMT	TAL CAN

Client Sample ID: GW-12607-072319-DA-009
Lab Sample ID: 240-116306-2
Date Collected: 07/23/19 13:25
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		20	393482	07/29/19 20:24	WKD	TAL CAN
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393285	07/26/19 19:18	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392729	07/24/19 11:31	AMT	TAL CAN

Client Sample ID: GW-12607-072319-DA-010
Lab Sample ID: 240-116306-3
Date Collected: 07/23/19 12:00
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393285	07/26/19 19:22	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392729	07/24/19 11:32	AMT	TAL CAN

Client Sample ID: GW-12607-072319-DA-011
Lab Sample ID: 240-116306-4
Date Collected: 07/23/19 13:00
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		2	393482	07/29/19 19:52	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392729	07/24/19 11:27	AMT	TAL CAN

Client Sample ID: GW-12607-072319-DA-012
Lab Sample ID: 240-116306-5
Date Collected: 07/23/19 13:15
Matrix: Water
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393285	07/26/19 19:27	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN

Lab Chronicle

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

Job ID: 240-116306-1

Client Sample ID: GW-12607-072319-DA-012

Lab Sample ID: 240-116306-5
Matrix: Water
Date Collected: 07/23/19 13:15
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7196A		1	392729	07/24/19 11:33	AMT	TAL CAN

Client Sample ID: GW-12607-072319-DA-013

Lab Sample ID: 240-116306-6
Matrix: Water
Date Collected: 07/23/19 13:50
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393285	07/26/19 19:31	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392729	07/24/19 11:34	AMT	TAL CAN

Client Sample ID: GW-12607-072319-DA-014

Lab Sample ID: 240-116306-7
Matrix: Water
Date Collected: 07/23/19 14:00
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393285	07/26/19 19:35	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392729	07/24/19 11:37	AMT	TAL CAN

Client Sample ID: GW-12607-072319-DA-015

Lab Sample ID: 240-116306-8
Matrix: Water
Date Collected: 07/23/19 14:00
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393285	07/26/19 19:40	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392729	07/24/19 11:38	AMT	TAL CAN

Client Sample ID: GW-12607-072319-DA-016

Lab Sample ID: 240-116306-9
Matrix: Water
Date Collected: 07/23/19 14:20
Date Received: 07/24/19 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393285	07/26/19 19:44	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392729	07/24/19 11:39	AMT	TAL CAN

Lab Chronicle

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

Job ID: 240-116306-1

Client Sample ID: GW-12607-072319-DA-017

Date Collected: 07/23/19 15:20
Date Received: 07/24/19 09:40

Lab Sample ID: 240-116306-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			392900	07/25/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393285	07/26/19 19:48	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392729	07/24/19 11:40	AMT	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: 240-116306-1
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	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-20
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kansas	NELAP		E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-21
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

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

MICHIGAN
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3.4/3.5

Chain of Custody Record

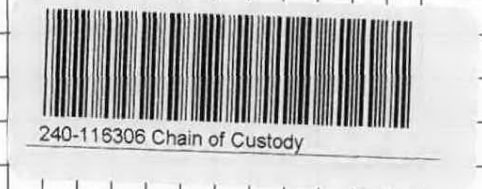
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TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

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

Client Contact	Project Manager: C. MEINKE	Site Contact: C. MEINKE	Date: 7/23/19	~~COC No:~~ 12607A-T0619-01
Company Name: GHD SERVICES INC	Tel/Fax: 248 893 3400	Lab Contact: D. HELKIER	Carrier: FED EX	1 of 1 COCs
Address: 26850 #406 ECKLEY 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			Job / SDG No.:
Site:	☐ 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)	METALS CHROME, HEXA	Sample Specific Notes:
GW-12607-071319-DA-008	7/23/19	1215	G	W	2			X X	
-009		1325	G	W	2			X X	
-010		1200	G	W	2			X X	
-011		1300	G	W	2			X X	
-012		1315	G	W	2			X X	
-013		1350	G	W	2			X X	
-014		1400	G	W	2			X X	
-015		1400	G	W	2			X X	
-016		1420	G	W	2			X X	
-017		1520	G	W	2			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: GHD	Date/Time: 7/23/19 1600	Received by:	Company: ETA	Date/Time: 7-24-19 940
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

8/1/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative Login # : 116306
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: Ryan Crabler
Cooler Received on 7-24-19 Opened on 7-24-19 940
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-8 (CF +0.1 °C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.5 °C
IR GUN #36 (CF +0.6°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 be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC984738
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. 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 _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: Ryan

18. 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)

19. SAMPLE PRESERVATION
Sample(s) -009 250ml Nitric were further preserved in the laboratory.
Time preserved: 7-24-19 1045 Preservative(s) added/Lot number(s): 216908 Nitric
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	Preservative Added (mls)	Lot #
GW-12607-072319-DA-008	240-116306-B-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072319-DA-009	240-116306-B-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072319-DA-010	240-116306-B-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072319-DA-044	240-116306-C-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072319-DA-044	240-116306-D-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072319-DA-012	240-116306-B-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072319-DA-013	240-116306-B-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072319-DA-014	240-116306-B-7	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072319-DA-015	240-116306-B-8	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072319-DA-016	240-116306-B-9	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072319-DA-017	240-116306-B-10	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: 240-116368-1
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:
8/2/2019 3:59:12 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.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: 240-116368-1

Job ID: 240-116368-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-116368-1

Comments
No additional comments.

Receipt
The samples were received on 7/25/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.1° C.

Metals
No analytical or quality issues were noted, other than those described 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, RACER Eckles Rd

Job ID: 240-116368-1

Qualifiers

Metals

Qualifier	Qualifier Description
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

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

Job ID: 240-116368-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-116368-1	GW-12607-072419-DA-018	Water	07/24/19 12:10	07/25/19 09:30	
240-116368-2	GW-12607-072419-DA-019	Water	07/24/19 13:05	07/25/19 09:30	
240-116368-3	GW-12607-072419-DA-020	Water	07/24/19 12:45	07/25/19 09:30	
240-116368-4	GW-12607-072419-DA-021	Water	07/24/19 14:10	07/25/19 09:30	
240-116368-5	GW-12607-072419-DA-022	Water	07/24/19 14:15	07/25/19 09:30	
240-116368-6	GW-12607-072419-DA-023	Water	07/24/19 15:05	07/25/19 09:30	
240-116368-7	GW-12607-072419-DA-024	Water	07/24/19 14:20	07/25/19 09:30	
240-116368-8	GW-12607-072419-DA-025	Water	07/24/19 15:15	07/25/19 09:30	
240-116368-9	GW-12607-072419-DA-026	Water	07/24/19 16:15	07/25/19 09:30	
240-116368-10	GW-12607-072419-DA-027	Water	07/24/19 16:45	07/25/19 09:30	
240-116368-11	GW-12607-072419-DA-028	Water	07/24/19 17:20	07/25/19 09:30	

Detection Summary

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

Job ID: 240-116368-1

Client Sample ID: GW-12607-072419-DA-018 — Lab Sample ID: 240-116368-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	15		5.0		ug/L	1		6010B	Total Recoverable
Manganese	260		15		ug/L	1		6010B	Total Recoverable
Sodium	24000		5000		ug/L	1		6010B	Total Recoverable
Nickel	48		40		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	15		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072419-DA-019 — Lab Sample ID: 240-116368-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	120		15		ug/L	1		6010B	Total Recoverable
Sodium	15000		5000		ug/L	1		6010B	Total Recoverable
Nickel	280		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072419-DA-020 — Lab Sample ID: 240-116368-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Sodium	160000		5000		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072419-DA-021 — Lab Sample ID: 240-116368-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	23000		10		ug/L	2		6010B	Total Recoverable
Manganese	48		15		ug/L	1		6010B	Total Recoverable
Sodium	13000		5000		ug/L	1		6010B	Total Recoverable
Chromium, hexavalent	24000		500		ug/L	50		7196A	Total/NA

Client Sample ID: GW-12607-072419-DA-022 — Lab Sample ID: 240-116368-5

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	26000		10		ug/L	2		6010B	Total Recoverable
Manganese	50		15		ug/L	1		6010B	Total Recoverable
Sodium	13000		5000		ug/L	1		6010B	Total Recoverable
Chromium, hexavalent	24000		1000		ug/L	100		7196A	Total/NA
Chromium, trivalent	2100		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072419-DA-023 — Lab Sample ID: 240-116368-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	20		5.0		ug/L	1		6010B	Total Recoverable
Manganese	490		15		ug/L	1		6010B	Total Recoverable
Sodium	26000		5000		ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Client Sample ID: GW-12607-072419-DA-023 (Continued) — Lab Sample ID: 240-116368-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium, trivalent	20		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072419-DA-024 — Lab Sample ID: 240-116368-7

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	1400		5.0		ug/L	1		6010B	Total Recoverable
Manganese	71		15		ug/L	1		6010B	Total Recoverable
Sodium	62000		5000		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	1400		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072419-DA-025 — Lab Sample ID: 240-116368-8

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	280		5.0		ug/L	1		6010B	Total Recoverable
Manganese	400		15		ug/L	1		6010B	Total Recoverable
Sodium	30000		5000		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	280		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072419-DA-026 — Lab Sample ID: 240-116368-9

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	33		5.0		ug/L	1		6010B	Total Recoverable
Manganese	370		15		ug/L	1		6010B	Total Recoverable
Sodium	46000		5000		ug/L	1		6010B	Total Recoverable
Nickel	240		40		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	33		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072419-DA-027 — Lab Sample ID: 240-116368-10

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Sodium	940000		25000		ug/L	5		6010B	Total Recoverable
Nickel	55		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072419-DA-028 — Lab Sample ID: 240-116368-11

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	160		15		ug/L	1		6010B	Total Recoverable
Sodium	99000		5000		ug/L	1		6010B	Total Recoverable
Nickel	2500		40		ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

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

Job ID: 240-116368-1

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, RACER Eckles Rd

Job ID: 240-116368-1

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

Client Sample ID: GW-12607-072419-DA-018
Date Collected: 07/24/19 12:10
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	15		5.0		ug/L		07/26/19 14:00	07/29/19 16:48	1
Manganese	260		15		ug/L		07/26/19 14:00	07/29/19 16:48	1
Sodium	24000		5000		ug/L		07/26/19 14:00	07/29/19 16:48	1
Nickel	48		40		ug/L		07/26/19 14:00	07/29/19 16:48	1

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

Job ID: 240-116368-1

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

Client Sample ID: GW-12607-072419-DA-019
Date Collected: 07/24/19 13:05
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/26/19 14:00	07/29/19 16:17	1
Manganese	**120**		15		ug/L		07/26/19 14:00	07/29/19 16:17	1
Sodium	**15000**		5000		ug/L		07/26/19 14:00	07/29/19 16:17	1
Nickel	**280**		40		ug/L		07/26/19 14:00	07/29/19 16:17	1

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

Job ID: 240-116368-1

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

Client Sample ID: GW-12607-072419-DA-020
Date Collected: 07/24/19 12:45
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/26/19 14:00	07/29/19 16:53	1
Manganese	15	U	15		ug/L		07/26/19 14:00	07/29/19 16:53	1
Sodium	**160000**		5000		ug/L		07/26/19 14:00	07/29/19 16:53	1
Nickel	40	U	40		ug/L		07/26/19 14:00	07/29/19 16:53	1

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

Job ID: 240-116368-1

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

Client Sample ID: GW-12607-072419-DA-021
Date Collected: 07/24/19 14:10
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**23000**		10		ug/L		07/26/19 14:00	07/30/19 22:59	2
Manganese	**48**		15		ug/L		07/26/19 14:00	07/29/19 16:58	1
Sodium	**13000**		5000		ug/L		07/26/19 14:00	07/29/19 16:58	1
Nickel	40	U	40		ug/L		07/26/19 14:00	07/29/19 16:58	1

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

Job ID: 240-116368-1

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

Client Sample ID: GW-12607-072419-DA-022
Date Collected: 07/24/19 14:15
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-5
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**26000**		10		ug/L		07/26/19 14:00	07/30/19 23:04	2
Manganese	**50**		15		ug/L		07/26/19 14:00	07/29/19 17:02	1
Sodium	**13000**		5000		ug/L		07/26/19 14:00	07/29/19 17:02	1
Nickel	40	U	40		ug/L		07/26/19 14:00	07/29/19 17:02	1

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

Job ID: 240-116368-1

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

Client Sample ID: GW-12607-072419-DA-023
Date Collected: 07/24/19 15:05
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-6
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**20**		5.0		ug/L		07/26/19 14:00	07/29/19 17:07	1
Manganese	**490**		15		ug/L		07/26/19 14:00	07/29/19 17:07	1
Sodium	**26000**		5000		ug/L		07/26/19 14:00	07/29/19 17:07	1
Nickel	40	U	40		ug/L		07/26/19 14:00	07/29/19 17:07	1

Client: GHD Services Inc.
Job ID: 240-116368-1
Project/Site: 12607, RACER Eckles Rd

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

Client Sample ID: GW-12607-072419-DA-024
Lab Sample ID: 240-116368-7
Date Collected: 07/24/19 14:20
Matrix: Water
Date Received: 07/25/19 09:30

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**1400**		5.0		ug/L		07/26/19 14:00	07/29/19 17:12	1
Manganese	**71**		15		ug/L		07/26/19 14:00	07/29/19 17:12	1
Sodium	**62000**		5000		ug/L		07/26/19 14:00	07/29/19 17:12	1
Nickel	40	U	40		ug/L		07/26/19 14:00	07/29/19 17:12	1

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

Job ID: 240-116368-1

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

Client Sample ID: GW-12607-072419-DA-025
Date Collected: 07/24/19 15:15
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-8
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**280**		5.0		ug/L		07/26/19 14:00	07/29/19 17:17	1
Manganese	**400**		15		ug/L		07/26/19 14:00	07/29/19 17:17	1
Sodium	**30000**		5000		ug/L		07/26/19 14:00	07/29/19 17:17	1
Nickel	40	U	40		ug/L		07/26/19 14:00	07/29/19 17:17	1

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

Job ID: 240-116368-1

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

Client Sample ID: GW-12607-072419-DA-026
Date Collected: 07/24/19 16:15
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-9
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	33		5.0		ug/L		07/26/19 14:00	07/29/19 17:30	1
Manganese	370		15		ug/L		07/26/19 14:00	07/29/19 17:30	1
Sodium	46000		5000		ug/L		07/26/19 14:00	07/29/19 17:30	1
Nickel	240		40		ug/L		07/26/19 14:00	07/29/19 17:30	1

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

Job ID: 240-116368-1

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

Client Sample ID: GW-12607-072419-DA-027
Date Collected: 07/24/19 16:45
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-10
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/26/19 14:00	07/29/19 17:35	1
Manganese	15	U	15		ug/L		07/26/19 14:00	07/29/19 17:35	1
Sodium	**940000**		25000		ug/L		07/26/19 14:00	07/31/19 22:52	5
Nickel	**55**		40		ug/L		07/26/19 14:00	07/29/19 17:35	1

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

Job ID: 240-116368-1

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

Client Sample ID: GW-12607-072419-DA-028
Date Collected: 07/24/19 17:20
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-11
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/26/19 14:00	07/29/19 17:40	1
Manganese	**160**		15		ug/L		07/26/19 14:00	07/29/19 17:40	1
Sodium	**99000**		5000		ug/L		07/26/19 14:00	07/29/19 17:40	1
Nickel	**2500**		40		ug/L		07/26/19 14:00	07/29/19 17:40	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-018
Date Collected: 07/24/19 12:10
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/25/19 10:00	1
Chromium, trivalent	**15**		10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-019
Date Collected: 07/24/19 13:05
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/25/19 10:01	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-020
Date Collected: 07/24/19 12:45
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/25/19 10:04	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-021
Date Collected: 07/24/19 14:10
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	**24000**		500		ug/L			07/25/19 10:05	50
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-022
Date Collected: 07/24/19 14:15
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-5
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	24000		1000		ug/L			07/25/19 10:06	100
Chromium, trivalent	2100		10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-023
Date Collected: 07/24/19 15:05
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-6
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/25/19 10:07	1
Chromium, trivalent	**20**		10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-024
Date Collected: 07/24/19 14:20
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-7
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/25/19 10:08	1
Chromium, trivalent	**1400**		10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-025
Date Collected: 07/24/19 15:15
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-8
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/25/19 10:11	1
Chromium, trivalent	**280**		10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-026
Date Collected: 07/24/19 16:15
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-9
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/25/19 10:12	1
Chromium, trivalent	**33**		10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-027
Date Collected: 07/24/19 16:45
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-10
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/25/19 10:13	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:33	1

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

Job ID: 240-116368-1

General Chemistry

Client Sample ID: GW-12607-072419-DA-028
Date Collected: 07/24/19 17:20
Date Received: 07/25/19 09:30

Lab Sample ID: 240-116368-11
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/25/19 10:14	1
Chromium, trivalent	10	U	10		ug/L			08/01/19 08:35	1

Metals

Prep Batch: 393139

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116368-1	GW-12607-072419-DA-018	Total Recoverable	Water	3005A	
240-116368-2	GW-12607-072419-DA-019	Total Recoverable	Water	3005A	
240-116368-3	GW-12607-072419-DA-020	Total Recoverable	Water	3005A	
240-116368-4	GW-12607-072419-DA-021	Total Recoverable	Water	3005A	
240-116368-5	GW-12607-072419-DA-022	Total Recoverable	Water	3005A	
240-116368-6	GW-12607-072419-DA-023	Total Recoverable	Water	3005A	
240-116368-7	GW-12607-072419-DA-024	Total Recoverable	Water	3005A	
240-116368-8	GW-12607-072419-DA-025	Total Recoverable	Water	3005A	
240-116368-9	GW-12607-072419-DA-026	Total Recoverable	Water	3005A	
240-116368-10	GW-12607-072419-DA-027	Total Recoverable	Water	3005A	
240-116368-11	GW-12607-072419-DA-028	Total Recoverable	Water	3005A	
MB 240-393139/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-393139/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-116368-2 MS	GW-12607-072419-DA-019	Total Recoverable	Water	3005A	
240-116368-2 MSD	GW-12607-072419-DA-019	Total Recoverable	Water	3005A	

Analysis Batch: 393482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116368-1	GW-12607-072419-DA-018	Total Recoverable	Water	6010B	393139
240-116368-2	GW-12607-072419-DA-019	Total Recoverable	Water	6010B	393139
240-116368-3	GW-12607-072419-DA-020	Total Recoverable	Water	6010B	393139
240-116368-4	GW-12607-072419-DA-021	Total Recoverable	Water	6010B	393139
240-116368-5	GW-12607-072419-DA-022	Total Recoverable	Water	6010B	393139
240-116368-6	GW-12607-072419-DA-023	Total Recoverable	Water	6010B	393139
240-116368-7	GW-12607-072419-DA-024	Total Recoverable	Water	6010B	393139
240-116368-8	GW-12607-072419-DA-025	Total Recoverable	Water	6010B	393139
240-116368-9	GW-12607-072419-DA-026	Total Recoverable	Water	6010B	393139
240-116368-10	GW-12607-072419-DA-027	Total Recoverable	Water	6010B	393139
240-116368-11	GW-12607-072419-DA-028	Total Recoverable	Water	6010B	393139
MB 240-393139/1-A	Method Blank	Total Recoverable	Water	6010B	393139
LCS 240-393139/2-A	Lab Control Sample	Total Recoverable	Water	6010B	393139
240-116368-2 MS	GW-12607-072419-DA-019	Total Recoverable	Water	6010B	393139
240-116368-2 MSD	GW-12607-072419-DA-019	Total Recoverable	Water	6010B	393139

Analysis Batch: 393701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116368-4	GW-12607-072419-DA-021	Total Recoverable	Water	6010B	393139
240-116368-5	GW-12607-072419-DA-022	Total Recoverable	Water	6010B	393139

Analysis Batch: 393922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116368-10	GW-12607-072419-DA-027	Total Recoverable	Water	6010B	393139

General Chemistry

Analysis Batch: 392883

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116368-1	GW-12607-072419-DA-018	Total/NA	Water	7196A	
240-116368-2	GW-12607-072419-DA-019	Total/NA	Water	7196A	
240-116368-3	GW-12607-072419-DA-020	Total/NA	Water	7196A	
240-116368-4	GW-12607-072419-DA-021	Total/NA	Water	7196A	

General Chemistry (Continued)

Analysis Batch: 392883 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116368-5	GW-12607-072419-DA-022	Total/NA	Water	7196A	
240-116368-6	GW-12607-072419-DA-023	Total/NA	Water	7196A	
240-116368-7	GW-12607-072419-DA-024	Total/NA	Water	7196A	
240-116368-8	GW-12607-072419-DA-025	Total/NA	Water	7196A	
240-116368-9	GW-12607-072419-DA-026	Total/NA	Water	7196A	
240-116368-10	GW-12607-072419-DA-027	Total/NA	Water	7196A	
240-116368-11	GW-12607-072419-DA-028	Total/NA	Water	7196A	
MB 240-392883/3	Method Blank	Total/NA	Water	7196A	
LCS 240-392883/4	Lab Control Sample	Total/NA	Water	7196A	
240-116368-2 MS	GW-12607-072419-DA-019	Total/NA	Water	7196A	
240-116368-2 MSD	GW-12607-072419-DA-019	Total/NA	Water	7196A	

Analysis Batch: 393934

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116368-1	GW-12607-072419-DA-018	Total/NA	Water	7196A	
240-116368-2	GW-12607-072419-DA-019	Total/NA	Water	7196A	
240-116368-3	GW-12607-072419-DA-020	Total/NA	Water	7196A	
240-116368-4	GW-12607-072419-DA-021	Total/NA	Water	7196A	
240-116368-5	GW-12607-072419-DA-022	Total/NA	Water	7196A	
240-116368-6	GW-12607-072419-DA-023	Total/NA	Water	7196A	
240-116368-7	GW-12607-072419-DA-024	Total/NA	Water	7196A	
240-116368-8	GW-12607-072419-DA-025	Total/NA	Water	7196A	
240-116368-9	GW-12607-072419-DA-026	Total/NA	Water	7196A	
240-116368-10	GW-12607-072419-DA-027	Total/NA	Water	7196A	
240-116368-11	GW-12607-072419-DA-028	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-393139/1-A
Matrix: Water
Analysis Batch: 393482

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 393139

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/26/19 14:00	07/29/19 13:49	1
Manganese	15	U	15		ug/L		07/26/19 14:00	07/29/19 13:49	1
Sodium	5000	U	5000		ug/L		07/26/19 14:00	07/29/19 13:49	1
Nickel	40	U	40		ug/L		07/26/19 14:00	07/29/19 13:49	1

Lab Sample ID: LCS 240-393139/2-A
Matrix: Water
Analysis Batch: 393482

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 393139

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium			1000	997		ug/L		100	80 - 120		
Manganese			1000	1020		ug/L		102	80 - 120		
Sodium			50000	49500		ug/L		99	80 - 120		
Nickel			1000	975		ug/L		98	80 - 120		

Lab Sample ID: 240-116368-2 MS
Matrix: Water
Analysis Batch: 393482

Client Sample ID: GW-12607-072419-DA-019
Prep Type: Total Recoverable
Prep Batch: 393139

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium	5.0	U	1000	1020		ug/L		101	75 - 125		
Manganese	120		1000	1120		ug/L		100	75 - 125		
Sodium	15000		50000	64500		ug/L		100	75 - 125		
Nickel	280		1000	1260		ug/L		99	75 - 125		

Lab Sample ID: 240-116368-2 MSD
Matrix: Water
Analysis Batch: 393482

Client Sample ID: GW-12607-072419-DA-019
Prep Type: Total Recoverable
Prep Batch: 393139

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	5.0	U	1000	992		ug/L		99	75 - 125	3	20
Manganese	120		1000	1110		ug/L		99	75 - 125	1	20
Sodium	15000		50000	63000		ug/L		97	75 - 125	2	20
Nickel	280		1000	1240		ug/L		97	75 - 125	2	20

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-392883/3
Matrix: Water
Analysis Batch: 392883

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

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/25/19 09:45	1

Lab Sample ID: LCS 240-392883/4
Matrix: Water
Analysis Batch: 392883

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium, hexavalent			250	263		ug/L		105	80 - 123		

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

Job ID: 240-116368-1

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: 240-116368-2 MS
Matrix: Water
Analysis Batch: 392883

Client Sample ID: GW-12607-072419-DA-019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium, hexavalent	10	U	250	262		ug/L		105	31 - 151		

Lab Sample ID: 240-116368-2 MSD
Matrix: Water
Analysis Batch: 392883

Client Sample ID: GW-12607-072419-DA-019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	10	U	250	250		ug/L		100	31 - 151	5	20

Lab Chronicle

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

Job ID: 240-116368-1

Client Sample ID: GW-12607-072419-DA-018
Lab Sample ID: 240-116368-1
Date Collected: 07/24/19 12:10
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 16:48	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392883	07/25/19 10:00	BLW	TAL CAN

Client Sample ID: GW-12607-072419-DA-019
Lab Sample ID: 240-116368-2
Date Collected: 07/24/19 13:05
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 16:17	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392883	07/25/19 10:01	BLW	TAL CAN

Client Sample ID: GW-12607-072419-DA-020
Lab Sample ID: 240-116368-3
Date Collected: 07/24/19 12:45
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 16:53	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392883	07/25/19 10:04	BLW	TAL CAN

Client Sample ID: GW-12607-072419-DA-021
Lab Sample ID: 240-116368-4
Date Collected: 07/24/19 14:10
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 16:58	WKD	TAL CAN
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		2	393701	07/30/19 22:59	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		50	392883	07/25/19 10:05	BLW	TAL CAN

Client Sample ID: GW-12607-072419-DA-022
Lab Sample ID: 240-116368-5
Date Collected: 07/24/19 14:15
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 17:02	WKD	TAL CAN

Lab Chronicle

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

Job ID: 240-116368-1

Client Sample ID: GW-12607-072419-DA-022
Lab Sample ID: 240-116368-5
Date Collected: 07/24/19 14:15
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		2	393701	07/30/19 23:04	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		100	392883	07/25/19 10:06	BLW	TAL CAN

Client Sample ID: GW-12607-072419-DA-023
Lab Sample ID: 240-116368-6
Date Collected: 07/24/19 15:05
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 17:07	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392883	07/25/19 10:07	BLW	TAL CAN

Client Sample ID: GW-12607-072419-DA-024
Lab Sample ID: 240-116368-7
Date Collected: 07/24/19 14:20
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 17:12	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392883	07/25/19 10:08	BLW	TAL CAN

Client Sample ID: GW-12607-072419-DA-025
Lab Sample ID: 240-116368-8
Date Collected: 07/24/19 15:15
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 17:17	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392883	07/25/19 10:11	BLW	TAL CAN

Client Sample ID: GW-12607-072419-DA-026
Lab Sample ID: 240-116368-9
Date Collected: 07/24/19 16:15
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 17:30	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392883	07/25/19 10:12	BLW	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-116368-1
Project/Site: 12607, RACER Eckles Rd

Client Sample ID: GW-12607-072419-DA-027
Lab Sample ID: 240-116368-10

Date Collected: 07/24/19 16:45
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 17:35	WKD	TAL CAN
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		5	393922	07/31/19 22:52	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:33	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392883	07/25/19 10:13	BLW	TAL CAN

Client Sample ID: GW-12607-072419-DA-028
Lab Sample ID: 240-116368-11

Date Collected: 07/24/19 17:20
Matrix: Water
Date Received: 07/25/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393139	07/26/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6010B		1	393482	07/29/19 17:40	WKD	TAL CAN
Total/NA	Analysis	7196A		1	393934	08/01/19 08:35	KLC	TAL CAN
Total/NA	Analysis	7196A		1	392883	07/25/19 10:14	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: 240-116368-1
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	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-20
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kansas	NELAP		E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-21
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

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

4.0/4.1

MICHIGAN 190

Chain of Custody Record 313655

T.A# 24005880

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

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

Client Contact	Project Manager: Chris Meincke	Site Contact: S. Kippen	Date: 7-24-19	COC No:
Company Name: GHD	Tel/Fax: (248) 935-7346	Lab Contact: J. Abston	Carrier: FedEx	1 of ___ COCs
Address: 26850 Haggerty Rd.	Analysis Turnaround Time			Sampler: SK / DS
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 / RecerTrust				Job / SDG No.:
Site: Livonia, M.I.				
PO# SSOW: 12607A-T06419-01				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Hex Chromium 200.7 Metals
GW-12607-072419-DA-018	7-24-19	12:10	G	GW	2			X X
-019		13:05			4		X	X X
-020		12:45			2			X X
-021		14:10			2			X X
-022		14:15			2			X X
-023		15:05			2			X X
-024		14:20			2			X X
-025		15:15			2			X X
-026		16:15			2			X X
-027		16:45			2			X X
-028		17:20			2			X X
	—	—	—	—	—			

240-115368 Chain of Custody

Sample Specific Notes:

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	7-24-19 18:45	[signature]	ETA	7-25-19 930
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
Canton Facility

Login # : 116368

Client GHD Site Name

Cooler Received on 7-25-19 Opened on 7-25-19 930

Cooler unpacked by: Ryan Crabby

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-8 (CF +0.1 °C) Observed Cooler Temp. 4.0 °C Corrected Cooler Temp. 4.1 °C
   IR GUN #36 (CF +0.6°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 be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? Yes (No)
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes (No) NA pH Strip Lot# HC984738
13. Were VOAs on the COC? Yes (No)
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No (NA)
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes (No)
16. 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

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

18. 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)

19. SAMPLE PRESERVATION

Sample(s) -027 (250ml Nitric plastic) were further preserved in the laboratory.
Time preserved: 1030 7-25-19 Preservative(s) added/Lot number(s): 216908

VOA Sample Preservation - Date/Time VOAs Frozen:

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
GW-12607-072419-DA-018	240-116368-B-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-019	240-116368-C-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-019	240-116368-D-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-020	240-116368-B-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-021	240-116368-B-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-022	240-116368-B-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-023	240-116368-B-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-024	240-116368-B-7	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-025	240-116368-B-8	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-026	240-116368-B-9	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-027	240-116368-B-10	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072419-DA-028	240-116368-B-11	Plastic 250ml - with Nitric Acid	<2	_____	_____

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

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

Laboratory Job ID: 240-116465-1
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:
8/8/2019 12:18:13 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

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: 240-116465-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-116465-1

Comments
No additional comments.

Receipt
The samples were received on 7/26/2019 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.5º C.

Metals
Method(s) 3005A: The following sample was diluted due to the nature of the sample matrix: GW-12607-072519-DA-034 (240-116465-6). 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(s) 7196A: The following samples were diluted due to the nature of the sample matrix: GW-12607-072519-DA-029 (240-116465-1), GW-12607-072519-DA-030 (240-116465-2), GW-12607-072519-DA-031 (240-116465-3) and GW-12607-072519-DA-036 (240-116465-8), GW-12607-072519-DA-032 (240-116465-4), GW-12607-072519-DA-034 (240-116465-6) and GW-12607-072519-DA-035 (240-116465-7), GW-12607-072519-DA-038 (240-116465-10), GW-12607-072519-DA-039 (240-116465-11) and GW-12607-072519-DA-040 (240-116465-12). 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.
Project/Site: 12607, RACER Eckles Rd

Job ID: 240-116465-1

Qualifiers

Metals

Qualifier	Qualifier Description
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

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

Job ID: 240-116465-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-116465-1	GW-12607-072519-DA-029	Water	07/25/19 12:05	07/26/19 09:35	
240-116465-2	GW-12607-072519-DA-030	Water	07/25/19 13:05	07/26/19 09:35	
240-116465-3	GW-12607-072519-DA-031	Water	07/25/19 14:15	07/26/19 09:35	
240-116465-4	GW-12607-072519-DA-032	Water	07/25/19 12:05	07/26/19 09:35	
240-116465-5	GW-12607-072519-DA-033	Water	07/25/19 13:10	07/26/19 09:35	
240-116465-6	GW-12607-072519-DA-034	Water	07/25/19 14:00	07/26/19 09:35	
240-116465-7	GW-12607-072519-DA-035	Water	07/25/19 14:05	07/26/19 09:35	
240-116465-8	GW-12607-072519-DA-036	Water	07/25/19 15:00	07/26/19 09:35	
240-116465-9	GW-12607-072519-DA-037	Water	07/25/19 15:30	07/26/19 09:35	
240-116465-10	GW-12607-072519-DA-038	Water	07/25/19 16:30	07/26/19 09:35	
240-116465-11	GW-12607-072519-DA-039	Water	07/25/19 16:00	07/26/19 09:35	
240-116465-12	GW-12607-072519-DA-040	Water	07/25/19 16:50	07/26/19 09:35	
240-116465-13	GW-12607-072519-DA-041	Water	07/25/19 17:40	07/26/19 09:35	

Detection Summary

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

Job ID: 240-116465-1

Client Sample ID: GW-12607-072519-DA-029 — Lab Sample ID: 240-116465-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	56		15		ug/L	1		6010B	Total Recoverable
Sodium	61000		5000		ug/L	1		6010B	Total Recoverable
Nickel	2400		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072519-DA-030 — Lab Sample ID: 240-116465-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	13		5.0		ug/L	1		6010B	Total Recoverable
Manganese	530		15		ug/L	1		6010B	Total Recoverable
Sodium	29000		5000		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	13		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072519-DA-031 — Lab Sample ID: 240-116465-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	79		5.0		ug/L	1		6010B	Total Recoverable
Manganese	25		15		ug/L	1		6010B	Total Recoverable
Sodium	3000000		50000		ug/L	10		6010B	Total Recoverable
Nickel	120		40		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	79		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072519-DA-032 — Lab Sample ID: 240-116465-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	280		5.0		ug/L	1		6010B	Total Recoverable
Sodium	6800000		250000		ug/L	50		6010B	Total Recoverable
Nickel	410		40		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	280		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072519-DA-033 — Lab Sample ID: 240-116465-5

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	9.7		5.0		ug/L	1		6010B	Total Recoverable
Sodium	1700000		50000		ug/L	10		6010B	Total Recoverable

Client Sample ID: GW-12607-072519-DA-034 — Lab Sample ID: 240-116465-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Sodium	6800000		250000		ug/L	5		6010B	Total Recoverable
Nickel	2400		400		ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Detection Summary

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

Job ID: 240-116465-1

Client Sample ID: GW-12607-072519-DA-035 — Lab Sample ID: 240-116465-7

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	150		15		ug/L	1		6010B	Total Recoverable
Sodium	10000000		250000		ug/L	50		6010B	Total Recoverable
Nickel	4800		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072519-DA-036 — Lab Sample ID: 240-116465-8

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	100		15		ug/L	1		6010B	Total Recoverable
Sodium	600000		25000		ug/L	5		6010B	Total Recoverable
Nickel	660		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072519-DA-037 — Lab Sample ID: 240-116465-9

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	880		5.0		ug/L	1		6010B	Total Recoverable
Chromium, hexavalent	640		20		ug/L	2		7196A	Total/NA
Chromium, trivalent	240		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072519-DA-038 — Lab Sample ID: 240-116465-10

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	130		5.0		ug/L	1		6010B	Total Recoverable
Manganese	18		15		ug/L	1		6010B	Total Recoverable
Sodium	4000000		50000		ug/L	10		6010B	Total Recoverable
Nickel	1300		40		ug/L	1		6010B	Total Recoverable
Chromium, trivalent	130		10		ug/L	1		7196A	Total/NA

Client Sample ID: GW-12607-072519-DA-039 — Lab Sample ID: 240-116465-11

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	420		15		ug/L	1		6010B	Total Recoverable
Sodium	570000		25000		ug/L	5		6010B	Total Recoverable
Nickel	1300		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072519-DA-040 — Lab Sample ID: 240-116465-12

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	170		5.0		ug/L	1		6010B	Total Recoverable
Manganese	460		15		ug/L	1		6010B	Total Recoverable
Sodium	770000		25000		ug/L	5		6010B	Total Recoverable
Chromium, trivalent	170		10		ug/L	1		7196A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

Detection Summary

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

Job ID: 240-116465-1

Client Sample ID: GW-12607-072519-DA-041 — Lab Sample ID: 240-116465-13

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chromium	31		5.0		ug/L	1		6010B	Total Recoverable
Manganese	1400		15		ug/L	1		6010B	Total Recoverable
Sodium	1400000		50000		ug/L	10		6010B	Total Recoverable
Nickel	44		40		ug/L	1		6010B	Total Recoverable
Chromium, hexavalent	14		10		ug/L	1		7196A	Total/NA
Chromium, trivalent	16		10		ug/L	1		7196A	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: 240-116465-1

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, RACER Eckles Rd

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-029
Date Collected: 07/25/19 12:05
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/29/19 14:00	08/02/19 14:59	1
Manganese	**56**		15		ug/L		07/29/19 14:00	08/02/19 14:59	1
Sodium	**61000**		5000		ug/L		07/29/19 14:00	08/02/19 14:59	1
Nickel	**2400**		40		ug/L		07/29/19 14:00	08/02/19 14:59	1

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-030
Date Collected: 07/25/19 13:05
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**13**		5.0		ug/L		07/29/19 14:00	08/02/19 15:20	1
Manganese	**530**		15		ug/L		07/29/19 14:00	08/02/19 15:20	1
Sodium	**29000**		5000		ug/L		07/29/19 14:00	08/02/19 15:20	1
Nickel	40	U	40		ug/L		07/29/19 14:00	08/02/19 15:20	1

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-031
Date Collected: 07/25/19 14:15
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	79		5.0		ug/L		07/29/19 14:00	08/02/19 15:24	1
Manganese	25		15		ug/L		07/29/19 14:00	08/02/19 15:24	1
Sodium	3000000		50000		ug/L		07/29/19 14:00	08/06/19 03:54	10
Nickel	120		40		ug/L		07/29/19 14:00	08/02/19 15:24	1

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-032
Date Collected: 07/25/19 12:05
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**280**		5.0		ug/L		07/30/19 14:00	08/02/19 19:44	1
Manganese	15	U	15		ug/L		07/30/19 14:00	08/02/19 19:44	1
Sodium	**6800000**		250000		ug/L		07/30/19 14:00	08/07/19 01:55	50
Nickel	**410**		40		ug/L		07/30/19 14:00	08/02/19 19:44	1

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-033
Date Collected: 07/25/19 13:10
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-5
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**9.7**		5.0		ug/L		07/29/19 14:00	08/02/19 15:29	1
Manganese	15	U	15		ug/L		07/29/19 14:00	08/02/19 15:29	1
Sodium	**1700000**		50000		ug/L		07/29/19 14:00	08/06/19 03:59	10
Nickel	40	U	40		ug/L		07/29/19 14:00	08/02/19 15:29	1

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-034
Date Collected: 07/25/19 14:00
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-6
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	50	U	50		ug/L		07/30/19 14:00	08/02/19 19:49	1
Manganese	150	U	150		ug/L		07/30/19 14:00	08/02/19 19:49	1
Sodium	**6800000**		250000		ug/L		07/30/19 14:00	08/06/19 03:40	5
Nickel	**2400**		400		ug/L		07/30/19 14:00	08/02/19 19:49	1

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-035
Date Collected: 07/25/19 14:05
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-7
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/30/19 14:00	08/02/19 20:02	1
Manganese	**150**		15		ug/L		07/30/19 14:00	08/02/19 20:02	1
Sodium	**10000000**		250000		ug/L		07/30/19 14:00	08/07/19 01:59	50
Nickel	**4800**		40		ug/L		07/30/19 14:00	08/02/19 20:02	1

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-036
Date Collected: 07/25/19 15:00
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-8
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/29/19 14:00	08/02/19 15:42	1
Manganese	**100**		15		ug/L		07/29/19 14:00	08/02/19 15:42	1
Sodium	**600000**		25000		ug/L		07/29/19 14:00	08/06/19 04:04	5
Nickel	**660**		40		ug/L		07/29/19 14:00	08/02/19 15:42	1

Client Sample Results

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-037
Date Collected: 07/25/19 15:30
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-9
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**880**		5.0		ug/L		07/29/19 14:00	08/02/19 15:46	1
Manganese	15	U	15		ug/L		07/29/19 14:00	08/02/19 15:46	1
Sodium	5000	U	5000		ug/L		07/29/19 14:00	08/02/19 15:46	1
Nickel	40	U	40		ug/L		07/29/19 14:00	08/02/19 15:46	1

Client Sample Results

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-038
Date Collected: 07/25/19 16:30
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-10
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	130		5.0		ug/L		07/29/19 14:00	08/02/19 15:51	1
Manganese	18		15		ug/L		07/29/19 14:00	08/02/19 15:51	1
Sodium	4000000		50000		ug/L		07/29/19 14:00	08/06/19 04:08	10
Nickel	1300		40		ug/L		07/29/19 14:00	08/02/19 15:51	1

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-039
Date Collected: 07/25/19 16:00
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-11
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/29/19 14:00	08/02/19 15:55	1
Manganese	**420**		15		ug/L		07/29/19 14:00	08/02/19 15:55	1
Sodium	**570000**		25000		ug/L		07/29/19 14:00	08/06/19 04:13	5
Nickel	**1300**		40		ug/L		07/29/19 14:00	08/02/19 15:55	1

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-040
Date Collected: 07/25/19 16:50
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-12
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**170**		5.0		ug/L		07/29/19 14:00	08/02/19 16:00	1
Manganese	**460**		15		ug/L		07/29/19 14:00	08/02/19 16:00	1
Sodium	**770000**		25000		ug/L		07/29/19 14:00	08/06/19 04:18	5
Nickel	40	U	40		ug/L		07/29/19 14:00	08/02/19 16:00	1

Client Sample Results

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

Job ID: 240-116465-1

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

Client Sample ID: GW-12607-072519-DA-041
Date Collected: 07/25/19 17:40
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-13
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	31		5.0		ug/L		07/29/19 14:00	08/02/19 16:04	1
Manganese	1400		15		ug/L		07/29/19 14:00	08/02/19 16:04	1
Sodium	1400000		50000		ug/L		07/29/19 14:00	08/06/19 04:31	10
Nickel	44		40		ug/L		07/29/19 14:00	08/02/19 16:04	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-029
Date Collected: 07/25/19 12:05
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/26/19 11:00	1
Chromium, trivalent	10	U	10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-030
Date Collected: 07/25/19 13:05
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/26/19 11:03	1
Chromium, trivalent	**13**		10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-031
Date Collected: 07/25/19 14:15
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	500	U	500		ug/L			07/26/19 11:04	50
Chromium, trivalent	**79**		10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-032
Date Collected: 07/25/19 12:05
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	500	U	500		ug/L			07/26/19 11:05	50
Chromium, trivalent	**280**		10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-033
Date Collected: 07/25/19 13:10
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-5
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/26/19 11:06	1
Chromium, trivalent	10	U	10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-034
Date Collected: 07/25/19 14:00
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-6
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	1000	U	1000		ug/L			07/26/19 11:07	100
Chromium, trivalent	10	U	10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-035
Date Collected: 07/25/19 14:05
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-7
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	1000	U	1000		ug/L			07/26/19 11:08	100
Chromium, trivalent	10	U	10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-036
Date Collected: 07/25/19 15:00
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-8
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/26/19 11:09	1
Chromium, trivalent	10	U	10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-037
Date Collected: 07/25/19 15:30
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-9
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	640		20		ug/L			07/26/19 11:13	2
Chromium, trivalent	240		10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-038
Date Collected: 07/25/19 16:30
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-10
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/26/19 11:14	1
Chromium, trivalent	**130**		10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-039
Date Collected: 07/25/19 16:00
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-11
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/26/19 11:15	1
Chromium, trivalent	10	U	10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-040
Date Collected: 07/25/19 16:50
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-12
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/26/19 11:16	1
Chromium, trivalent	**170**		10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116465-1

General Chemistry

Client Sample ID: GW-12607-072519-DA-041
Date Collected: 07/25/19 17:40
Date Received: 07/26/19 09:35

Lab Sample ID: 240-116465-13
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	14		10		ug/L			07/26/19 11:17	1
Chromium, trivalent	16		10		ug/L			08/06/19 12:54	1

Metals

Prep Batch: 393325

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116465-1	GW-12607-072519-DA-029	Total Recoverable	Water	3005A	
240-116465-2	GW-12607-072519-DA-030	Total Recoverable	Water	3005A	
240-116465-3	GW-12607-072519-DA-031	Total Recoverable	Water	3005A	
240-116465-5	GW-12607-072519-DA-033	Total Recoverable	Water	3005A	
240-116465-8	GW-12607-072519-DA-036	Total Recoverable	Water	3005A	
240-116465-9	GW-12607-072519-DA-037	Total Recoverable	Water	3005A	
240-116465-10	GW-12607-072519-DA-038	Total Recoverable	Water	3005A	
240-116465-11	GW-12607-072519-DA-039	Total Recoverable	Water	3005A	
240-116465-12	GW-12607-072519-DA-040	Total Recoverable	Water	3005A	
240-116465-13	GW-12607-072519-DA-041	Total Recoverable	Water	3005A	
MB 240-393325/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-393325/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-116465-1 MS	GW-12607-072519-DA-029	Total Recoverable	Water	3005A	
240-116465-1 MSD	GW-12607-072519-DA-029	Total Recoverable	Water	3005A	

Prep Batch: 393548

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116465-4	GW-12607-072519-DA-032	Total Recoverable	Water	3005A	
240-116465-6	GW-12607-072519-DA-034	Total Recoverable	Water	3005A	
240-116465-7	GW-12607-072519-DA-035	Total Recoverable	Water	3005A	
MB 240-393548/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-393548/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 394399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116465-1	GW-12607-072519-DA-029	Total Recoverable	Water	6010B	393325
240-116465-2	GW-12607-072519-DA-030	Total Recoverable	Water	6010B	393325
240-116465-3	GW-12607-072519-DA-031	Total Recoverable	Water	6010B	393325
240-116465-4	GW-12607-072519-DA-032	Total Recoverable	Water	6010B	393548
240-116465-5	GW-12607-072519-DA-033	Total Recoverable	Water	6010B	393325
240-116465-6	GW-12607-072519-DA-034	Total Recoverable	Water	6010B	393548
240-116465-7	GW-12607-072519-DA-035	Total Recoverable	Water	6010B	393548
240-116465-8	GW-12607-072519-DA-036	Total Recoverable	Water	6010B	393325
240-116465-9	GW-12607-072519-DA-037	Total Recoverable	Water	6010B	393325
240-116465-10	GW-12607-072519-DA-038	Total Recoverable	Water	6010B	393325
240-116465-11	GW-12607-072519-DA-039	Total Recoverable	Water	6010B	393325
240-116465-12	GW-12607-072519-DA-040	Total Recoverable	Water	6010B	393325
240-116465-13	GW-12607-072519-DA-041	Total Recoverable	Water	6010B	393325
MB 240-393325/1-A	Method Blank	Total Recoverable	Water	6010B	393325
MB 240-393548/1-A	Method Blank	Total Recoverable	Water	6010B	393548
LCS 240-393325/2-A	Lab Control Sample	Total Recoverable	Water	6010B	393325
LCS 240-393548/2-A	Lab Control Sample	Total Recoverable	Water	6010B	393548
240-116465-1 MS	GW-12607-072519-DA-029	Total Recoverable	Water	6010B	393325
240-116465-1 MSD	GW-12607-072519-DA-029	Total Recoverable	Water	6010B	393325

Analysis Batch: 394463

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116465-3	GW-12607-072519-DA-031	Total Recoverable	Water	6010B	393325
240-116465-5	GW-12607-072519-DA-033	Total Recoverable	Water	6010B	393325
240-116465-6	GW-12607-072519-DA-034	Total Recoverable	Water	6010B	393548
240-116465-8	GW-12607-072519-DA-036	Total Recoverable	Water	6010B	393325

Metals (Continued)

Analysis Batch: 394463 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116465-10	GW-12607-072519-DA-038	Total Recoverable	Water	6010B	393325
240-116465-11	GW-12607-072519-DA-039	Total Recoverable	Water	6010B	393325
240-116465-12	GW-12607-072519-DA-040	Total Recoverable	Water	6010B	393325
240-116465-13	GW-12607-072519-DA-041	Total Recoverable	Water	6010B	393325

Analysis Batch: 394639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116465-4	GW-12607-072519-DA-032	Total Recoverable	Water	6010B	393548
240-116465-7	GW-12607-072519-DA-035	Total Recoverable	Water	6010B	393548

General Chemistry

Analysis Batch: 393074

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116465-1	GW-12607-072519-DA-029	Total/NA	Water	7196A	
240-116465-2	GW-12607-072519-DA-030	Total/NA	Water	7196A	
240-116465-3	GW-12607-072519-DA-031	Total/NA	Water	7196A	
240-116465-4	GW-12607-072519-DA-032	Total/NA	Water	7196A	
240-116465-5	GW-12607-072519-DA-033	Total/NA	Water	7196A	
240-116465-6	GW-12607-072519-DA-034	Total/NA	Water	7196A	
240-116465-7	GW-12607-072519-DA-035	Total/NA	Water	7196A	
240-116465-8	GW-12607-072519-DA-036	Total/NA	Water	7196A	
240-116465-9	GW-12607-072519-DA-037	Total/NA	Water	7196A	
240-116465-10	GW-12607-072519-DA-038	Total/NA	Water	7196A	
240-116465-11	GW-12607-072519-DA-039	Total/NA	Water	7196A	
240-116465-12	GW-12607-072519-DA-040	Total/NA	Water	7196A	
240-116465-13	GW-12607-072519-DA-041	Total/NA	Water	7196A	
MB 240-393074/3	Method Blank	Total/NA	Water	7196A	
LCS 240-393074/4	Lab Control Sample	Total/NA	Water	7196A	
240-116465-1 MS	GW-12607-072519-DA-029	Total/NA	Water	7196A	
240-116465-1 MSD	GW-12607-072519-DA-029	Total/NA	Water	7196A	

Analysis Batch: 394646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116465-1	GW-12607-072519-DA-029	Total/NA	Water	7196A	
240-116465-2	GW-12607-072519-DA-030	Total/NA	Water	7196A	
240-116465-3	GW-12607-072519-DA-031	Total/NA	Water	7196A	
240-116465-4	GW-12607-072519-DA-032	Total/NA	Water	7196A	
240-116465-5	GW-12607-072519-DA-033	Total/NA	Water	7196A	
240-116465-6	GW-12607-072519-DA-034	Total/NA	Water	7196A	
240-116465-7	GW-12607-072519-DA-035	Total/NA	Water	7196A	
240-116465-8	GW-12607-072519-DA-036	Total/NA	Water	7196A	
240-116465-9	GW-12607-072519-DA-037	Total/NA	Water	7196A	
240-116465-10	GW-12607-072519-DA-038	Total/NA	Water	7196A	
240-116465-11	GW-12607-072519-DA-039	Total/NA	Water	7196A	
240-116465-12	GW-12607-072519-DA-040	Total/NA	Water	7196A	
240-116465-13	GW-12607-072519-DA-041	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-393325/1-A
Matrix: Water
Analysis Batch: 394399

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 393325

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/29/19 14:00	08/02/19 14:50	1
Manganese	15	U	15		ug/L		07/29/19 14:00	08/02/19 14:50	1
Sodium	5000	U	5000		ug/L		07/29/19 14:00	08/02/19 14:50	1
Nickel	40	U	40		ug/L		07/29/19 14:00	08/02/19 14:50	1

Lab Sample ID: LCS 240-393325/2-A
Matrix: Water
Analysis Batch: 394399

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 393325

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium			1000	1000		ug/L		100	80 - 120		
Manganese			1000	1010		ug/L		101	80 - 120		
Sodium			50000	50200		ug/L		100	80 - 120		
Nickel			1000	1010		ug/L		101	80 - 120		

Lab Sample ID: 240-116465-1 MS
Matrix: Water
Analysis Batch: 394399

Client Sample ID: GW-12607-072519-DA-029
Prep Type: Total Recoverable
Prep Batch: 393325

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium	5.0	U	1000	1010		ug/L		101	75 - 125		
Manganese	56		1000	1070		ug/L		102	75 - 125		
Sodium	61000		50000	112000		ug/L		102	75 - 125		
Nickel	2400		1000	3540		ug/L		109	75 - 125		

Lab Sample ID: 240-116465-1 MSD
Matrix: Water
Analysis Batch: 394399

Client Sample ID: GW-12607-072519-DA-029
Prep Type: Total Recoverable
Prep Batch: 393325

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	5.0	U	1000	1010		ug/L		101	75 - 125	0	20
Manganese	56		1000	1070		ug/L		101	75 - 125	0	20
Sodium	61000		50000	113000		ug/L		105	75 - 125	1	20
Nickel	2400		1000	3600		ug/L		115	75 - 125	2	20

Lab Sample ID: MB 240-393548/1-A
Matrix: Water
Analysis Batch: 394399

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 393548

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/30/19 14:00	08/02/19 18:40	1
Manganese	15	U	15		ug/L		07/30/19 14:00	08/02/19 18:40	1
Sodium	5000	U	5000		ug/L		07/30/19 14:00	08/02/19 18:40	1
Nickel	40	U	40		ug/L		07/30/19 14:00	08/02/19 18:40	1

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 240-393548/2-A
Matrix: Water
Analysis Batch: 394399

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 393548

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	1000	969		ug/L		97	80 - 120
Manganese	1000	1030		ug/L		103	80 - 120
Sodium	50000	51200		ug/L		102	80 - 120
Nickel	1000	991		ug/L		99	80 - 120

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-393074/3
Matrix: Water
Analysis Batch: 393074

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

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10	ug/L			07/26/19 09:42	1

Lab Sample ID: LCS 240-393074/4
Matrix: Water
Analysis Batch: 393074

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	250	271		ug/L		109	80 - 123

Lab Sample ID: 240-116465-1 MS
Matrix: Water
Analysis Batch: 393074

Client Sample ID: GW-12607-072519-DA-029
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium, hexavalent	10	U	250	273		ug/L		109	31 - 151

Lab Sample ID: 240-116465-1 MSD
Matrix: Water
Analysis Batch: 393074

Client Sample ID: GW-12607-072519-DA-029
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	10	U	250	269		ug/L		108	31 - 151	2	20

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-116465-1
Project/Site: 12607, RACER Eckles Rd

Client Sample ID: GW-12607-072519-DA-029
Lab Sample ID: 240-116465-1
Date Collected: 07/25/19 12:05
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 14:59	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393074	07/26/19 11:00	AMT	TAL CAN

Client Sample ID: GW-12607-072519-DA-030
Lab Sample ID: 240-116465-2
Date Collected: 07/25/19 13:05
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 15:20	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393074	07/26/19 11:03	AMT	TAL CAN

Client Sample ID: GW-12607-072519-DA-031
Lab Sample ID: 240-116465-3
Date Collected: 07/25/19 14:15
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		10	394463	08/06/19 03:54	WKD	TAL CAN
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 15:24	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		50	393074	07/26/19 11:04	AMT	TAL CAN

Client Sample ID: GW-12607-072519-DA-032
Lab Sample ID: 240-116465-4
Date Collected: 07/25/19 12:05
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393548	07/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		50	394639	08/07/19 01:55	WKD	TAL CAN
Total Recoverable	Prep	3005A			393548	07/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 19:44	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		50	393074	07/26/19 11:05	AMT	TAL CAN

Lab Chronicle

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

Job ID: 240-116465-1

Client Sample ID: GW-12607-072519-DA-033

Lab Sample ID: 240-116465-5
Date Collected: 07/25/19 13:10
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		10	394463	08/06/19 03:59	WKD	TAL CAN
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 15:29	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393074	07/26/19 11:06	AMT	TAL CAN

Client Sample ID: GW-12607-072519-DA-034

Lab Sample ID: 240-116465-6
Date Collected: 07/25/19 14:00
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393548	07/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		5	394463	08/06/19 03:40	WKD	TAL CAN
Total Recoverable	Prep	3005A			393548	07/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 19:49	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		100	393074	07/26/19 11:07	AMT	TAL CAN

Client Sample ID: GW-12607-072519-DA-035

Lab Sample ID: 240-116465-7
Date Collected: 07/25/19 14:05
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393548	07/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		50	394639	08/07/19 01:59	WKD	TAL CAN
Total Recoverable	Prep	3005A			393548	07/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 20:02	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		100	393074	07/26/19 11:08	AMT	TAL CAN

Client Sample ID: GW-12607-072519-DA-036

Lab Sample ID: 240-116465-8
Date Collected: 07/25/19 15:00
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		5	394463	08/06/19 04:04	WKD	TAL CAN
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 15:42	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393074	07/26/19 11:09	AMT	TAL CAN

Lab Chronicle

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

Job ID: 240-116465-1

Client Sample ID: GW-12607-072519-DA-037

Lab Sample ID: 240-116465-9
Date Collected: 07/25/19 15:30
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 15:46	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		2	393074	07/26/19 11:13	AMT	TAL CAN

Client Sample ID: GW-12607-072519-DA-038

Lab Sample ID: 240-116465-10
Date Collected: 07/25/19 16:30
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		10	394463	08/06/19 04:08	WKD	TAL CAN
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 15:51	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393074	07/26/19 11:14	AMT	TAL CAN

Client Sample ID: GW-12607-072519-DA-039

Lab Sample ID: 240-116465-11
Date Collected: 07/25/19 16:00
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		5	394463	08/06/19 04:13	WKD	TAL CAN
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 15:55	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393074	07/26/19 11:15	AMT	TAL CAN

Client Sample ID: GW-12607-072519-DA-040

Lab Sample ID: 240-116465-12
Date Collected: 07/25/19 16:50
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		5	394463	08/06/19 04:18	WKD	TAL CAN
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 16:00	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393074	07/26/19 11:16	AMT	TAL CAN

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-116465-1
Project/Site: 12607, RACER Eckles Rd

Client Sample ID: GW-12607-072519-DA-041
Lab Sample ID: 240-116465-13

Date Collected: 07/25/19 17:40
Matrix: Water
Date Received: 07/26/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		10	394463	08/06/19 04:31	WKD	TAL CAN
Total Recoverable	Prep	3005A			393325	07/29/19 14:00	SEM	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 16:04	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393074	07/26/19 11:17	AMT	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: 240-116465-1
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	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State		PH-0590	12-31-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-20
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kansas	NELAP		E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State		KY98016	12-31-19
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota	NELAP		OH00048	12-31-19
Minnesota (Petrofund)	State Program	1	3506	07-31-21
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State		CL0024	06-05-21
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-19-11	08-31-20
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

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

MICHIGAN
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4.4/4.5

Chain of Custody Record 313661

T.A. # 24005880

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

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

Client Contact	Project Manager: Chris Meincke	Site Contact: S. Kippen	Date: 7-25-19	COC No:
Company Name: GHD	Tel/Fax: 248 935-7346	Lab Contact: J. Abston	Carrier: FedEx	1 of 2 COCs
Address: 26850 Haggerty Rd.	Analysis Turnaround Time			Sampler: SK / DS
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			Job / SDG No.:
Site: Livonia, M.I.	☐ 2 days			
PO# 550W: 12607A-T06419-01	☐ 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)	Hex Chromium 218.7	200.7 Metals	Sample Specific Notes:
GW-12607-072519-DA-029	7-25-19	12:05	G	GW	4		X	X	X	
-030		13:05			2			X	X	
-031		14:15			2			X	X	
-032		12:05			2			X	X	
-033		13:10			2			X	X	
-034		14:00			2			X	X	
-035		14:05			2			X	X	
-036		15:00			2			X	X	
-037		15:30			2			X	X	
-038		16:30			2			X	X	
-039		16:00			2			X	X	
-040		16:50			2			X	X	

240-116455 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:
[signature]	GHD 7/25/19	18:45	[signature]	FEA	7-26-19 955
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

8/8/2019

MICHIGAN 190

Chain of Custody Record 313654

T.A.# 24005880

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

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

Client Contact	Project Manager: C. Meincke	Site Contact: S. Kippen	Date: 7.25.19	COC No:
Company Name: GHD	Tel/Fax: –	Lab Contact: J. Abston	Carrier: Fed Ex	2 of 2 COCs
Address: 26850 Haggerty Rd	Analysis Turnaround Time			Sampler: SK / DS
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			
Site: Livonia, M.I.	☐ 2 days			Job / SDG No.:
PO# 5500W: 12607A-T06419.01	☐ 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)	Hex Chromium 200.7 Metals		Sample Specific Notes:
GW-12607-072519-JDA-041	7.25.19	17:40	G	GW	2			X	X	
					SK					

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 7.25.19	18:45	[signature]	ETA	7-26-19 935
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

8/8/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 116465**
Canton Facility

Client GHD Site Name _____ Cooler unpacked by: Ryan Crikley

Cooler Received on 7-26-19 Opened on 7-26-19 955

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-8 (CF **+0.1** °C) Observed Cooler Temp. 4.4 °C Corrected Cooler Temp. 4.5 °C
   IR GUN #36 (CF **+0.6**°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 be reconciled with the COC? (Yes) No
9. Were correct bottle(s) used for the test(s) indicated? (Yes) No
10. Sufficient quantity received to perform indicated analyses? (Yes) No
11. Are these work share samples? Yes (No)
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes (No) NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? Yes (No)
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No (NA)
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____ Yes (No)
16. 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 _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: RC

18. 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)

19. SAMPLE PRESERVATION

* NOTE- -31, -33, and -38 need Further preserved in lab.

Sample(s) -31 -32 -33 -34 -35 and -38 (250 Nitric plastics) were further preserved in the laboratory.
Time preserved: 1045 7-26-19 Preservative(s) added/Lot number(s): 216908

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	Preservative Added (mls)	Lot #
GW-12607-072519-DA-029	240-116465-C-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-029	240-116465-D-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-030	240-116465-B-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-031	240-116465-B-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-032	240-116465-B-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-033	240-116465-B-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-034	240-116465-B-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-035	240-116465-B-7	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-036	240-116465-B-8	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-037	240-116465-B-9	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-038	240-116465-B-10	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-039	240-116465-B-11	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-040	240-116465-B-12	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072519-DA-041	240-116465-B-13	Plastic 250ml - with Nitric Acid	<2	_____	_____

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

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

Laboratory Job ID: 240-116571-1
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:
8/6/2019 2:23:33 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

LINKS

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Visit us at: www.testamericainc.com

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: 240-116571-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-116571-1

Comments
No additional comments.

Receipt
The samples were received on 7/29/2019 9:00 AM; the samples arrived in good condition. The temperature of the cooler at receipt was 26.5º C. The lab was instructed to proceed with analysis.

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

General Chemistry
Method(s) 7196A: The following samples were received past the 24 hour holding time: GW-12607-072619-DA-042 (240-116571-1), GW-12607-072619-DA-043 (240-116571-2), GW-12607-072619-DA-044 (240-116571-3) and GW-12607-072619-DA-045 (240-116571-4).

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, RACER Eckles Rd

Job ID: 240-116571-1

Qualifiers

Metals

Qualifier	Qualifier Description
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.
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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

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

Job ID: 240-116571-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-116571-1	GW-12607-072619-DA-042	Water	07/26/19 12:20	07/29/19 09:00	
240-116571-2	GW-12607-072619-DA-043	Water	07/26/19 13:15	07/29/19 09:00	
240-116571-3	GW-12607-072619-DA-044	Water	07/26/19 13:20	07/29/19 09:00	
240-116571-4	GW-12607-072619-DA-045	Water	07/26/19 00:00	07/29/19 09:00	

Detection Summary

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

Job ID: 240-116571-1

Client Sample ID: GW-12607-072619-DA-042 — Lab Sample ID: 240-116571-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	330		15		ug/L	1		6010B	Total Recoverable
Sodium	230000		5000		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072619-DA-043 — Lab Sample ID: 240-116571-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	80		15		ug/L	1		6010B	Total Recoverable
Sodium	88000		5000		ug/L	1		6010B	Total Recoverable
Nickel	1900		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072619-DA-044 — Lab Sample ID: 240-116571-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	83		15		ug/L	1		6010B	Total Recoverable
Sodium	92000		5000		ug/L	1		6010B	Total Recoverable
Nickel	1900		40		ug/L	1		6010B	Total Recoverable

Client Sample ID: GW-12607-072619-DA-045 — Lab Sample ID: 240-116571-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Manganese	140		15		ug/L	1		6010B	Total Recoverable
Sodium	250000		5000		ug/L	1		6010B	Total Recoverable
Nickel	210		40		ug/L	1		6010B	Total Recoverable

This Detection Summary does not include radiochemical test results.

Method Summary

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

Job ID: 240-116571-1

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, RACER Eckles Rd

Job ID: 240-116571-1

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

Client Sample ID: GW-12607-072619-DA-042
Date Collected: 07/26/19 12:20
Date Received: 07/29/19 09:00

Lab Sample ID: 240-116571-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/30/19 14:00	08/02/19 20:06	1
Manganese	**330**		15		ug/L		07/30/19 14:00	08/02/19 20:06	1
Sodium	**230000**		5000		ug/L		07/30/19 14:00	08/02/19 20:06	1
Nickel	40	U	40		ug/L		07/30/19 14:00	08/02/19 20:06	1

Client Sample Results

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

Job ID: 240-116571-1

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

Client Sample ID: GW-12607-072619-DA-043
Date Collected: 07/26/19 13:15
Date Received: 07/29/19 09:00

Lab Sample ID: 240-116571-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/30/19 14:00	08/02/19 20:10	1
Manganese	**80**		15		ug/L		07/30/19 14:00	08/02/19 20:10	1
Sodium	**88000**		5000		ug/L		07/30/19 14:00	08/02/19 20:10	1
Nickel	**1900**		40		ug/L		07/30/19 14:00	08/02/19 20:10	1

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

Job ID: 240-116571-1

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

Client Sample ID: GW-12607-072619-DA-044
Date Collected: 07/26/19 13:20
Date Received: 07/29/19 09:00

Lab Sample ID: 240-116571-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/30/19 14:00	08/02/19 20:15	1
Manganese	**83**		15		ug/L		07/30/19 14:00	08/02/19 20:15	1
Sodium	**92000**		5000		ug/L		07/30/19 14:00	08/02/19 20:15	1
Nickel	**1900**		40		ug/L		07/30/19 14:00	08/02/19 20:15	1

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

Job ID: 240-116571-1

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

Client Sample ID: GW-12607-072619-DA-045
Date Collected: 07/26/19 00:00
Date Received: 07/29/19 09:00

Lab Sample ID: 240-116571-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/30/19 14:00	08/02/19 20:19	1
Manganese	**140**		15		ug/L		07/30/19 14:00	08/02/19 20:19	1
Sodium	**250000**		5000		ug/L		07/30/19 14:00	08/02/19 20:19	1
Nickel	**210**		40		ug/L		07/30/19 14:00	08/02/19 20:19	1

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

Job ID: 240-116571-1

General Chemistry

Client Sample ID: GW-12607-072619-DA-042
Date Collected: 07/26/19 12:20
Date Received: 07/29/19 09:00

Lab Sample ID: 240-116571-1
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U H H3	10		ug/L			07/29/19 12:24	1
Chromium, trivalent	10	U	10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116571-1

General Chemistry

Client Sample ID: GW-12607-072619-DA-043
Date Collected: 07/26/19 13:15
Date Received: 07/29/19 09:00

Lab Sample ID: 240-116571-2
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U H H3	10		ug/L			07/29/19 12:26	1
Chromium, trivalent	10	U	10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116571-1

General Chemistry

Client Sample ID: GW-12607-072619-DA-044
Date Collected: 07/26/19 13:20
Date Received: 07/29/19 09:00

Lab Sample ID: 240-116571-3
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U H H3	10		ug/L			07/29/19 12:27	1
Chromium, trivalent	10	U	10		ug/L			08/06/19 12:54	1

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

Job ID: 240-116571-1

General Chemistry

Client Sample ID: GW-12607-072619-DA-045
Date Collected: 07/26/19 00:00
Date Received: 07/29/19 09:00

Lab Sample ID: 240-116571-4
Matrix: Water

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U H H3	10		ug/L			07/29/19 12:28	1
Chromium, trivalent	10	U	10		ug/L			08/06/19 12:54	1

QC Association Summary

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

Job ID: 240-116571-1

Metals

Prep Batch: 393548

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116571-1	GW-12607-072619-DA-042	Total Recoverable	Water	3005A	
240-116571-2	GW-12607-072619-DA-043	Total Recoverable	Water	3005A	
240-116571-3	GW-12607-072619-DA-044	Total Recoverable	Water	3005A	
240-116571-4	GW-12607-072619-DA-045	Total Recoverable	Water	3005A	
MB 240-393548/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-393548/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 394399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116571-1	GW-12607-072619-DA-042	Total Recoverable	Water	6010B	393548
240-116571-2	GW-12607-072619-DA-043	Total Recoverable	Water	6010B	393548
240-116571-3	GW-12607-072619-DA-044	Total Recoverable	Water	6010B	393548
240-116571-4	GW-12607-072619-DA-045	Total Recoverable	Water	6010B	393548
MB 240-393548/1-A	Method Blank	Total Recoverable	Water	6010B	393548
LCS 240-393548/2-A	Lab Control Sample	Total Recoverable	Water	6010B	393548

General Chemistry

Analysis Batch: 393384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116571-1	GW-12607-072619-DA-042	Total/NA	Water	7196A	
240-116571-2	GW-12607-072619-DA-043	Total/NA	Water	7196A	
240-116571-3	GW-12607-072619-DA-044	Total/NA	Water	7196A	
240-116571-4	GW-12607-072619-DA-045	Total/NA	Water	7196A	
MB 240-393384/3	Method Blank	Total/NA	Water	7196A	
LCS 240-393384/4	Lab Control Sample	Total/NA	Water	7196A	
240-116571-1 MS	GW-12607-072619-DA-042	Total/NA	Water	7196A	
240-116571-1 MSD	GW-12607-072619-DA-042	Total/NA	Water	7196A	

Analysis Batch: 394646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-116571-1	GW-12607-072619-DA-042	Total/NA	Water	7196A	
240-116571-2	GW-12607-072619-DA-043	Total/NA	Water	7196A	
240-116571-3	GW-12607-072619-DA-044	Total/NA	Water	7196A	
240-116571-4	GW-12607-072619-DA-045	Total/NA	Water	7196A	

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-393548/1-A
Matrix: Water
Analysis Batch: 394399

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 393548

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium	5.0	U	5.0		ug/L		07/30/19 14:00	08/02/19 18:40	1
Manganese	15	U	15		ug/L		07/30/19 14:00	08/02/19 18:40	1
Sodium	5000	U	5000		ug/L		07/30/19 14:00	08/02/19 18:40	1
Nickel	40	U	40		ug/L		07/30/19 14:00	08/02/19 18:40	1

Lab Sample ID: LCS 240-393548/2-A
Matrix: Water
Analysis Batch: 394399

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 393548

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium			1000	969		ug/L		97	80 - 120		
Manganese			1000	1030		ug/L		103	80 - 120		
Sodium			50000	51200		ug/L		102	80 - 120		
Nickel			1000	991		ug/L		99	80 - 120		

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 240-393384/3
Matrix: Water
Analysis Batch: 393384

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

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chromium, hexavalent	10	U	10		ug/L			07/29/19 12:23	1

Lab Sample ID: LCS 240-393384/4
Matrix: Water
Analysis Batch: 393384

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium, hexavalent			250	262		ug/L		105	80 - 123		

Lab Sample ID: 240-116571-1 MS
Matrix: Water
Analysis Batch: 393384

Client Sample ID: GW-12607-072619-DA-042
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium, hexavalent	10	U H H3	250	261		ug/L		104	31 - 151		

Lab Sample ID: 240-116571-1 MSD
Matrix: Water
Analysis Batch: 393384

Client Sample ID: GW-12607-072619-DA-042
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium, hexavalent	10	U H H3	250	258		ug/L		103	31 - 151	1	20

Lab Chronicle

Client: GHD Services Inc.
Job ID: 240-116571-1
Project/Site: 12607, RACER Eckles Rd

Client Sample ID: GW-12607-072619-DA-042
Lab Sample ID: 240-116571-1
Date Collected: 07/26/19 12:20
Matrix: Water
Date Received: 07/29/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393548	07/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 20:06	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393384	07/29/19 12:24	BLW	TAL CAN

Client Sample ID: GW-12607-072619-DA-043
Lab Sample ID: 240-116571-2
Date Collected: 07/26/19 13:15
Matrix: Water
Date Received: 07/29/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393548	07/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 20:10	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393384	07/29/19 12:26	BLW	TAL CAN

Client Sample ID: GW-12607-072619-DA-044
Lab Sample ID: 240-116571-3
Date Collected: 07/26/19 13:20
Matrix: Water
Date Received: 07/29/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393548	07/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 20:15	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393384	07/29/19 12:27	BLW	TAL CAN

Client Sample ID: GW-12607-072619-DA-045
Lab Sample ID: 240-116571-4
Date Collected: 07/26/19 00:00
Matrix: Water
Date Received: 07/29/19 09:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			393548	07/30/19 14:00	MRL	TAL CAN
Total Recoverable	Analysis	6010B		1	394399	08/02/19 20:19	RKT	TAL CAN
Total/NA	Analysis	7196A		1	394646	08/06/19 12:54	KLC	TAL CAN
Total/NA	Analysis	7196A		1	393384	07/29/19 12:28	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: 240-116571-1
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	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State		PH-0590	12-31-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-20
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kansas	NELAP		E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota	NELAP		OH00048	12-31-19
Minnesota (Petrofund)	State Program	1	3506	07-31-21
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State		CL0024	06-05-21
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

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

MICHIGAN 190

26.4/26.5

Chain of Custody Record

313657

T.A. 24005880

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

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

Client Contact	Project Manager: C. Meincke	Site Contact: S. Kippen	Date: 7-26-19	COC No:
Company Name: GHD	Tel/Fax: (248) 935-7346	Lab Contact: J. Abston	Carrier: Fed Ex	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			Lab Sampling:
Project Name: Eckles Rd Racer	☐ 1 week			
Site: Livonia, M.I.	☐ 2 days			Job / SDG No.:
PO# SOW: 12607A-T0619-01	☐ 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)	HEX-chrome 200.7 Metals		Sample Specific Notes:
GW-12607-072619-DA-042	7-26-19	12:20	G	GW	2			X	X	
043	7-26-19	13:15			2			X	X	
044		13:20			2			X	X	
045					2			X	X	
										SK

240-116571 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: END of Sampling Event

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	7-26-19 15:20	[signature]	TA	7-29a 900
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

8/6/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 116571

Client GHS Site Name

Cooler Received on 7-29-19 Opened on 7-29-19

Cooler unpacked by:

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-8 (CF +0.1 °C) Observed Cooler Temp. 26.4 °C Corrected Cooler Temp. 26.5 °C
   IR GUN #36 (CF +0.6°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 be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	Yes	(No)
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	(Yes)	No NA pH Strip Lot# HC984738
13. Were VOAs on the COC?	Yes	(No)
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No (NA)
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	(No)
16. 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 _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: ~~RC~~ NS

Hightemp insufficient coolant

18. 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)

19. 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	Preservative Added (mls)	Lot #
GW-12607-072619-DA-042	240-116571-B-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072619-DA-043	240-116571-B-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072619-DA-044	240-116571-B-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-12607-072619-DA-045	240-116571-B-4	Plastic 250ml - with Nitric Acid	<2	_____	_____

Attachment C
USEPA Regional Laboratory
Laboratory Analytical Reports

Attachment C.1
USEPA Regional Laboratory
Laboratory Analytical Reports – Soil

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5 CHICAGO REGIONAL LABORATORY

536 SOUTH CLARK STREET

CHICAGO, ILLINOIS 60605

Date: **7/31/2019**

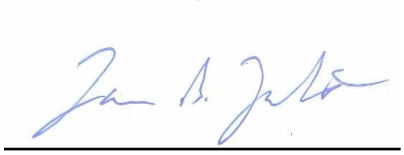
Subject: **Review of Region 5 Data for RACER Livonia**

To: **RRB, LCD, U.S. EPA Region 5**
77 W. Jackson Boulevard
Chicago, IL 60604

From: **Lawrence Zintek, Chemist**
US EPA Region 5 LSASD Analytical Service Branch

The data transmitted under this cover memo successfully passed CRL's data review procedures as documented in the current Quality Management Plan and applicable Standard Operating Procedures. In accordance with the EPA QA/G-8 *Guidance on Environmental Data Verification and Data Validation* and the U.S. EPA Region 5 RMD QMP, CRL performs data verification on all the data generated internally. CRL does not perform data validation or quality assessment procedures.

This report was reviewed and the information provided herein accurately represents the analysis performed.



Please contact the analyst with any technical report issues, Amanda Wroble at (312)-353-0375 for sample project concerns, and Sylvia Griffin at (312)-353-9073 with data transmittal questions. Thank you.

Attached are Results for: **RACER Livonia**

Analyses included in this report:

OSRTI PFC

Report Name: 1906011 OSRTI PFC FINAL Jul 31 19 1054

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

ANALYSIS CASE NARRATIVE

General Information

A total of twelve (12) soil samples were received for PFAS analysis on June 25, 2019. The holding time of 28 days was met for all samples.

The designated analyst for these samples, Larry Zintek, can be reached at (312) 886-2925.

Sample Analysis and Results

Sample preparation and analysis occurred via the Analytical Services Branch (ASB) standard operating procedure (ASB SOP) OM022 Ver. 1 with deviations outlined in pen-and-ink change #11018 (revised surrogate list) and #15482 (target analyte 6:2 FTS and labeled surrogate currently not reported by this SOP).

The data reported herein meets the requirements referenced in the analytical SOP and any laboratory specifications stated in the "Memorandum Titled- "Perfluorinated Compound Soil Split Sampling at RACER Eckles Road, Livonia, Michigan" dated June 18, 2019 with the exceptions noted in the Quality Control section below. See the report for detailed sample results. Data are properly qualified.

Quality Control

In this data report all samples include pertinent recoveries, RPDs, RSD, etc. as well as the limit ranges in order to understand if the results will be biased high or low. All Quality Control (QC) audits were within the limits specified in the method or QAPP for the analytes or did not result in qualification of the data except for the following. No reporting limits were raised or data flagged due to Method Blank Contamination since some PFAS compounds have been found in Ottawa Sand, which also affects the Method Reporting Limit Recoveries and Blank Spike Recoveries. Data are properly qualified.

Relative Percent Difference (RPD)

RPDs are only relevant if the analyte is detected above the reporting limit.

Qualitative Identification

For any analyte, when the ion ratio limit of ± 30% is exceeded, the affected data are qualified 'I'. This is primarily the case at low concentrations, the confirmatory ion is usually less sensitive and therefore the ion ratio may not pass. In this data package, PFOS and/or PFHxS were qualified "I" in a few instances. This is due to

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

perceived weathering in the sample where the possible branched portion is in much higher concentration than the linear portion causing the ion ratio criteria to fail. This data for PFOS and PFHxS should be used with caution because the ion ratio failed.

Method Blanks(s)/ Reagent Blank(s)

PFDA was found slightly above the reporting limit in sample B19G001-BLK1. (Probably due to Ottawa sand)

Method Reporting Limit Check Samples

Sample B19G001-MRL2 had high recovery for PFDA. (Probably due to Ottawa sand)

Surrogate Recovery

M2PFTreA surrogate recovery was biased low in samples 1906011-05, -10 and -12.

Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

WORK ORDER **Printed: 6/26/2019 10:50:25AM**

1906011

US EPA Region 5 Chicago Regional Laboratory

Client: **RRB, LCD, U.S. EPA Region 5** **Project Manager:** **Angela M Ockrassa**
Project: **RACER Livonia** **Project Number:** **[none]**

Report To:

Zachary Sasnow | 77 W. Jackson Boulevard | Phone: (312) 886-0258
RRB, LCD, U.S. EPA Region 5 | Chicago, IL 60604 | Fax:

Date Due: Aug-09-19 15:00 (45 day TAT)
Received By: Robert Snyder Date Received: Jun-25-19 10:00
Logged In By: Robert Snyder Date Logged In: Jun-25-19 12:13

Samples Received at: 1.3 °C
Sample tags/labels **Yes**
Seals Intact **Yes**
Received on ice **Yes**
Paperwork Included **Yes**

Work Order Comments:

Sample ID: 1906011-01 **Sampled:** Jun-20-19 10:05 **Matrix:** Soil
Sample Name: S-12607-062019-SK-001 **Sample Location/Comments:**
Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 10:05	
Total Dry Solids 105C	7	Jun-27-19 10:05	

Sample ID: 1906011-02 **Sampled:** Jun-20-19 10:10 **Matrix:** Soil
Sample Name: S-12607-062019-SK-002 **Sample Location/Comments:**
Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 10:10	
Total Dry Solids 105C	7	Jun-27-19 10:10	

Sample ID: 1906011-03 **Sampled:** Jun-20-19 10:20 **Matrix:** Soil
Sample Name: S-12607-062019-SK-003 **Sample Location/Comments:**
Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 10:20	
Total Dry Solids 105C	7	Jun-27-19 10:20	

1906011

US EPA Region 5 Chicago Regional Laboratory

Client: RRB, LCD, U.S. EPA Region 5
Project: RACER Livonia
Project Manager: Angela M Ockrassa
Project Number: [none]

Sample ID: 1906011-04 **Sampled:** Jun-20-19 10:25 **Matrix:** Soil

Sample Name: S-12607-062019-SK-004 **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 10:25	
Total Dry Solids 105C	7	Jun-27-19 10:25	

Sample ID: 1906011-05 **Sampled:** Jun-20-19 10:40 **Matrix:** Soil

Sample Name: S-12607-062019-SK-005 **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 10:40	
Total Dry Solids 105C	7	Jun-27-19 10:40	

Sample ID: 1906011-06 **Sampled:** Jun-20-19 13:20 **Matrix:** Soil

Sample Name: S-12607-062019-SK-006 **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 13:20	
Total Dry Solids 105C	7	Jun-27-19 13:20	

Sample ID: 1906011-07 **Sampled:** Jun-20-19 13:25 **Matrix:** Soil

Sample Name: S-12607-062019-SK-007 **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 13:25	
Total Dry Solids 105C	7	Jun-27-19 13:25	

Sample ID: 1906011-08 **Sampled:** Jun-20-19 13:35 **Matrix:** Soil

Sample Name: S-12607-062019-SK-008 **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 13:35	

1906011

US EPA Region 5 Chicago Regional Laboratory

Client: RRB, LCD, U.S. EPA Region 5
Project: RACER Livonia
Project Manager: Angela M Ockrassa
Project Number: [none]

Sample ID: 1906011-08 **Sampled:** Jun-20-19 13:35 **Matrix:** Soil

Sample Name: S-12607-062019-SK-008 **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
Total Dry Solids 105C	7	Jun-27-19 13:35	

Sample ID: 1906011-09 **Sampled:** Jun-20-19 13:45 **Matrix:** Soil

Sample Name: S-12607-062019-SK-009 **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 13:45	
Total Dry Solids 105C	7	Jun-27-19 13:45	

Sample ID: 1906011-10 **Sampled:** Jun-20-19 14:00 **Matrix:** Soil

Sample Name: S-12607-062019-SK-010 **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 14:00	
Total Dry Solids 105C	7	Jun-27-19 14:00	

Sample ID: 1906011-11 **Sampled:** Jun-20-19 14:05 **Matrix:** Soil

Sample Name: S-12607-062019-SK-011 **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 14:05	
Total Dry Solids 105C	7	Jun-27-19 14:05	

Sample ID: 1906011-12 **Sampled:** Jun-20-19 14:40 **Matrix:** Soil

Sample Name: S-12607-062019-SK-012 **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Jul-18-19 14:40	
Total Dry Solids 105C	7	Jun-27-19 14:40	

1906011

US EPA Region 5 Chicago Regional Laboratory

Client:	**RRB, LCD, U.S. EPA Region 5**	**Project Manager:**	**Angela M Ockrassa**
Project:	**RACER Livonia**	**Project Number:**	**[none]**

REVIEWED
By Amanda Wroble at 10:51 am, Jun 26, 2019

Reviewed By Date

Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC

US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-001 (1906011-01) **Matrix: Soil** **Sampled: Jun-20-19 10:05** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			110	ng/kg dry	1	B19G001	Jul-02-19	Jul-02-19
perfluoropentanoate	**U**			110	"	"	"	"	"
perfluorohexanoate	**U**			44.2	"	"	"	"	"
perfluoroheptanoate	**U**			22.1	"	"	"	"	"
perfluorooctanoate	**U**			22.1	"	"	"	"	"
perfluorononanoate	**U**			22.1	"	"	"	"	"
perfluorodecanoate	**U**			22.1	"	"	"	"	"
perfluoroundecanoate	**U**			22.1	"	"	"	"	"
perfluorododecanoate	**U**			22.1	"	"	"	"	"
perfluorotridecanoate	**U**			22.1	"	"	"	"	"
perfluorotetradecanoate	**U**			22.1	"	"	"	"	"
perfluorobutyl sulfonate	**U**			22.1	"	"	"	"	"
perfluorohexyl sulfonate	**U**			22.1	"	"	"	"	"
perfluorooctyl sulfonate	**U**			26.5	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			22.1	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			22.1	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			22.1	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			22.1	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			22.1	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			22.1	"	"	"	"	"
N-MeFOSAA	**U**			22.1	"	"	"	"	"
N-EtFOSAA	**U**			22.1	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			22.1	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	281	*79.6%*	*70-130*	"	"	"
D3-N-MeFOSAA	272	*77.0%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	240	*70.1%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	234	*70.7%*	*70-130*	"	"	"
M9PFNA	272	*77.0%*	*70-130*	"	"	"
M8PFOSA	273	*77.2%*	*70-130*	"	"	"
M8PFOS	240	*71.0%*	*70-130*	"	"	"

Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC

US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-001 (1906011-01) **Matrix: Soil** **Sampled: Jun-20-19 10:05** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	273			*77.3%*		*70-130*	*B19G001*	*Jul-02-19*	*Jul-02-19*
M7PFUnA	269			*76.2%*		*70-130*	"	"	"
M6PFDA	273			*77.1%*		*70-130*	"	"	"
M5PFPeA	255			*72.1%*		*70-130*	"	"	"
M5PFHxA	276			*78.2%*		*70-130*	"	"	"
M4PFHpA	280			*79.2%*		*70-130*	"	"	"
M3PFHxS	244			*73.1%*		*70-130*	"	"	"
M3PFBS	244			*74.5%*		*70-130*	"	"	"
M2PFTreA	251			*71.2%*		*70-130*	"	"	"
MPFDoA	266			*75.3%*		*70-130*	"	"	"
MPFBA	293			*82.9%*		*70-130*	"	"	"

S-12607-062019-SK-002 (1906011-02) **Matrix: Soil** **Sampled: Jun-20-19 10:10** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			127	ng/kg dry	1	B19G001	Jul-02-19	Jul-02-19
perfluoropentanoate	**U**			127	"	"	"	"	"
perfluorohexanoate	**U**			50.9	"	"	"	"	"
perfluoroheptanoate	**U**			25.5	"	"	"	"	"
perfluorooctanoate	**U**			25.5	"	"	"	"	"
perfluorononanoate	**U**			25.5	"	"	"	"	"
perfluorodecanoate	**29.7**			25.5	"	"	"	"	"
perfluoroundecanoate	**U**			25.5	"	"	"	"	"
perfluorododecanoate	**U**			25.5	"	"	"	"	"
perfluorotridecanoate	**U**			25.5	"	"	"	"	"
perfluorotetradecanoate	**U**			25.5	"	"	"	"	"
perfluorobutyl sulfonate	**U**			25.5	"	"	"	"	"
perfluorohexyl sulfonate	**U**			25.5	"	"	"	"	"
perfluorooctyl sulfonate	**34.0**			30.5	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			25.5	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			25.5	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			25.5	"	"	"	"	"

Environmental Protection Agency Region 5
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-002 (1906011-02) **Matrix: Soil** **Sampled: Jun-20-19 10:10** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			25.5	ng/kg dry	1	B19G001	Jul-02-19	Jul-02-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			25.5	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			25.5	"	"	"	"	"
N-MeFOSAA	**U**			25.5	"	"	"	"	"
N-EtFOSAA	**U**			25.5	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			25.5	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	336	*82.5%*	*70-130*	"	"	"
D3-N-MeFOSAA	348	*85.5%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	284	*72.0%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	293	*77.1%*	*70-130*	"	"	"
M9PFNA	335	*82.2%*	*70-130*	"	"	"
M8PFOSA	308	*75.7%*	*70-130*	"	"	"
M8PFOS	298	*76.4%*	*70-130*	"	"	"
M8PFOA	328	*80.4%*	*70-130*	"	"	"
M7PFUnA	320	*78.6%*	*70-130*	"	"	"
M6PFDA	329	*80.7%*	*70-130*	"	"	"
M5PFPeA	329	*80.9%*	*70-130*	"	"	"
M5PFHxA	332	*81.5%*	*70-130*	"	"	"
M4PFHpA	337	*82.8%*	*70-130*	"	"	"
M3PFHxS	306	*79.5%*	*70-130*	"	"	"
M3PFBS	294	*77.8%*	*70-130*	"	"	"
M2PFTreA	314	*77.0%*	*70-130*	"	"	"
MPFDoA	318	*78.1%*	*70-130*	"	"	"
MPFBA	356	*87.3%*	*70-130*	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-003 (1906011-03) **Matrix: Soil** **Sampled: Jun-20-19 10:20** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			101	ng/kg dry	1	B19G001	Jul-02-19	Jul-02-19
perfluoropentanoate	**U**			101	"	"	"	"	"
perfluorohexanoate	**U**			40.2	"	"	"	"	"
perfluoroheptanoate	**U**			20.1	"	"	"	"	"
perfluorooctanoate	**U**			20.1	"	"	"	"	"
perfluorononanoate	**U**			20.1	"	"	"	"	"
perfluorodecanoate	**U**			20.1	"	"	"	"	"
perfluoroundecanoate	**U**			20.1	"	"	"	"	"
perfluorododecanoate	**U**			20.1	"	"	"	"	"
perfluorotridecanoate	**U**			20.1	"	"	"	"	"
perfluorotetradecanoate	**U**			20.1	"	"	"	"	"
perfluorobutyl sulfonate	**U**			20.1	"	"	"	"	"
perfluorohexyl sulfonate	**U**			20.1	"	"	"	"	"
perfluorooctyl sulfonate	**67.6**			24.1	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			20.1	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			20.1	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			20.1	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			20.1	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			20.1	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			20.1	"	"	"	"	"
N-MeFOSAA	**U**			20.1	"	"	"	"	"
N-EtFOSAA	**U**			20.1	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			20.1	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	271	*84.3%*	*70-130*	"	"	"
D3-N-MeFOSAA	271	*84.3%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	239	*76.6%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	240	*79.6%*	*70-130*	"	"	"
M9PFNA	271	*84.2%*	*70-130*	"	"	"
M8PFOSA	249	*77.5%*	*70-130*	"	"	"
M8PFOS	239	*77.6%*	*70-130*	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-003 (1906011-03) **Matrix: Soil** **Sampled: Jun-20-19 10:20** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	265			*82.2%*		*70-130*	*B19G001*	*Jul-02-19*	*Jul-02-19*
M7PFUnA	257			*79.8%*		*70-130*	"	"	"
M6PFDA	258			*80.2%*		*70-130*	"	"	"
M5PFPeA	261			*81.0%*		*70-130*	"	"	"
M5PFHxA	266			*82.6%*		*70-130*	"	"	"
M4PFHpA	280			*87.0%*		*70-130*	"	"	"
M3PFHxS	247			*81.0%*		*70-130*	"	"	"
M3PFBS	238			*79.4%*		*70-130*	"	"	"
M2PFTreA	240			*74.4%*		*70-130*	"	"	"
MPFDoA	258			*80.1%*		*70-130*	"	"	"
MPFBA	291			*90.4%*		*70-130*	"	"	"

S-12607-062019-SK-004 (1906011-04) **Matrix: Soil** **Sampled: Jun-20-19 10:25** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			102	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
perfluoropentanoate	**U**			102	"	"	"	"	"
perfluorohexanoate	**U**			40.8	"	"	"	"	"
perfluoroheptanoate	**U**			20.4	"	"	"	"	"
perfluorooctanoate	**U**			20.4	"	"	"	"	"
perfluorononanoate	**U**			20.4	"	"	"	"	"
perfluorodecanoate	**U**			20.4	"	"	"	"	"
perfluoroundecanoate	**U**			20.4	"	"	"	"	"
perfluorododecanoate	**U**			20.4	"	"	"	"	"
perfluorotridecanoate	**U**			20.4	"	"	"	"	"
perfluorotetradecanoate	**U**			20.4	"	"	"	"	"
perfluorobutyl sulfonate	**70.8**			20.4	"	"	"	"	"
perfluorohexyl sulfonate	**U**			20.4	"	"	"	"	"
perfluorooctyl sulfonate	**93.3**	I		24.5	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			20.4	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			20.4	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			20.4	"	"	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-004 (1906011-04) **Matrix: Soil** **Sampled: Jun-20-19 10:25** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			20.4	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			20.4	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			20.4	"	"	"	"	"
N-MeFOSAA	**U**			20.4	"	"	"	"	"
N-EtFOSAA	**U**			20.4	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			20.4	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	280	*85.7%*	*70-130*	"	"	"
D3-N-MeFOSAA	277	*84.7%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	230	*72.7%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	229	*74.9%*	*70-130*	"	"	"
M9PFNA	267	*81.9%*	*70-130*	"	"	"
M8PFOSA	256	*78.5%*	*70-130*	"	"	"
M8PFOS	261	*83.6%*	*70-130*	"	"	"
M8PFOA	268	*82.0%*	*70-130*	"	"	"
M7PFUnA	262	*80.2%*	*70-130*	"	"	"
M6PFDA	265	*81.1%*	*70-130*	"	"	"
M5PFPeA	255	*78.0%*	*70-130*	"	"	"
M5PFHxA	268	*82.0%*	*70-130*	"	"	"
M4PFHpA	272	*83.2%*	*70-130*	"	"	"
M3PFHxS	241	*77.9%*	*70-130*	"	"	"
M3PFBS	232	*76.4%*	*70-130*	"	"	"
M2PFTreA	258	*78.9%*	*70-130*	"	"	"
MPFDoA	267	*81.6%*	*70-130*	"	"	"
MPFBA	285	*87.3%*	*70-130*	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-005 (1906011-05) **Matrix: Soil** **Sampled: Jun-20-19 10:40** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			89.6	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
perfluoropentanoate	**U**			89.6	"	"	"	"	"
perfluorohexanoate	**U**			35.9	"	"	"	"	"
perfluoroheptanoate	**U**			17.9	"	"	"	"	"
perfluorooctanoate	**U**			17.9	"	"	"	"	"
perfluorononanoate	**U**			17.9	"	"	"	"	"
perfluorodecanoate	**U**			17.9	"	"	"	"	"
perfluoroundecanoate	**U**			17.9	"	"	"	"	"
perfluorododecanoate	**U**			17.9	"	"	"	"	"
perfluorotridecanoate	**U**			17.9	"	"	"	"	"
perfluorotetradecanoate	**U**	J		17.9	"	"	"	"	"
perfluorobutyl sulfonate	**U**			17.9	"	"	"	"	"
perfluorohexyl sulfonate	**48.7**	I		17.9	"	"	"	"	"
perfluorooctyl sulfonate	**45.0**	I		21.5	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			17.9	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			17.9	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			17.9	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			17.9	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			17.9	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			17.9	"	"	"	"	"
N-MeFOSAA	**U**			17.9	"	"	"	"	"
N-EtFOSAA	**U**			17.9	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			17.9	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	255	*89.0%*	*70-130*	"	"	"
D3-N-MeFOSAA	261	*91.1%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	215	*77.4%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	225	*83.9%*	*70-130*	"	"	"
M9PFNA	256	*89.2%*	*70-130*	"	"	"
M8PFOSA	253	*88.2%*	*70-130*	"	"	"
M8PFOS	252	*91.6%*	*70-130*	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-005 (1906011-05) **Matrix: Soil** **Sampled: Jun-20-19 10:40** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	255			*88.9%*		*70-130*	*B19G001*	*Jul-02-19*	*Jul-03-19*
M7PFUnA	242			*84.5%*		*70-130*	"	"	"
M6PFDA	243			*84.7%*		*70-130*	"	"	"
M5PFPeA	252			*87.7%*		*70-130*	"	"	"
M5PFHxA	257			*89.5%*		*70-130*	"	"	"
M4PFHpA	258			*90.0%*		*70-130*	"	"	"
M3PFHxS	233			*86.1%*		*70-130*	"	"	"
M3PFBS	228			*85.7%*		*70-130*	"	"	"
M2PFTreA	196	Q		*68.4%*		*70-130*	"	"	"
MPFDoA	240			*83.8%*		*70-130*	"	"	"
MPFBA	283			*98.6%*		*70-130*	"	"	"

S-12607-062019-SK-006 (1906011-06) **Matrix: Soil** **Sampled: Jun-20-19 13:20** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			105	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
perfluoropentanoate	**U**			105	"	"	"	"	"
perfluorohexanoate	**U**			42.0	"	"	"	"	"
perfluoroheptanoate	**U**			21.0	"	"	"	"	"
perfluorooctanoate	**U**			21.0	"	"	"	"	"
perfluorononanoate	**U**			21.0	"	"	"	"	"
perfluorodecanoate	**U**			21.0	"	"	"	"	"
perfluoroundecanoate	**U**			21.0	"	"	"	"	"
perfluorododecanoate	**U**			21.0	"	"	"	"	"
perfluorotridecanoate	**U**			21.0	"	"	"	"	"
perfluorotetradecanoate	**U**			21.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			21.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			21.0	"	"	"	"	"
perfluorooctyl sulfonate	**U**			25.2	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			21.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			21.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			21.0	"	"	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-006 (1906011-06) **Matrix: Soil** **Sampled: Jun-20-19 13:20** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			21.0	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			21.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			21.0	"	"	"	"	"
N-MeFOSAA	**U**			21.0	"	"	"	"	"
N-EtFOSAA	**U**			21.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			21.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	289	*86.0%*	*70-130*	"	"	"
D3-N-MeFOSAA	290	*86.4%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	234	*72.0%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	242	*77.1%*	*70-130*	"	"	"
M9PFNA	279	*82.9%*	*70-130*	"	"	"
M8PFOSA	277	*82.3%*	*70-130*	"	"	"
M8PFOS	263	*81.6%*	*70-130*	"	"	"
M8PFOA	278	*82.6%*	*70-130*	"	"	"
M7PFUnA	270	*80.3%*	*70-130*	"	"	"
M6PFDA	269	*79.9%*	*70-130*	"	"	"
M5PFPeA	277	*82.4%*	*70-130*	"	"	"
M5PFHxA	281	*83.5%*	*70-130*	"	"	"
M4PFHpA	293	*87.2%*	*70-130*	"	"	"
M3PFHxS	252	*79.3%*	*70-130*	"	"	"
M3PFBS	245	*78.4%*	*70-130*	"	"	"
M2PFTreA	269	*80.0%*	*70-130*	"	"	"
MPFDoA	274	*81.5%*	*70-130*	"	"	"
MPFBA	317	*94.4%*	*70-130*	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-007 (1906011-07) **Matrix: Soil** **Sampled: Jun-20-19 13:25** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			92.4	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
perfluoropentanoate	**U**			92.4	"	"	"	"	"
perfluorohexanoate	**U**			37.0	"	"	"	"	"
perfluoroheptanoate	**U**			18.5	"	"	"	"	"
perfluorooctanoate	**U**			18.5	"	"	"	"	"
perfluorononanoate	**U**			18.5	"	"	"	"	"
perfluorodecanoate	**U**			18.5	"	"	"	"	"
perfluoroundecanoate	**U**			18.5	"	"	"	"	"
perfluorododecanoate	**U**			18.5	"	"	"	"	"
perfluorotridecanoate	**U**			18.5	"	"	"	"	"
perfluorotetradecanoate	**U**			18.5	"	"	"	"	"
perfluorobutyl sulfonate	**U**			18.5	"	"	"	"	"
perfluorohexyl sulfonate	**U**			18.5	"	"	"	"	"
perfluorooctyl sulfonate	**24.9**			22.2	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			18.5	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			18.5	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			18.5	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			18.5	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			18.5	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			18.5	"	"	"	"	"
N-MeFOSAA	**U**			18.5	"	"	"	"	"
N-EtFOSAA	**U**			18.5	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			18.5	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	279	*94.4%*	*70-130*	"	"	"
D3-N-MeFOSAA	276	*93.5%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	251	*87.7%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	240	*86.8%*	*70-130*	"	"	"
M9PFNA	269	*91.1%*	*70-130*	"	"	"
M8PFOSA	266	*90.0%*	*70-130*	"	"	"
M8PFOS	263	*93.1%*	*70-130*	"	"	"

Environmental Protection Agency Region 5
Chicago Regional Laboratory

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-007 (1906011-07) **Matrix: Soil** **Sampled: Jun-20-19 13:25** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	267			*90.3%*		*70-130*	*B19G001*	*Jul-02-19*	*Jul-03-19*
M7PFUnA	267			*90.3%*		*70-130*	"	"	"
M6PFDA	271			*91.6%*		*70-130*	"	"	"
M5PFPeA	269			*90.9%*		*70-130*	"	"	"
M5PFHxA	264			*89.3%*		*70-130*	"	"	"
M4PFHpA	275			*92.8%*		*70-130*	"	"	"
M3PFHxS	253			*90.6%*		*70-130*	"	"	"
M3PFBS	241			*87.6%*		*70-130*	"	"	"
M2PFTreA	251			*84.8%*		*70-130*	"	"	"
MPFDoA	266			*89.9%*		*70-130*	"	"	"
MPFBA	295			*99.6%*		*70-130*	"	"	"

S-12607-062019-SK-008 (1906011-08) **Matrix: Soil** **Sampled: Jun-20-19 13:35** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			97.7	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
perfluoropentanoate	**U**			97.7	"	"	"	"	"
perfluorohexanoate	**U**			39.1	"	"	"	"	"
perfluoroheptanoate	**U**			19.5	"	"	"	"	"
perfluorooctanoate	**U**			19.5	"	"	"	"	"
perfluorononanoate	**U**			19.5	"	"	"	"	"
perfluorodecanoate	**U**			19.5	"	"	"	"	"
perfluoroundecanoate	**U**			19.5	"	"	"	"	"
perfluorododecanoate	**U**			19.5	"	"	"	"	"
perfluorotridecanoate	**U**			19.5	"	"	"	"	"
perfluorotetradecanoate	**U**			19.5	"	"	"	"	"
perfluorobutyl sulfonate	**U**			19.5	"	"	"	"	"
perfluorohexyl sulfonate	**U**			19.5	"	"	"	"	"
perfluorooctyl sulfonate	**287**			23.5	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			19.5	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			19.5	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			19.5	"	"	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-008 (1906011-08) **Matrix: Soil** **Sampled: Jun-20-19 13:35** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			19.5	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			19.5	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			19.5	"	"	"	"	"
N-MeFOSAA	**U**			19.5	"	"	"	"	"
N-EtFOSAA	**U**			19.5	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			19.5	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	269	*85.9%*	*70-130*	"	"	"
D3-N-MeFOSAA	268	*85.9%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	231	*76.2%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	227	*77.5%*	*70-130*	"	"	"
M9PFNA	260	*83.1%*	*70-130*	"	"	"
M8PFOSA	254	*81.1%*	*70-130*	"	"	"
M8PFOS	245	*81.9%*	*70-130*	"	"	"
M8PFOA	259	*82.7%*	*70-130*	"	"	"
M7PFUnA	247	*78.8%*	*70-130*	"	"	"
M6PFDA	257	*82.0%*	*70-130*	"	"	"
M5PFPeA	259	*82.9%*	*70-130*	"	"	"
M5PFHxA	260	*83.2%*	*70-130*	"	"	"
M4PFHpA	268	*85.7%*	*70-130*	"	"	"
M3PFHxS	239	*80.6%*	*70-130*	"	"	"
M3PFBS	234	*80.7%*	*70-130*	"	"	"
M2PFTreA	246	*78.6%*	*70-130*	"	"	"
MPFDoA	259	*82.7%*	*70-130*	"	"	"
MPFBA	286	*91.6%*	*70-130*	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-009 (1906011-09) **Matrix: Soil** **Sampled: Jun-20-19 13:45** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			96.6	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
perfluoropentanoate	**U**			96.6	"	"	"	"	"
perfluorohexanoate	**U**			38.6	"	"	"	"	"
perfluoroheptanoate	**U**			19.3	"	"	"	"	"
perfluorooctanoate	**U**			19.3	"	"	"	"	"
perfluorononanoate	**U**			19.3	"	"	"	"	"
perfluorodecanoate	**U**			19.3	"	"	"	"	"
perfluoroundecanoate	**U**			19.3	"	"	"	"	"
perfluorododecanoate	**U**			19.3	"	"	"	"	"
perfluorotridecanoate	**U**			19.3	"	"	"	"	"
perfluorotetradecanoate	**U**			19.3	"	"	"	"	"
perfluorobutyl sulfonate	**U**			19.3	"	"	"	"	"
perfluorohexyl sulfonate	**U**			19.3	"	"	"	"	"
perfluorooctyl sulfonate	**379**			23.2	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			19.3	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			19.3	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			19.3	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			19.3	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			19.3	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			19.3	"	"	"	"	"
N-MeFOSAA	**U**			19.3	"	"	"	"	"
N-EtFOSAA	**U**			19.3	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			19.3	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	272	*88.0%*	*70-130*	"	"	"
D3-N-MeFOSAA	265	*85.9%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	233	*78.1%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	232	*80.2%*	*70-130*	"	"	"
M9PFNA	261	*84.5%*	*70-130*	"	"	"
M8PFOSA	255	*82.4%*	*70-130*	"	"	"
M8PFOS	235	*79.4%*	*70-130*	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-009 (1906011-09) **Matrix: Soil** **Sampled: Jun-20-19 13:45** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	262			*84.7%*		*70-130*	*B19G001*	*Jul-02-19*	*Jul-03-19*
M7PFUnA	259			*83.9%*		*70-130*	"	"	"
M6PFDA	259			*83.9%*		*70-130*	"	"	"
M5PFPeA	248			*80.2%*		*70-130*	"	"	"
M5PFHxA	267			*86.4%*		*70-130*	"	"	"
M4PFHpA	266			*86.0%*		*70-130*	"	"	"
M3PFHxS	245			*83.7%*		*70-130*	"	"	"
M3PFBS	231			*80.3%*		*70-130*	"	"	"
M2PFTreA	262			*84.8%*		*70-130*	"	"	"
MPFDoA	262			*84.7%*		*70-130*	"	"	"
MPFBA	281			*91.0%*		*70-130*	"	"	"

S-12607-062019-SK-010 (1906011-10) **Matrix: Soil** **Sampled: Jun-20-19 14:00** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			93.4	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
perfluoropentanoate	**U**			93.4	"	"	"	"	"
perfluorohexanoate	**U**			37.3	"	"	"	"	"
perfluoroheptanoate	**U**			18.7	"	"	"	"	"
perfluorooctanoate	**U**			18.7	"	"	"	"	"
perfluorononanoate	**U**			18.7	"	"	"	"	"
perfluorodecanoate	**U**			18.7	"	"	"	"	"
perfluoroundecanoate	**U**			18.7	"	"	"	"	"
perfluorododecanoate	**U**			18.7	"	"	"	"	"
perfluorotridecanoate	**U**			18.7	"	"	"	"	"
perfluorotetradecanoate	**U**	J		18.7	"	"	"	"	"
perfluorobutyl sulfonate	**U**			18.7	"	"	"	"	"
perfluorohexyl sulfonate	**U**			18.7	"	"	"	"	"
perfluorooctyl sulfonate	**205**	I		22.4	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			18.7	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			18.7	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			18.7	"	"	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-010 (1906011-10) **Matrix: Soil** **Sampled: Jun-20-19 14:00** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			18.7	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			18.7	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			18.7	"	"	"	"	"
N-MeFOSAA	**U**			18.7	"	"	"	"	"
N-EtFOSAA	**U**			18.7	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			18.7	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	266	*88.9%*	*70-130*	"	"	"
D3-N-MeFOSAA	271	*90.7%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	220	*76.1%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	228	*81.6%*	*70-130*	"	"	"
M9PFNA	264	*88.2%*	*70-130*	"	"	"
M8PFOSA	253	*84.6%*	*70-130*	"	"	"
M8PFOS	259	*90.7%*	*70-130*	"	"	"
M8PFOA	256	*85.7%*	*70-130*	"	"	"
M7PFUnA	252	*84.3%*	*70-130*	"	"	"
M6PFDA	250	*83.5%*	*70-130*	"	"	"
M5PFPeA	253	*84.7%*	*70-130*	"	"	"
M5PFHxA	257	*86.0%*	*70-130*	"	"	"
M4PFHpA	269	*90.0%*	*70-130*	"	"	"
M3PFHxS	245	*86.6%*	*70-130*	"	"	"
M3PFBS	228	*82.2%*	*70-130*	"	"	"
M2PFTreA	204	Q *68.3%*	*70-130*	"	"	"
MPFDoA	245	*82.2%*	*70-130*	"	"	"
MPFBA	293	*98.1%*	*70-130*	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-011 (1906011-11) **Matrix: Soil** **Sampled: Jun-20-19 14:05** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			108	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
perfluoropentanoate	**U**			108	"	"	"	"	"
perfluorohexanoate	**U**			43.3	"	"	"	"	"
perfluoroheptanoate	**U**			21.6	"	"	"	"	"
perfluorooctanoate	**U**			21.6	"	"	"	"	"
perfluorononanoate	**U**			21.6	"	"	"	"	"
perfluorodecanoate	**U**			21.6	"	"	"	"	"
perfluoroundecanoate	**U**			21.6	"	"	"	"	"
perfluorododecanoate	**U**			21.6	"	"	"	"	"
perfluorotridecanoate	**U**			21.6	"	"	"	"	"
perfluorotetradecanoate	**U**			21.6	"	"	"	"	"
perfluorobutyl sulfonate	**U**			21.6	"	"	"	"	"
perfluorohexyl sulfonate	**U**			21.6	"	"	"	"	"
perfluorooctyl sulfonate	**87.1**	I		26.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			21.6	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			21.6	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			21.6	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			21.6	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			21.6	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			21.6	"	"	"	"	"
N-MeFOSAA	**U**			21.6	"	"	"	"	"
N-EtFOSAA	**U**			21.6	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			21.6	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	307	*88.7%*	*70-130*	"	"	"
D3-N-MeFOSAA	310	*89.6%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	275	*82.0%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	275	*84.9%*	*70-130*	"	"	"
M9PFNA	304	*87.8%*	*70-130*	"	"	"
M8PFOSA	291	*84.0%*	*70-130*	"	"	"
M8PFOS	291	*88.0%*	*70-130*	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-011 (1906011-11) **Matrix: Soil** **Sampled: Jun-20-19 14:05** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	307			*88.7%*		*70-130*	*B19G001*	*Jul-02-19*	*Jul-03-19*
M7PFUnA	294			*84.9%*		*70-130*	"	"	"
M6PFDA	295			*85.2%*		*70-130*	"	"	"
M5PFPeA	286			*82.5%*		*70-130*	"	"	"
M5PFHxA	314			*90.6%*		*70-130*	"	"	"
M4PFHpA	324			*93.7%*		*70-130*	"	"	"
M3PFHxS	284			*86.8%*		*70-130*	"	"	"
M3PFBS	271			*84.3%*		*70-130*	"	"	"
M2PFTreA	254			*73.3%*		*70-130*	"	"	"
MPFDoA	296			*85.6%*		*70-130*	"	"	"
MPFBA	343			*99.1%*		*70-130*	"	"	"

S-12607-062019-SK-012 (1906011-12) **Matrix: Soil** **Sampled: Jun-20-19 14:40** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			139	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
perfluoropentanoate	**U**			139	"	"	"	"	"
perfluorohexanoate	**U**			55.5	"	"	"	"	"
perfluoroheptanoate	**U**			27.7	"	"	"	"	"
perfluorooctanoate	**U**			27.7	"	"	"	"	"
perfluorononanoate	**U**			27.7	"	"	"	"	"
perfluorodecanoate	**U**			27.7	"	"	"	"	"
perfluoroundecanoate	**U**			27.7	"	"	"	"	"
perfluorododecanoate	**U**			27.7	"	"	"	"	"
perfluorotridecanoate	**U**			27.7	"	"	"	"	"
perfluorotetradecanoate	**U**	J		27.7	"	"	"	"	"
perfluorobutyl sulfonate	**U**			27.7	"	"	"	"	"
perfluorohexyl sulfonate	**U**			27.7	"	"	"	"	"
perfluorooctyl sulfonate	**U**			33.3	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			27.7	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			27.7	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			27.7	"	"	"	"	"

Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC

US EPA Region 5 LSASD Analytical Service Branch

S-12607-062019-SK-012 (1906011-12) **Matrix: Soil** **Sampled: Jun-20-19 14:40** **Received: Jun-25-19 10:00**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			27.7	ng/kg dry	1	B19G001	Jul-02-19	Jul-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			27.7	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			27.7	"	"	"	"	"
N-MeFOSAA	**U**			27.7	"	"	"	"	"
N-EtFOSAA	**U**			27.7	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			27.7	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	315	*70.9%*	*70-130*	"	"	"
D3-N-MeFOSAA	337	*76.0%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	314	*73.0%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	334	*80.6%*	*70-130*	"	"	"
M9PFNA	349	*78.8%*	*70-130*	"	"	"
M8PFOSA	324	*73.0%*	*70-130*	"	"	"
M8PFOS	335	*78.8%*	*70-130*	"	"	"
M8PFOA	346	*78.0%*	*70-130*	"	"	"
M7PFUnA	339	*76.4%*	*70-130*	"	"	"
M6PFDA	338	*76.2%*	*70-130*	"	"	"
M5PFPeA	334	*75.2%*	*70-130*	"	"	"
M5PFHxA	361	*81.3%*	*70-130*	"	"	"
M4PFHpA	357	*80.5%*	*70-130*	"	"	"
M3PFHxS	327	*77.9%*	*70-130*	"	"	"
M3PFBS	315	*76.4%*	*70-130*	"	"	"
M2PFTreA	291	Q *65.7%*	*70-130*	"	"	"
MPFDoA	336	*75.8%*	*70-130*	"	"	"
MPFBA	370	*83.5%*	*70-130*	"	"	"

Environmental Protection Agency Region 5
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

Blank (B19G001-BLK1) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**U**			95.0	ng/kg						
perfluoropentanoate	**U**			95.0	"						
perfluorohexanoate	**U**			38.0	"						
perfluoroheptanoate	**U**			19.0	"						
perfluorooctanoate	**U**			19.0	"						
perfluorononanoate	**U**			19.0	"						
perfluorodecanoate	**25.6**	Q		19.0	"						
perfluoroundecanoate	**U**			19.0	"						
perfluorododecanoate	**U**			19.0	"						
perfluorotridecanoate	**U**			19.0	"						
perfluorotetradecanoate	**U**			19.0	"						
perfluorobutyl sulfonate	**U**			19.0	"						
perfluorohexyl sulfonate	**U**			19.0	"						
perfluorooctyl sulfonate	**U**			22.8	"						
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			19.0	"						
perfluoro-1-pentanesulfonate (PFPeS)	**U**			19.0	"						
perfluoro-1-heptanesulfonate (PFHpS)	**U**			19.0	"						
perfluoro-1-octanesulfonamide (FOSA)	**U**			19.0	"						
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			19.0	"						
perfluoro-1-nonanesulfonate (PFNS)	**U**			19.0	"						
N-MeFOSAA	**U**			19.0	"						
N-EtFOSAA	**U**			19.0	"						
perfluoro-1-decanesulfonate (PFDS)	**U**			19.0	"						
Surrogate: D5-N-EtFOSAA	*291*				*"*	*304.0*		*95.7%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*303*				*"*	*304.0*		*99.6%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*258*				*"*	*294.2*		*87.7%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*263*				*"*	*284.2*		*92.7%*	*70-130*		
Surrogate: M9PFNA	*298*				*"*	*304.0*		*98.2%*	*70-130*		

Environmental Protection Agency Region 5
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

Blank (B19G001-BLK1) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: M8PFOSA	*281*				*ng/kg*	*304.0*		*92.4%*	*70-130*		
Surrogate: M8PFOS	*284*				*"*	*290.9*		*97.5%*	*70-130*		
Surrogate: M8PFOA	*297*				*"*	*304.0*		*97.8%*	*70-130*		
Surrogate: M7PFUnA	*289*				*"*	*304.0*		*95.2%*	*70-130*		
Surrogate: M6PFDA	*289*				*"*	*304.0*		*94.9%*	*70-130*		
Surrogate: M5PFPeA	*300*				*"*	*304.0*		*98.6%*	*70-130*		
Surrogate: M5PFHxA	*295*				*"*	*304.0*		*97.1%*	*70-130*		
Surrogate: M4PFHpA	*302*				*"*	*304.0*		*99.3%*	*70-130*		
Surrogate: M3PFHxS	*265*				*"*	*287.6*		*92.0%*	*70-130*		
Surrogate: M3PFBS	*264*				*"*	*282.4*		*93.5%*	*70-130*		
Surrogate: M2PFTreA	*281*				*"*	*304.0*		*92.4%*	*70-130*		
Surrogate: MPFDoA	*283*				*"*	*304.0*		*93.0%*	*70-130*		
Surrogate: MPFBA	*327*				*"*	*304.0*		*108%*	*70-130*		

Blank (B19G001-BLK2) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**U**			96.7	ng/kg						
perfluoropentanoate	**U**			96.7	"						
perfluorohexanoate	**U**			38.7	"						
perfluoroheptanoate	**U**			19.3	"						
perfluorooctanoate	**U**			19.3	"						
perfluorononanoate	**U**			19.3	"						
perfluorodecanoate	**U**			19.3	"						
perfluoroundecanoate	**U**			19.3	"						
perfluorododecanoate	**U**			19.3	"						
perfluorotridecanoate	**U**			19.3	"						
perfluorotetradecanoate	**U**			19.3	"						
perfluorobutyl sulfonate	**U**			19.3	"						
perfluorohexyl sulfonate	**U**			19.3	"						
perfluorooctyl sulfonate	**U**			23.2	"						
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			19.3	"						

Environmental Protection Agency Region 5
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

Blank (B19G001-BLK2) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluoro-1-pentanesulfonate (PFPeS)	U			19.3	ng/kg						
perfluoro-1-heptanesulfonate (PFHpS)	U			19.3	"						
perfluoro-1-octanesulfonamide (FOSA)	U			19.3	"						
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	U			19.3	"						
perfluoro-1-nonanesulfonate (PFNS)	U			19.3	"						
N-MeFOSAA	U			19.3	"						
N-EtFOSAA	U			19.3	"						
perfluoro-1-decanesulfonate (PFDS)	U			19.3	"						
Surrogate: D5-N-EtFOSAA	*291*				*"*	*309.4*		*94.0%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*293*				*"*	*309.4*		*94.6%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*248*				*"*	*299.5*		*82.8%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*255*				*"*	*289.3*		*88.0%*	*70-130*		
Surrogate: M9PFNA	*287*				*"*	*309.4*		*92.7%*	*70-130*		
Surrogate: M8PFOSA	*285*				*"*	*309.4*		*92.1%*	*70-130*		
Surrogate: M8PFOS	*274*				*"*	*296.1*		*92.5%*	*70-130*		
Surrogate: M8PFOA	*283*				*"*	*309.4*		*91.6%*	*70-130*		
Surrogate: M7PFUnA	*283*				*"*	*309.4*		*91.4%*	*70-130*		
Surrogate: M6PFDA	*280*				*"*	*309.4*		*90.7%*	*70-130*		
Surrogate: M5PFPeA	*288*				*"*	*309.4*		*93.0%*	*70-130*		
Surrogate: M5PFHxA	*285*				*"*	*309.4*		*92.1%*	*70-130*		
Surrogate: M4PFHpA	*292*				*"*	*309.4*		*94.4%*	*70-130*		
Surrogate: M3PFHxS	*257*				*"*	*292.7*		*87.9%*	*70-130*		
Surrogate: M3PFBS	*256*				*"*	*287.4*		*89.0%*	*70-130*		
Surrogate: M2PFTreA	*291*				*"*	*309.4*		*93.9%*	*70-130*		
Surrogate: MPFDoA	*285*				*"*	*309.4*		*92.2%*	*70-130*		
Surrogate: MPFBA	*315*				*"*	*309.4*		*102%*	*70-130*		

LCS (B19G001-BS1) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**1700**			121	ng/kg	1943		87.6%	70-130		

Environmental Protection Agency Region 5
Chicago Regional Laboratory

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

LCS (B19G001-BS1) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluoropentanoate	**1570**			121	ng/kg	1943		80.8%	70-130		
perfluorohexanoate	**329**			48.6	"	388.5		84.7%	70-130		
perfluoroheptanoate	**333**			24.3	"	388.5		85.6%	70-130		
perfluorooctanoate	**330**			24.3	"	388.5		85.1%	70-130		
perfluorononanoate	**325**			24.3	"	388.5		83.6%	70-130		
perfluorodecanoate	**340**			24.3	"	388.5		87.6%	70-130		
perfluoroundecanoate	**325**			24.3	"	388.5		83.8%	70-130		
perfluorododecanoate	**323**			24.3	"	388.5		83.1%	70-130		
perfluorotridecanoate	**322**			24.3	"	388.5		83.0%	70-130		
perfluorotetradecanoate	**336**			24.3	"	388.5		86.5%	70-130		
perfluorobutyl sulfonate	**312**			24.3	"	388.5		80.2%	70-130		
perfluorohexyl sulfonate	**321**			24.3	"	388.5		82.6%	70-130		
perfluorooctyl sulfonate	**331**			29.1	"	388.5		85.1%	70-130		
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**313**			24.3	"	388.5		80.5%	70-130		
perfluoro-1-pentanesulfonate (PFPeS)	**325**			24.3	"	388.5		83.8%	70-130		
perfluoro-1-heptanesulfonate (PFHpS)	**316**			24.3	"	388.5		81.3%	70-130		
perfluoro-1-octanesulfonamide (FOSA)	**325**			24.3	"	388.5		83.6%	70-130		
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**306**			24.3	"	388.5		78.8%	70-130		
perfluoro-1-nonanesulfonate (PFNS)	**310**			24.3	"	388.5		79.8%	70-130		
N-MeFOSAA	**341**			24.3	"	388.5		87.9%	70-130		
N-EtFOSAA	**327**			24.3	"	388.5		84.2%	70-130		
perfluoro-1-decanesulfonate (PFDS)	**336**			24.3	"	388.5		86.4%	70-130		
Surrogate: D5-N-EtFOSAA	*341*				*"*	*388.5*		*87.8%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*350*				*"*	*388.5*		*90.2%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*314*				*"*	*376.1*		*83.4%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*319*				*"*	*363.3*		*87.7%*	*70-130*		
Surrogate: M9PFNA	*336*				*"*	*388.5*		*86.5%*	*70-130*		
Surrogate: M8PFOSA	*331*				*"*	*388.5*		*85.2%*	*70-130*		
Surrogate: M8PFOS	*311*				*"*	*371.8*		*83.5%*	*70-130*		

Environmental Protection Agency Region 5
Chicago Regional Laboratory

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

LCS (B19G001-BS1) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: M8PFOA	*338*				*ng/kg*	*388.5*		*87.1%*	*70-130*		
Surrogate: M7PFUnA	*338*				*"*	*388.5*		*87.1%*	*70-130*		
Surrogate: M6PFDA	*342*				*"*	*388.5*		*88.2%*	*70-130*		
Surrogate: M5PFPeA	*331*				*"*	*388.5*		*85.3%*	*70-130*		
Surrogate: M5PFHxA	*336*				*"*	*388.5*		*86.5%*	*70-130*		
Surrogate: M4PFHpA	*350*				*"*	*388.5*		*90.0%*	*70-130*		
Surrogate: M3PFHxS	*321*				*"*	*367.6*		*87.3%*	*70-130*		
Surrogate: M3PFBS	*298*				*"*	*361.0*		*82.5%*	*70-130*		
Surrogate: M2PFTreA	*354*				*"*	*388.5*		*91.2%*	*70-130*		
Surrogate: MPFDoA	*340*				*"*	*388.5*		*87.5%*	*70-130*		
Surrogate: MPFBA	*369*				*"*	*388.5*		*95.1%*	*70-130*		

LCS Dup (B19G001-BSD1) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**1940**			129	ng/kg	2061		94.2%	70-130	7.33	30
perfluoropentanoate	**1680**			129	"	2061		81.3%	70-130	0.640	30
perfluorohexanoate	**354**			51.5	"	412.2		85.8%	70-130	1.25	30
perfluoroheptanoate	**360**			25.8	"	412.2		87.4%	70-130	2.09	30
perfluorooctanoate	**354**			25.8	"	412.2		86.0%	70-130	1.04	30
perfluorononanoate	**345**			25.8	"	412.2		83.6%	70-130	0.0622	30
perfluorodecanoate	**358**			25.8	"	412.2		86.9%	70-130	0.718	30
perfluoroundecanoate	**343**			25.8	"	412.2		83.3%	70-130	0.541	30
perfluorododecanoate	**349**			25.8	"	412.2		84.7%	70-130	1.89	30
perfluorotridecanoate	**365**			25.8	"	412.2		88.6%	70-130	6.54	30
perfluorotetradecanoate	**366**			25.8	"	412.2		88.8%	70-130	2.60	30
perfluorobutyl sulfonate	**334**			25.8	"	412.2		81.0%	70-130	0.985	30
perfluorohexyl sulfonate	**335**			25.8	"	412.2		81.3%	70-130	1.49	30
perfluorooctyl sulfonate	**337**			30.9	"	412.2		81.9%	70-130	3.89	30
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**351**			25.8	"	412.2		85.3%	70-130	5.68	30
perfluoro-1-pentanesulfonate (PFPeS)	**333**			25.8	"	412.2		80.9%	70-130	3.49	30
perfluoro-1-heptanesulfonate (PFHpS)	**344**			25.8	"	412.2		83.5%	70-130	2.58	30

Environmental Protection Agency Region 5
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

LCS Dup (B19G001-BSD1) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluoro-1-octanesulfonamide (FOSA)	**339**			25.8	ng/kg	412.2		82.3%	70-130	1.48	30
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**338**			25.8	"	412.2		81.9%	70-130	3.94	30
perfluoro-1-nonanesulfonate (PFNS)	**336**			25.8	"	412.2		81.6%	70-130	2.24	30
N-MeFOSAA	**342**			25.8	"	412.2		83.1%	70-130	5.60	30
N-EtFOSAA	**352**			25.8	"	412.2		85.3%	70-130	1.35	30
perfluoro-1-decanesulfonate (PFDS)	**344**			25.8	"	412.2		83.4%	70-130	3.53	30
Surrogate: D5-N-EtFOSAA	*385*				*"*	*412.2*		*93.5%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*355*				*"*	*412.2*		*86.1%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*333*				*"*	*399.0*		*83.5%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*327*				*"*	*385.4*		*84.9%*	*70-130*		
Surrogate: M9PFNA	*352*				*"*	*412.2*		*85.5%*	*70-130*		
Surrogate: M8PFOSA	*339*				*"*	*412.2*		*82.1%*	*70-130*		
Surrogate: M8PFOS	*323*				*"*	*394.5*		*82.0%*	*70-130*		
Surrogate: M8PFOA	*345*				*"*	*412.2*		*83.8%*	*70-130*		
Surrogate: M7PFUnA	*345*				*"*	*412.2*		*83.7%*	*70-130*		
Surrogate: M6PFDA	*344*				*"*	*412.2*		*83.4%*	*70-130*		
Surrogate: M5PFPeA	*345*				*"*	*412.2*		*83.7%*	*70-130*		
Surrogate: M5PFHxA	*348*				*"*	*412.2*		*84.5%*	*70-130*		
Surrogate: M4PFHpA	*365*				*"*	*412.2*		*88.5%*	*70-130*		
Surrogate: M3PFHxS	*314*				*"*	*389.9*		*80.4%*	*70-130*		
Surrogate: M3PFBS	*311*				*"*	*382.9*		*81.1%*	*70-130*		
Surrogate: M2PFTreA	*373*				*"*	*412.2*		*90.6%*	*70-130*		
Surrogate: MPFDoA	*354*				*"*	*412.2*		*85.9%*	*70-130*		
Surrogate: MPFBA	*385*				*"*	*412.2*		*93.4%*	*70-130*		

Duplicate (B19G001-DUP1) **Source: 1906011-01** **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**25.0**			124	ng/kg dry		22.2			11.8	30
perfluoropentanoate	**U**			124	"		U				30
perfluorohexanoate	**17.9**			49.8	"		U				30
perfluoroheptanoate	**14.2**			24.9	"		12.6			11.4	30

Environmental Protection Agency Region 5
Chicago Regional Laboratory

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

Duplicate (B19G001-DUP1) **Source: 1906011-01** **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorooctanoate	**13.9**			24.9	ng/kg dry		13.0			6.69	30
perfluorononanoate	**8.17**			24.9	"		6.53			22.4	30
perfluorodecanoate	**18.1**			24.9	"		16.9			6.64	30
perfluoroundecanoate	**15.3**			24.9	"		13.6			11.7	30
perfluorododecanoate	**19.0**			24.9	"		17.4			8.50	30
perfluorotridecanoate	**8.28**	Q		24.9	"		5.46			41.1	30
perfluorotetradecanoate	**8.13**			24.9	"		8.90			9.02	30
perfluorobutyl sulfonate	**U**			24.9	"		U				30
perfluorohexyl sulfonate	**U**			24.9	"		U				30
perfluorooctyl sulfonate	**18.0**	Q		29.9	"		25.1			33.0	30
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			24.9	"		U				30
perfluoro-1-pentanesulfonate (PFPeS)	**U**			24.9	"		U				30
perfluoro-1-heptanesulfonate (PFHpS)	**4.68**			24.9	"		4.52			3.62	30
perfluoro-1-octanesulfonamide (FOSA)	**U**			24.9	"		U				30
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			24.9	"		U				30
perfluoro-1-nonanesulfonate (PFNS)	**U**			24.9	"		3.22				30
N-MeFOSAA	**U**			24.9	"		U				30
N-EtFOSAA	**U**			24.9	"		U				30
perfluoro-1-decanesulfonate (PFDS)	**3.09**			24.9	"		U				30
Surrogate: D5-N-EtFOSAA	*372*				"	*398.1*		*93.4%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*378*				"	*398.1*		*94.8%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*315*				"	*385.3*		*81.7%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*326*				"	*372.2*		*87.7%*	*70-130*		
Surrogate: M9PFNA	*364*				"	*398.1*		*91.4%*	*70-130*		
Surrogate: M8PFOSA	*349*				"	*398.1*		*87.7%*	*70-130*		
Surrogate: M8PFOS	*352*				"	*381.0*		*92.4%*	*70-130*		
Surrogate: M8PFOA	*358*				"	*398.1*		*89.8%*	*70-130*		
Surrogate: M7PFUnA	*358*				"	*398.1*		*89.9%*	*70-130*		
Surrogate: M6PFDA	*361*				"	*398.1*		*90.6%*	*70-130*		

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

Duplicate (B19G001-DUP1) **Source: 1906011-01** **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: M5PFPeA	*362*				*ng/kg dry*	*398.1*		*91.0%*	*70-130*		
Surrogate: M5PFHxA	*375*				*"*	*398.1*		*94.1%*	*70-130*		
Surrogate: M4PFHpA	*369*				*"*	*398.1*		*92.7%*	*70-130*		
Surrogate: M3PFHxS	*336*				*"*	*376.6*		*89.3%*	*70-130*		
Surrogate: M3PFBS	*329*				*"*	*369.8*		*89.0%*	*70-130*		
Surrogate: M2PFTreA	*363*				*"*	*398.1*		*91.3%*	*70-130*		
Surrogate: MPFDoA	*362*				*"*	*398.1*		*91.0%*	*70-130*		
Surrogate: MPFBA	*412*				*"*	*398.1*		*103%*	*70-130*		

MRL Check (B19G001-MRL1) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**92.6**			108	ng/kg	108.3		85.5%	50-150		
perfluoropentanoate	**101**			108	"	108.3		93.1%	50-150		
perfluorohexanoate	**20.4**			43.3	"	21.66		94.2%	50-150		
perfluoroheptanoate	**23.2**			21.7	"	21.66		107%	50-150		
perfluorooctanoate	**20.5**			21.7	"	21.66		94.5%	50-150		
perfluorononanoate	**21.3**			21.7	"	21.66		98.4%	50-150		
perfluorodecanoate	**27.3**	I		21.7	"	21.66		126%	50-150		
perfluoroundecanoate	**19.3**			21.7	"	21.66		89.1%	50-150		
perfluorododecanoate	**19.1**			21.7	"	21.66		88.3%	50-150		
perfluorotridecanoate	**21.0**			21.7	"	21.66		97.1%	50-150		
perfluorotetradecanoate	**21.9**			21.7	"	21.66		101%	50-150		
perfluorobutyl sulfonate	**18.4**			21.7	"	21.66		84.7%	50-150		
perfluorohexyl sulfonate	**20.7**			21.7	"	21.66		95.5%	50-150		
perfluorooctyl sulfonate	**20.2**			26.0	"	21.66		93.4%	50-150		
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**18.4**			21.7	"	21.66		84.9%	50-150		
perfluoro-1-pentanesulfonate (PFPeS)	**18.2**			21.7	"	21.66		84.3%	50-150		
perfluoro-1-heptanesulfonate (PFHpS)	**20.3**			21.7	"	21.66		93.8%	50-150		
perfluoro-1-octanesulfonamide (FOSA)	**19.0**			21.7	"	21.66		87.7%	50-150		

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

MRL Check (B19G001-MRL1) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**21.2**	I		21.7	ng/kg	21.66		97.7%	50-150		
perfluoro-1-nonanesulfonate (PFNS)	**18.6**			21.7	"	21.66		86.0%	50-150		
N-MeFOSAA	**17.7**			21.7	"	21.66		81.8%	50-150		
N-EtFOSAA	**20.4**			21.7	"	21.66		94.0%	50-150		
perfluoro-1-decanesulfonate (PFDS)	**19.9**			21.7	"	21.66		91.8%	50-150		
Surrogate: D5-N-EtFOSAA	*313*				*"*	*346.5*		*90.3%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*320*				*"*	*346.5*		*92.5%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*278*				*"*	*335.4*		*82.9%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*271*				*"*	*324.0*		*83.6%*	*70-130*		
Surrogate: M9PFNA	*306*				*"*	*346.5*		*88.4%*	*70-130*		
Surrogate: M8PFOSA	*301*				*"*	*346.5*		*86.8%*	*70-130*		
Surrogate: M8PFOS	*286*				*"*	*331.6*		*86.1%*	*70-130*		
Surrogate: M8PFOA	*302*				*"*	*346.5*		*87.2%*	*70-130*		
Surrogate: M7PFUnA	*309*				*"*	*346.5*		*89.2%*	*70-130*		
Surrogate: M6PFDA	*305*				*"*	*346.5*		*88.0%*	*70-130*		
Surrogate: M5PFPeA	*297*				*"*	*346.5*		*85.7%*	*70-130*		
Surrogate: M5PFHxA	*310*				*"*	*346.5*		*89.4%*	*70-130*		
Surrogate: M4PFHpA	*317*				*"*	*346.5*		*91.6%*	*70-130*		
Surrogate: M3PFHxS	*287*				*"*	*327.8*		*87.7%*	*70-130*		
Surrogate: M3PFBS	*271*				*"*	*321.9*		*84.0%*	*70-130*		
Surrogate: M2PFTreA	*312*				*"*	*346.5*		*90.2%*	*70-130*		
Surrogate: MPFDoA	*310*				*"*	*346.5*		*89.4%*	*70-130*		
Surrogate: MPFBA	*337*				*"*	*346.5*		*97.4%*	*70-130*		

MRL Check (B19G001-MRL2) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**102**			111	ng/kg	110.9		92.2%	50-150		
perfluoropentanoate	**105**			111	"	110.9		94.8%	50-150		
perfluorohexanoate	**27.6**	I		44.4	"	22.18		124%	50-150		
perfluoroheptanoate	**30.3**			22.2	"	22.18		137%	50-150		
perfluorooctanoate	**24.0**			22.2	"	22.18		108%	50-150		

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

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US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

MRL Check (B19G001-MRL2) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorononanoate	**22.5**			22.2	ng/kg	22.18		101%	50-150		
perfluorodecanoate	**59.0**	Q		22.2	"	22.18		266%	50-150		
perfluoroundecanoate	**22.7**			22.2	"	22.18		102%	50-150		
perfluorododecanoate	**21.2**			22.2	"	22.18		95.7%	50-150		
perfluorotridecanoate	**21.7**			22.2	"	22.18		98.0%	50-150		
perfluorotetradecanoate	**25.7**			22.2	"	22.18		116%	50-150		
perfluorobutyl sulfonate	**22.1**			22.2	"	22.18		99.7%	50-150		
perfluorohexyl sulfonate	**20.6**			22.2	"	22.18		92.8%	50-150		
perfluorooctyl sulfonate	**22.7**			26.6	"	22.18		102%	50-150		
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**19.7**			22.2	"	22.18		88.8%	50-150		
perfluoro-1-pentanesulfonate (PFPeS)	**17.9**			22.2	"	22.18		80.6%	50-150		
perfluoro-1-heptanesulfonate (PFHpS)	**18.4**			22.2	"	22.18		83.1%	50-150		
perfluoro-1-octanesulfonamide (FOSA)	**19.7**			22.2	"	22.18		89.0%	50-150		
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**19.0**	I		22.2	"	22.18		85.6%	50-150		
perfluoro-1-nonanesulfonate (PFNS)	**18.1**			22.2	"	22.18		81.5%	50-150		
N-MeFOSAA	**18.6**			22.2	"	22.18		84.1%	50-150		
N-EtFOSAA	**24.2**			22.2	"	22.18		109%	50-150		
perfluoro-1-decanesulfonate (PFDS)	**18.4**			22.2	"	22.18		82.8%	50-150		
Surrogate: D5-N-EtFOSAA	*327*				*"*	*354.9*		*92.2%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*318*				*"*	*354.9*		*89.5%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*280*				*"*	*343.5*		*81.5%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*271*				*"*	*331.8*		*81.8%*	*70-130*		
Surrogate: M9PFNA	*311*				*"*	*354.9*		*87.7%*	*70-130*		
Surrogate: M8PFOSA	*288*				*"*	*354.9*		*81.1%*	*70-130*		
Surrogate: M8PFOS	*279*				*"*	*339.6*		*82.2%*	*70-130*		
Surrogate: M8PFOA	*309*				*"*	*354.9*		*87.0%*	*70-130*		
Surrogate: M7PFUnA	*310*				*"*	*354.9*		*87.4%*	*70-130*		
Surrogate: M6PFDA	*314*				*"*	*354.9*		*88.4%*	*70-130*		
Surrogate: M5PFPeA	*301*				*"*	*354.9*		*84.8%*	*70-130*		

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

MRL Check (B19G001-MRL2) **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: M5PFHxA	*299*				*ng/kg*	*354.9*		*84.3%*	*70-130*		
Surrogate: M4PFHpA	*302*				*"*	*354.9*		*85.2%*	*70-130*		
Surrogate: M3PFHxS	*271*				*"*	*335.7*		*80.8%*	*70-130*		
Surrogate: M3PFBS	*265*				*"*	*329.7*		*80.5%*	*70-130*		
Surrogate: M2PFTreA	*325*				*"*	*354.9*		*91.7%*	*70-130*		
Surrogate: MPFDoA	*323*				*"*	*354.9*		*91.1%*	*70-130*		
Surrogate: MPFBA	*334*				*"*	*354.9*		*94.2%*	*70-130*		

Matrix Spike (B19G001-MS1) **Source: 1906011-01** **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**1510**			108	ng/kg dry	1725	22.2	86.3%	70-130		
perfluoropentanoate	**1370**			108	"	1725	U	79.1%	70-130		
perfluorohexanoate	**281**			43.1	"	345.0	U	81.5%	70-130		
perfluoroheptanoate	**286**			21.6	"	345.0	12.6	79.2%	70-130		
perfluorooctanoate	**288**			21.6	"	345.0	13.0	79.7%	70-130		
perfluorononanoate	**282**			21.6	"	345.0	6.53	79.7%	70-130		
perfluorodecanoate	**286**			21.6	"	345.0	16.9	77.9%	70-130		
perfluoroundecanoate	**289**			21.6	"	345.0	13.6	79.8%	70-130		
perfluorododecanoate	**293**			21.6	"	345.0	17.4	79.8%	70-130		
perfluorotridecanoate	**280**			21.6	"	345.0	5.46	79.5%	70-130		
perfluorotetradecanoate	**288**			21.6	"	345.0	8.90	80.8%	70-130		
perfluorobutyl sulfonate	**269**			21.6	"	345.0	U	78.1%	70-130		
perfluorohexyl sulfonate	**278**			21.6	"	345.0	U	80.6%	70-130		
perfluorooctyl sulfonate	**286**			25.9	"	345.0	25.1	75.6%	70-130		
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**282**			21.6	"	345.0	U	81.6%	70-130		
perfluoro-1-pentanesulfonate (PFPeS)	**284**			21.6	"	345.0	U	82.2%	70-130		
perfluoro-1-heptanesulfonate (PFHpS)	**290**			21.6	"	345.0	4.52	82.7%	70-130		
perfluoro-1-octanesulfonamide (FOSA)	**291**			21.6	"	345.0	U	84.4%	70-130		
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**282**			21.6	"	345.0	U	81.7%	70-130		

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

Matrix Spike (B19G001-MS1) **Source: 1906011-01** **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluoro-1-nonanesulfonate (PFNS)	**283**			21.6	ng/kg dry	345.0	3.22	81.1%	70-130		
N-MeFOSAA	**280**			21.6	"	345.0	U	81.1%	70-130		
N-EtFOSAA	**296**			21.6	"	345.0	U	85.7%	70-130		
perfluoro-1-decanesulfonate (PFDS)	**282**			21.6	"	345.0	U	81.7%	70-130		
Surrogate: D5-N-EtFOSAA	*298*				"	*345.0*		*86.4%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*303*				"	*345.0*		*87.7%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*274*				"	*334.0*		*82.0%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*272*				"	*322.6*		*84.3%*	*70-130*		
Surrogate: M9PFNA	*294*				"	*345.0*		*85.4%*	*70-130*		
Surrogate: M8PFOSA	*291*				"	*345.0*		*84.5%*	*70-130*		
Surrogate: M8PFOS	*291*				"	*330.2*		*88.2%*	*70-130*		
Surrogate: M8PFOA	*296*				"	*345.0*		*85.9%*	*70-130*		
Surrogate: M7PFUnA	*286*				"	*345.0*		*83.0%*	*70-130*		
Surrogate: M6PFDA	*287*				"	*345.0*		*83.3%*	*70-130*		
Surrogate: M5PFPeA	*292*				"	*345.0*		*84.7%*	*70-130*		
Surrogate: M5PFHxA	*292*				"	*345.0*		*84.5%*	*70-130*		
Surrogate: M4PFHpA	*301*				"	*345.0*		*87.4%*	*70-130*		
Surrogate: M3PFHxS	*270*				"	*326.4*		*82.8%*	*70-130*		
Surrogate: M3PFBS	*255*				"	*320.5*		*79.6%*	*70-130*		
Surrogate: M2PFTreA	*302*				"	*345.0*		*87.5%*	*70-130*		
Surrogate: MPFDoA	*297*				"	*345.0*		*86.2%*	*70-130*		
Surrogate: MPFBA	*310*				"	*345.0*		*89.8%*	*70-130*		

Matrix Spike Dup (B19G001-MSD1) **Source: 1906011-01** **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**1600**			118	ng/kg dry	1881	22.2	83.9%	70-130	2.77	30
perfluoropentanoate	**1490**			118	"	1881	U	79.0%	70-130	0.173	30
perfluorohexanoate	**303**			47.0	"	376.2	U	80.6%	70-130	1.15	30
perfluoroheptanoate	**317**			23.5	"	376.2	12.6	80.8%	70-130	2.03	30
perfluorooctanoate	**304**			23.5	"	376.2	13.0	77.3%	70-130	3.04	30
perfluorononanoate	**314**			23.5	"	376.2	6.53	81.7%	70-130	2.42	30
perfluorodecanoate	**319**			23.5	"	376.2	16.9	80.2%	70-130	2.92	30

Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

Matrix Spike Dup (B19G001-MSD1) **Source: 1906011-01** **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluoroundecanoate	**303**			23.5	ng/kg dry	376.2	13.6	77.0%	70-130	3.56	30
perfluorododecanoate	**312**			23.5	"	376.2	17.4	78.2%	70-130	2.04	30
perfluorotridecanoate	**302**			23.5	"	376.2	5.46	78.9%	70-130	0.697	30
perfluorotetradecanoate	**299**			23.5	"	376.2	8.90	77.3%	70-130	4.45	30
perfluorobutyl sulfonate	**309**			23.5	"	376.2	U	82.2%	70-130	5.23	30
perfluorohexyl sulfonate	**303**			23.5	"	376.2	U	80.6%	70-130	0.0212	30
perfluorooctyl sulfonate	**317**			28.2	"	376.2	25.1	77.6%	70-130	2.61	30
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**288**			23.5	"	376.2	U	76.6%	70-130	6.31	30
perfluoro-1-pentanesulfonate (PFPeS)	**292**			23.5	"	376.2	U	77.7%	70-130	5.61	30
perfluoro-1-heptanesulfonate (PFHpS)	**287**			23.5	"	376.2	4.52	75.1%	70-130	9.68	30
perfluoro-1-octanesulfonamide (FOSA)	**293**			23.5	"	376.2	U	77.9%	70-130	8.00	30
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**291**			23.5	"	376.2	U	77.3%	70-130	5.44	30
perfluoro-1-nonanesulfonate (PFNS)	**284**			23.5	"	376.2	3.22	74.7%	70-130	8.24	30
N-MeFOSAA	**301**			23.5	"	376.2	U	80.0%	70-130	1.34	30
N-EtFOSAA	**307**			23.5	"	376.2	U	81.7%	70-130	4.77	30
perfluoro-1-decanesulfonate (PFDS)	**298**			23.5	"	376.2	U	79.1%	70-130	3.20	30
Surrogate: D5-N-EtFOSAA	*306*				*"*	*376.2*		*81.3%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*322*				*"*	*376.2*		*85.5%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*284*				*"*	*364.1*		*78.0%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*287*				*"*	*351.7*		*81.5%*	*70-130*		
Surrogate: M9PFNA	*313*				*"*	*376.2*		*83.3%*	*70-130*		
Surrogate: M8PFOSA	*301*				*"*	*376.2*		*79.9%*	*70-130*		
Surrogate: M8PFOS	*288*				*"*	*360.0*		*79.9%*	*70-130*		
Surrogate: M8PFOA	*310*				*"*	*376.2*		*82.3%*	*70-130*		
Surrogate: M7PFUnA	*307*				*"*	*376.2*		*81.6%*	*70-130*		
Surrogate: M6PFDA	*303*				*"*	*376.2*		*80.5%*	*70-130*		
Surrogate: M5PFPeA	*309*				*"*	*376.2*		*82.1%*	*70-130*		
Surrogate: M5PFHxA	*307*				*"*	*376.2*		*81.6%*	*70-130*		
Surrogate: M4PFHpA	*319*				*"*	*376.2*		*84.9%*	*70-130*		

Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

PFC - Quality Control
US EPA Region 5 LSASD Analytical Service Branch

Batch B19G001 - Solvent Extraction

Matrix Spike Dup (B19G001-MSD1) **Source: 1906011-01** **Prepared & Analyzed: Jul-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: M3PFHxS	*280*				*ng/kg dry*	*355.8*		*78.8%*	*70-130*		
Surrogate: M3PFBS	*271*				*"*	*349.5*		*77.5%*	*70-130*		
Surrogate: M2PFTreA	*298*				*"*	*376.2*		*79.3%*	*70-130*		
Surrogate: MPFDoA	*309*				*"*	*376.2*		*82.1%*	*70-130*		
Surrogate: MPFBA	*342*				*"*	*376.2*		*90.9%*	*70-130*		

Environmental Protection Agency Region 5
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Jul-31-19 10:54

Notes and Definitions

J	The identification of the analyte is acceptable; the reported value is an estimate.
I	Ion ratio criteria is not met for this analyte
U	Not Detected
NR	Not Reported
Q	QC limit Exceeded

Attachment C.2
USEPA Regional Laboratory
Laboratory Analytical Reports – Groundwater

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

US EPA Region 5 LSASD Analytical Services Branch

536 SOUTH CLARK STREET

CHICAGO, ILLINOIS 60605

Date: **8/27/2019**

Title: **ASB Data Report for RACER Livonia**

To: **RRB, LCD, U.S. EPA Region 5**
77 W. Jackson Boulevard
Chicago, IL 60604

From: **Lawrence Zintek, Chemist**
zintek.lawrence@epa.gov
US EPA Region 5 LSASD Analytical Services Branch

The results reported in this document apply to the samples as received and relate only to the items tested. The data transmitted under this cover memo successfully passed the data review process and applicable Analytical Services Branch (ASB) laboratory Standard Operating Procedures. In accordance with the EPA QA/G-8 *Guidance on Environmental Data Verification and Data Validation*, ASB performs data verification on all the data generated internally. ASB does not perform data validation or quality assessment procedures.

This report was reviewed and the information provided herein accurately represents the analysis performed.

Please contact the analyst with any technical report issues, Amanda Wroble at (312)-353-0375 for sample project concerns, and Robert Snyder at (312)-353-9083 with data transmittal questions. Thank you.

Attached are Results for: **RACER Livonia**

Analyses included in this report:

OSRTI PFC

Report Name: 1907014 OSRTI PFC FINAL Aug 27 19 1454

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Accredited Analyses included in this Report

Method: ****** DEFAULT SPECIFIC METHOD *** in Water***
Analysis: ***OSRTI PFC***

Analyte	Certifications
perfluorobutanoate	ISO/IEC 17025:2005
perfluoropentanoate	ISO/IEC 17025:2005
perfluorohexanoate	ISO/IEC 17025:2005
perfluoroheptanoate	ISO/IEC 17025:2005
perfluorooctanoate	ISO/IEC 17025:2005
perfluorononanoate	ISO/IEC 17025:2005
perfluorodecanoate	ISO/IEC 17025:2005
perfluoroundecanoate	ISO/IEC 17025:2005
perfluorododecanoate	ISO/IEC 17025:2005
perfluorotridecanoate	ISO/IEC 17025:2005
perfluorotetradecanoate	ISO/IEC 17025:2005
perfluorobutyl sulfonate	ISO/IEC 17025:2005
perfluorohexyl sulfonate	ISO/IEC 17025:2005
perfluorooctyl sulfonate	ISO/IEC 17025:2005
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	ISO/IEC 17025:2005
perfluoro-1-pentanesulfonate (PFPeS)	ISO/IEC 17025:2005
perfluoro-1-heptanesulfonate (PFHpS)	ISO/IEC 17025:2005
perfluoro-1-octanesulfonamide (FOSA)	ISO/IEC 17025:2005

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Accredited Analyses included in this Report

Method: ****** DEFAULT SPECIFIC METHOD *** in Water***
Analysis: ***OSRTI PFC***

Analyte	Certifications
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	ISO/IEC 17025:2005
perfluoro-1-nonanesulfonate (PFNS)	ISO/IEC 17025:2005
N-MeFOSAA	ISO/IEC 17025:2005
N-EtFOSAA	ISO/IEC 17025:2005
perfluoro-1-decanesulfonate (PFDS)	ISO/IEC 17025:2005

Analytes not listed above are not accredited by ANAB.

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

ANALYSIS CASE NARRATIVE

General Information

A total of nineteen (19) water samples were received for PFAS analysis on July 24, 2019. The holding time of 28 days was met for all samples.

The designated analyst for these samples, Larry Zintek, can be reached at (312) 886-2925.

Sample Analysis and Results

Sample preparation and analysis occurred via the Analytical Services Branch (ASB) standard operating procedure (ASB SOP) OM021 Ver. 3 with deviations outlined in pen-and-ink change #19116 due to how the samples were collected.

The data reported herein meets the requirements referenced in the analytical SOP and any laboratory specifications stated in the "Memorandum Titled- " Perfluorinated Compound Split Sampling at RACER Eckles Road, Livonia, Michigan" dated July 15, 2019 with the exceptions noted in the Quality Control section below. See the report for detailed sample results. Data are properly qualified.

Quality Control

In this data report all samples include pertinent recoveries, RPDs, RSD, etc. as well as the limit ranges in order to understand if the results will be biased high or low. All Quality Control (QC) audits were within the limits specified in the method or QAPP for the analytes or did not result in qualification of the data except for the following:

Initial Calibration Curve
Level 1 of the initial calibration curve for PFNA was not used to generate the calibration curve because PFNA was found at a higher concentration than expected most likely due to PFNA contamination in the vials/caps. The reporting limit for PFNA was raised to 150 ng/L for site samples only, not QC samples. The results for PFNA were less than the uncorrected method reporting limit of 10 ng/L for 1907014-01, -02, -03, -04, -06, -07, -08, -09, -10 and -19. The concentration in the following various samples are shown in parenthesis next to the sample number: 1907014-11 (11.1 ng/L), 1907014-12 (30.1 ng/L), 1907014-13 (43.5 ng/L), 1907014-14 (15 ng/L), 1907014-15 (75.5 ng/L), 1907014-16 (40.2 ng/L), 1907014-17 (13.5 ng/L) and 1907014-18 (61.1 ng/L). None of the data for PFNA should be used due to contamination issues.

Reagent Blank(s)

PFHpA was found in a reagent blank at 6.1 ng/L. the reporting limit was raised to 15 ng/L for all site samples only, not QC samples.

Relative Percent Difference (RPD)

RPDs are only relevant if the analyte is detected above the reporting limit. The RPD failed in sample B19G041-DUP1 for PFHxA and PFNA probably due to low level contamination issues with these two analytes during this analysis.

Qualitative Identification

For any analyte, when the ion ratio limit of ± 30% is exceeded, the affected data are qualified 'I'. This is primarily the case at low concentrations, the confirmatory ion is usually less sensitive and therefore the ion ratio may not pass. In this data package, primarily for PFOS and/or PFHxS were qualified "I" in a few instances probably due to perceived weathering in the sample where the possible branched portion is in much higher concentration than the linear portion causing the ion ratio criteria to fail. This data for PFOS and PFHxS should be used with caution because the ion ratio failed.

Method Blanks(s)

PFHxA was found at 50.4 ng/L in B19G041-BLK1 and 6.87 ng/L in -BLK2. The reporting limit was raised to 100 ng/L for site samples only. Samples 1907014-01, -12 through -19 and B19G041-DUP1 results were below the uncorrected method reporting limit of 10 ng/L. Samples 1907014-02 through -11 PFHxA results were between 37.4 and 88.1 ng/L. None of the data for PFHxA should be used due to contamination issues.

PFOA was found at 3.68 ng/L in B19G041-BLK1 and PFBA was found in B19G041-BLK2 at 20.4 ng/L. This does not affect the results.

Method Reporting Limit Check Samples

Sample B19G041-MRL2 had high recovery for PFHxA.

Matrix Spike/Matrix Spike Duplicate

Sample B19G041-MS1 was biased low for PFTriA and PFTreA. Sample B19G041-MSD1 was biased low for PFTreA.

Surrogate Recovery

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Samples 1907014-01, -02, -04, -05, -11, -13, -14, -15, B19G041-DUP1, -MS1 and -MSD1 were biased low for M2PFTreA. Sample 1907014-03 was biased low for M8:2 FTS, M2PFTreA and MPFDoA. Sample 1907014-06 was biased low for M4:2FTS and M2PFTreA. Sample 1907014-07 and -19 were biased low for M8:2FTS and M2PFTreA. Sample 1907014-12 was biased low for M8:2 FTS, M4:2FTS, M5PFHxA, M2PFTreA and MPFDoA. Samples 1907014-16 and -17 were biased low for M4:2 FTS and M2PFTreA. Sample 1907014 -18 was biased low for M4:2 FTS, M8:2FTS and M2PFTreA.

Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

WORK ORDER **Printed: 7/29/2019 10:26:56AM**

1907014

US EPA Region 5 LSASD Analytical Service Branch

Client: **RRB, LCD, U.S. EPA Region 5** **Project Manager:** **Angela M Ockrassa**
Project: **RACER Livonia** **Project Number:** **[none]**

Report To:

Zachary Sasnow | 77 W. Jackson Boulevard | Phone: (312) 886-0258
RRB, LCD, U.S. EPA Region 5 | Chicago, IL 60604 | Fax:

Date Due: Sep-09-19 15:00 (47 day TAT)
Received By: Robert Snyder Date Received: Jul-24-19 10:45
Logged In By: Robert Snyder Date Logged In: Jul-26-19 10:34

Samples Received at: 0.7 °C
Sample tags/labels **Yes**
Seals Intact **Yes**
Received on ice **Yes**
Paperwork Included **Yes**

Work Order Comments:
Copy/Relog from 1906011.

Sample ID: 1907014-01 **Sampled:** Jul-22-19 11:50 **Matrix:** Water
Sample Name: GW-12607-072219-DA-001A **Sample Location/Comments:**
Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-19-19 11:50	

Sample ID: 1907014-02 **Sampled:** Jul-22-19 12:45 **Matrix:** Water
Sample Name: GW-12607-072219-DA-002A **Sample Location/Comments:**
Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-19-19 12:45	

Sample ID: 1907014-03 **Sampled:** Jul-22-19 12:55 **Matrix:** Water
Sample Name: GW-12607-072219-DA-003A **Sample Location/Comments:**
Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-19-19 12:55	

1907014

US EPA Region 5 LSASD Analytical Service Branch

Client: RRB, LCD, U.S. EPA Region 5
Project: RACER Livonia
Project Manager: Angela M Ockrassa
Project Number: [none]

Sample ID: 1907014-04 **Sampled:** Jul-22-19 12:35 **Matrix:** Water

Sample Name: GW-12607-072219-DA-004A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-19-19 12:35	

Sample ID: 1907014-05 **Sampled:** Jul-22-19 13:45 **Matrix:** Water

Sample Name: GW-12607-072219-DA-005A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-19-19 13:45	

Sample ID: 1907014-06 **Sampled:** Jul-22-19 12:25 **Matrix:** Water

Sample Name: GW-12607-072219-DA-006A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-19-19 12:25	

Sample ID: 1907014-07 **Sampled:** Jul-22-19 13:20 **Matrix:** Water

Sample Name: GW-12607-072219-DA-007A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-19-19 13:20	

Sample ID: 1907014-08 **Sampled:** Jul-22-19 11:30 **Matrix:** Water

Sample Name: EB-12607-072219-DA-001A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-19-19 11:30	

1907014

US EPA Region 5 LSASD Analytical Service Branch

Client: RRB, LCD, U.S. EPA Region 5
Project: RACER Livonia
Project Manager: Angela M Ockrassa
Project Number: [none]

Sample ID: 1907014-09 **Sampled:** Jul-22-19 11:40 **Matrix:** Water

Sample Name: FB-12607-072219-DA-001A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-19-19 11:40	

Sample ID: 1907014-10 **Sampled:** Jul-23-19 10:00 **Matrix:** Water

Sample Name: FB-12607-072319-DA-002A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-20-19 10:00	

Sample ID: 1907014-11 **Sampled:** Jul-23-19 12:15 **Matrix:** Water

Sample Name: GW-12607-072319-DA-008A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-20-19 12:15	

Sample ID: 1907014-12 **Sampled:** Jul-23-19 13:25 **Matrix:** Water

Sample Name: GW-12607-072319-DA-009A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-20-19 13:25	

Sample ID: 1907014-13 **Sampled:** Jul-23-19 12:00 **Matrix:** Water

Sample Name: GW-12607-072319-DA-010A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-20-19 12:00	

1907014

US EPA Region 5 LSASD Analytical Service Branch

Client: RRB, LCD, U.S. EPA Region 5 **Project Manager:** Angela M Ockrassa
Project: RACER Livonia **Project Number:** [none]

Sample ID: 1907014-14 **Sampled:** Jul-23-19 13:00 **Matrix:** Water *QC Source Sample*

Sample Name: GW-12607-072319-DA-011A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-20-19 13:00	

Sample ID: 1907014-15 **Sampled:** Jul-23-19 13:15 **Matrix:** Water

Sample Name: GW-12607-072319-DA-012A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-20-19 13:15	

Sample ID: 1907014-16 **Sampled:** Jul-23-19 13:50 **Matrix:** Water

Sample Name: GW-12607-072319-DA-013A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-20-19 13:50	

Sample ID: 1907014-17 **Sampled:** Jul-23-19 14:00 **Matrix:** Water

Sample Name: GW-12607-072319-DA-014A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-20-19 14:00	

Sample ID: 1907014-18 **Sampled:** Jul-23-19 14:00 **Matrix:** Water

Sample Name: GW-12607-072319-DA-015A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-20-19 14:00	

1907014

US EPA Region 5 LSASD Analytical Service Branch

Client: RRB, LCD, U.S. EPA Region 5
Project: RACER Livonia

Project Manager: Angela M Ockrassa
Project Number: [none]

Sample ID: 1907014-19 **Sampled:** Jul-23-19 14:20 **Matrix:** Water

Sample Name: GW-12607-072319-DA-016A **Sample Location/Comments:**

Sample Comments:

Analysis	Hold time (days)	Expires	Comments
OSRTI PFC	28	Aug-20-19 14:20	

REVIEWED
By Amanda Wroble at 10:27 am, Jul 29, 2019

Reviewed By Date

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-001A (1907014-01) **Matrix: Water** **Sampled: Jul-22-19 11:50** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-02-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**64.5**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	127	*79.5%*	*70-130*	"	"	"
D3-N-MeFOSAA	123	*77.1%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	114	*74.2%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	106	*70.7%*	*70-130*	"	"	"
M9PFNA	128	*79.7%*	*70-130*	"	"	"
M8PFOSA	132	*82.4%*	*70-130*	"	"	"
M8PFOS	124	*81.1%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-001A (1907014-01) **Matrix: Water** **Sampled: Jul-22-19 11:50** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	129			*80.8%*		*70-130*	*B19G041*	*Aug-01-19*	*Aug-02-19*
M7PFUnA	130			*81.1%*		*70-130*	"	"	"
M6PFDA	128			*79.9%*		*70-130*	"	"	"
M5PFPeA	131			*82.1%*		*70-130*	"	"	"
M5PFHxA	132			*82.8%*		*70-130*	"	"	"
M4PFHpA	124			*77.5%*		*70-130*	"	"	"
M3PFHxS	127			*84.0%*		*70-130*	"	"	"
M3PFBS	118			*79.5%*		*70-130*	"	"	"
M2PFTreA	95.0	Q		*59.4%*		*70-130*	"	"	"
MPFDoA	120			*75.1%*		*70-130*	"	"	"
MPFBA	137			*85.9%*		*70-130*	"	"	"

GW-12607-072219-DA-002A (1907014-02) **Matrix: Water** **Sampled: Jul-22-19 12:45** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**12.1**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**24.9**	I		10.0	"	"	"	"	"
perfluorooctyl sulfonate	**342**	I		10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-002A (1907014-02) **Matrix: Water** **Sampled: Jul-22-19 12:45** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	123	*76.9%*	*70-130*	"	"	"
D3-N-MeFOSAA	124	*77.5%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	113	*73.6%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	129	*86.2%*	*70-130*	"	"	"
M9PFNA	122	*76.0%*	*70-130*	"	"	"
M8PFOSA	129	*80.6%*	*70-130*	"	"	"
M8PFOS	125	*81.7%*	*70-130*	"	"	"
M8PFOA	125	*77.9%*	*70-130*	"	"	"
M7PFUnA	123	*77.2%*	*70-130*	"	"	"
M6PFDA	122	*76.3%*	*70-130*	"	"	"
M5PFPeA	134	*83.8%*	*70-130*	"	"	"
M5PFHxA	123	*77.2%*	*70-130*	"	"	"
M4PFHpA	120	*74.7%*	*70-130*	"	"	"
M3PFHxS	122	*80.5%*	*70-130*	"	"	"
M3PFBS	128	*86.4%*	*70-130*	"	"	"
M2PFTreA	83.0	Q *51.9%*	*70-130*	"	"	"
MPFDoA	114	*71.2%*	*70-130*	"	"	"
MPFBA	154	*96.5%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-003A (1907014-03) **Matrix: Water** **Sampled: Jul-22-19 12:55** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**12.6**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**	J		10.0	"	"	"	"	"
perfluorotridecanoate	**U**	J		10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**23.6**	I		10.0	"	"	"	"	"
perfluorooctyl sulfonate	**329**	I		10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**	J		10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result		%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	118		*73.9%*	*70-130*	"	"	"
D3-N-MeFOSAA	112		*70.2%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	106	Q	*69.3%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	121		*80.8%*	*70-130*	"	"	"
M9PFNA	113		*70.5%*	*70-130*	"	"	"
M8PFOSA	124		*77.5%*	*70-130*	"	"	"
M8PFOS	121		*79.2%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-003A (1907014-03) **Matrix: Water** **Sampled: Jul-22-19 12:55** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	119			*74.6%*		*70-130*	*B19G041*	*Aug-01-19*	*Aug-03-19*
M7PFUnA	116			*72.7%*		*70-130*	"	"	"
M6PFDA	117			*73.2%*		*70-130*	"	"	"
M5PFPeA	130			*81.0%*		*70-130*	"	"	"
M5PFHxA	119			*74.6%*		*70-130*	"	"	"
M4PFHpA	112			*70.0%*		*70-130*	"	"	"
M3PFHxS	112			*73.7%*		*70-130*	"	"	"
M3PFBS	124			*83.4%*		*70-130*	"	"	"
M2PFTreA	76.5	Q		*47.8%*		*70-130*	"	"	"
MPFDoA	107	Q		*67.1%*		*70-130*	"	"	"
MPFBA	147			*91.6%*		*70-130*	"	"	"

GW-12607-072219-DA-004A (1907014-04) **Matrix: Water** **Sampled: Jul-22-19 12:35** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-004A (1907014-04) **Matrix: Water** **Sampled: Jul-22-19 12:35** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	120	*74.7%*	*70-130*	"	"	"
D3-N-MeFOSAA	123	*76.7%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	109	*71.3%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	107	*71.4%*	*70-130*	"	"	"
M9PFNA	121	*75.9%*	*70-130*	"	"	"
M8PFOSA	123	*76.6%*	*70-130*	"	"	"
M8PFOS	117	*76.4%*	*70-130*	"	"	"
M8PFOA	123	*76.6%*	*70-130*	"	"	"
M7PFUnA	120	*75.2%*	*70-130*	"	"	"
M6PFDA	121	*75.3%*	*70-130*	"	"	"
M5PFPeA	130	*81.2%*	*70-130*	"	"	"
M5PFHxA	128	*79.8%*	*70-130*	"	"	"
M4PFHpA	120	*74.8%*	*70-130*	"	"	"
M3PFHxS	120	*79.5%*	*70-130*	"	"	"
M3PFBS	118	*79.1%*	*70-130*	"	"	"
M2PFTreA	102	Q *63.5%*	*70-130*	"	"	"
MPFDoA	118	*73.7%*	*70-130*	"	"	"
MPFBA	137	*85.5%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-005A (1907014-05) **Matrix: Water** **Sampled: Jul-22-19 13:45** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	122	*76.4%*	*70-130*	"	"	"
D3-N-MeFOSAA	125	*77.8%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	115	*74.8%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	106	*71.1%*	*70-130*	"	"	"
M9PFNA	120	*75.2%*	*70-130*	"	"	"
M8PFOSA	129	*80.5%*	*70-130*	"	"	"
M8PFOS	122	*80.0%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-005A (1907014-05) **Matrix: Water** **Sampled: Jul-22-19 13:45** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	125			*77.9%*		*70-130*	*B19G041*	*Aug-01-19*	*Aug-03-19*
M7PFUnA	121			*75.9%*		*70-130*	"	"	"
M6PFDA	125			*77.8%*		*70-130*	"	"	"
M5PFPeA	132			*82.8%*		*70-130*	"	"	"
M5PFHxA	124			*77.6%*		*70-130*	"	"	"
M4PFHpA	118			*73.6%*		*70-130*	"	"	"
M3PFHxS	121			*80.0%*		*70-130*	"	"	"
M3PFBS	124			*83.2%*		*70-130*	"	"	"
M2PFTreA	95.2	Q		*59.5%*		*70-130*	"	"	"
MPFDoA	117			*73.4%*		*70-130*	"	"	"
MPFBA	141			*87.9%*		*70-130*	"	"	"

GW-12607-072219-DA-006A (1907014-06) **Matrix: Water** **Sampled: Jul-22-19 12:25** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**	J		10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-006A (1907014-06) **Matrix: Water** **Sampled: Jul-22-19 12:25** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result		%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	123		*76.9%*	*70-130*	"	"	"
D3-N-MeFOSAA	125		*78.2%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	109		*71.4%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	104	Q	*69.3%*	*70-130*	"	"	"
M9PFNA	120		*75.2%*	*70-130*	"	"	"
M8PFOSA	128		*79.8%*	*70-130*	"	"	"
M8PFOS	116		*75.6%*	*70-130*	"	"	"
M8PFOA	124		*77.7%*	*70-130*	"	"	"
M7PFUnA	123		*76.9%*	*70-130*	"	"	"
M6PFDA	123		*76.7%*	*70-130*	"	"	"
M5PFPeA	132		*82.4%*	*70-130*	"	"	"
M5PFHxA	126		*78.5%*	*70-130*	"	"	"
M4PFHpA	119		*74.7%*	*70-130*	"	"	"
M3PFHxS	120		*79.4%*	*70-130*	"	"	"
M3PFBS	120		*80.7%*	*70-130*	"	"	"
M2PFTreA	95.1	Q	*59.5%*	*70-130*	"	"	"
MPFDoA	115		*71.9%*	*70-130*	"	"	"
MPFBA	147		*91.7%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-007A (1907014-07) **Matrix: Water** **Sampled: Jul-22-19 13:20** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**10.5**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**27.9**	I		10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**	J		10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	Flags	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	124		*77.8%*	*70-130*	"	"	"
D3-N-MeFOSAA	127		*79.2%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	107	Q	*69.7%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	110		*73.6%*	*70-130*	"	"	"
M9PFNA	121		*75.9%*	*70-130*	"	"	"
M8PFOSA	127		*79.4%*	*70-130*	"	"	"
M8PFOS	120		*78.1%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072219-DA-007A (1907014-07) **Matrix: Water** **Sampled: Jul-22-19 13:20** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	123			*77.0%*		*70-130*	*B19G041*	*Aug-01-19*	*Aug-03-19*
M7PFUnA	125			*78.4%*		*70-130*	"	"	"
M6PFDA	127			*79.1%*		*70-130*	"	"	"
M5PFPeA	128			*80.1%*		*70-130*	"	"	"
M5PFHxA	127			*79.6%*		*70-130*	"	"	"
M4PFHpA	117			*73.3%*		*70-130*	"	"	"
M3PFHxS	122			*80.6%*		*70-130*	"	"	"
M3PFBS	123			*82.8%*		*70-130*	"	"	"
M2PFTreA	94.2	Q		*58.9%*		*70-130*	"	"	"
MPFDoA	121			*75.5%*		*70-130*	"	"	"
MPFBA	147			*91.7%*		*70-130*	"	"	"

EB-12607-072219-DA-001A (1907014-08) **Matrix: Water** **Sampled: Jul-22-19 11:30** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**			10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

EB-12607-072219-DA-001A (1907014-08) **Matrix: Water** **Sampled: Jul-22-19 11:30** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	132	*82.3%*	*70-130*	"	"	"
D3-N-MeFOSAA	127	*79.5%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	113	*73.9%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	112	*74.6%*	*70-130*	"	"	"
M9PFNA	127	*79.1%*	*70-130*	"	"	"
M8PFOSA	129	*80.5%*	*70-130*	"	"	"
M8PFOS	129	*84.3%*	*70-130*	"	"	"
M8PFOA	128	*79.8%*	*70-130*	"	"	"
M7PFUnA	129	*80.4%*	*70-130*	"	"	"
M6PFDA	126	*78.8%*	*70-130*	"	"	"
M5PFPeA	130	*81.5%*	*70-130*	"	"	"
M5PFHxA	128	*80.1%*	*70-130*	"	"	"
M4PFHpA	127	*79.3%*	*70-130*	"	"	"
M3PFHxS	125	*82.6%*	*70-130*	"	"	"
M3PFBS	123	*82.8%*	*70-130*	"	"	"
M2PFTreA	117	*72.8%*	*70-130*	"	"	"
MPFDoA	128	*79.7%*	*70-130*	"	"	"
MPFBA	145	*90.6%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

FB-12607-072219-DA-001A (1907014-09) **Matrix: Water** **Sampled: Jul-22-19 11:40** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**			10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	130	*81.2%*	*70-130*	"	"	"
D3-N-MeFOSAA	132	*82.6%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	115	*74.9%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	111	*73.9%*	*70-130*	"	"	"
M9PFNA	130	*81.1%*	*70-130*	"	"	"
M8PFOSA	132	*82.5%*	*70-130*	"	"	"
M8PFOS	126	*82.0%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

FB-12607-072219-DA-001A (1907014-09) **Matrix: Water** **Sampled: Jul-22-19 11:40** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	131			*82.0%*		*70-130*	*B19G041*	*Aug-01-19*	*Aug-03-19*
M7PFUnA	132			*82.5%*		*70-130*	"	"	"
M6PFDA	132			*82.7%*		*70-130*	"	"	"
M5PFPeA	134			*84.0%*		*70-130*	"	"	"
M5PFHxA	130			*81.3%*		*70-130*	"	"	"
M4PFHpA	126			*78.7%*		*70-130*	"	"	"
M3PFHxS	127			*84.1%*		*70-130*	"	"	"
M3PFBS	125			*84.4%*		*70-130*	"	"	"
M2PFTreA	113			*70.8%*		*70-130*	"	"	"
MPFDoA	126			*78.7%*		*70-130*	"	"	"
MPFBA	148			*92.5%*		*70-130*	"	"	"

FB-12607-072319-DA-002A (1907014-10) **Matrix: Water** **Sampled: Jul-23-19 10:00** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**			10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

FB-12607-072319-DA-002A (1907014-10) **Matrix: Water** **Sampled: Jul-23-19 10:00** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	135	*84.1%*	*70-130*	"	"	"
D3-N-MeFOSAA	137	*85.7%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	119	*77.4%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	115	*76.9%*	*70-130*	"	"	"
M9PFNA	132	*82.4%*	*70-130*	"	"	"
M8PFOSA	135	*84.6%*	*70-130*	"	"	"
M8PFOS	127	*82.7%*	*70-130*	"	"	"
M8PFOA	136	*85.2%*	*70-130*	"	"	"
M7PFUnA	134	*84.0%*	*70-130*	"	"	"
M6PFDA	134	*83.8%*	*70-130*	"	"	"
M5PFPeA	137	*85.9%*	*70-130*	"	"	"
M5PFHxA	136	*85.0%*	*70-130*	"	"	"
M4PFHpA	130	*81.5%*	*70-130*	"	"	"
M3PFHxS	128	*84.7%*	*70-130*	"	"	"
M3PFBS	127	*85.2%*	*70-130*	"	"	"
M2PFTreA	125	*78.1%*	*70-130*	"	"	"
MPFDoA	132	*82.8%*	*70-130*	"	"	"
MPFBA	150	*93.7%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-008A (1907014-11) **Matrix: Water** **Sampled: Jul-23-19 12:15** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**34.0**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**666**			20.0	"	2	"	"	Aug-03-19
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	1	"	"	Aug-03-19
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	133	*83.0%*	*70-130*	"	"	"
D3-N-MeFOSAA	132	*82.4%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	121	*78.9%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	118	*78.8%*	*70-130*	"	"	"
M9PFNA	135	*84.3%*	*70-130*	"	"	"
M8PFOSA	143	*89.2%*	*70-130*	"	"	"
M8PFOS	133	*86.7%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-008A (1907014-11) **Matrix: Water** **Sampled: Jul-23-19 12:15** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	135			*84.3%*		*70-130*	*B19G041*	*Aug-01-19*	*Aug-03-19*
M7PFUnA	136			*84.7%*		*70-130*	"	"	"
M6PFDA	135			*84.1%*		*70-130*	"	"	"
M5PFPeA	139			*86.6%*		*70-130*	"	"	"
M5PFHxA	135			*84.4%*		*70-130*	"	"	"
M4PFHpA	129			*80.6%*		*70-130*	"	"	"
M3PFHxS	132			*87.2%*		*70-130*	"	"	"
M3PFBS	130			*87.8%*		*70-130*	"	"	"
M2PFTreA	110	Q		*68.7%*		*70-130*	"	"	"
MPFDoA	128			*80.2%*		*70-130*	"	"	"
MPFBA	155			*96.8%*		*70-130*	"	"	"

GW-12607-072319-DA-009A (1907014-12) **Matrix: Water** **Sampled: Jul-23-19 13:25** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**	J		100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**	J		10.0	"	"	"	"	"
perfluorotridecanoate	**U**	J		10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**15.3**	I		10.0	"	"	"	"	"
perfluorooctyl sulfonate	**35.8**	I		10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**	J		10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-009A (1907014-12) **Matrix: Water** **Sampled: Jul-23-19 13:25** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**	J		10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result		%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	118		*73.7%*	*70-130*	"	"	"
D3-N-MeFOSAA	121		*75.7%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	101	Q	*65.9%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	99.9	Q	*66.8%*	*70-130*	"	"	"
M9PFNA	116		*72.6%*	*70-130*	"	"	"
M8PFOSA	127		*79.2%*	*70-130*	"	"	"
M8PFOS	126		*82.5%*	*70-130*	"	"	"
M8PFOA	128		*79.7%*	*70-130*	"	"	"
M7PFUnA	120		*75.2%*	*70-130*	"	"	"
M6PFDA	121		*75.4%*	*70-130*	"	"	"
M5PFPeA	129		*80.7%*	*70-130*	"	"	"
M5PFHxA	64.8	Q	*40.5%*	*70-130*	"	"	"
M4PFHpA	120		*75.1%*	*70-130*	"	"	"
M3PFHxS	121		*79.8%*	*70-130*	"	"	"
M3PFBS	120		*80.9%*	*70-130*	"	"	"
M2PFTreA	81.3	Q	*50.8%*	*70-130*	"	"	"
MPFDoA	112	Q	*69.8%*	*70-130*	"	"	"
MPFBA	149		*93.3%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-010A (1907014-13) **Matrix: Water** **Sampled: Jul-23-19 12:00** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**11.3**	I		10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	135	*84.1%*	*70-130*	"	"	"
D3-N-MeFOSAA	130	*81.3%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	114	*74.1%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	112	*74.6%*	*70-130*	"	"	"
M9PFNA	130	*81.4%*	*70-130*	"	"	"
M8PFOSA	131	*81.9%*	*70-130*	"	"	"
M8PFOS	125	*81.6%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-010A (1907014-13) **Matrix: Water** **Sampled: Jul-23-19 12:00** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	134			*83.8%*		*70-130*	*B19G041*	*Aug-01-19*	*Aug-03-19*
M7PFUnA	131			*81.9%*		*70-130*	"	"	"
M6PFDA	134			*84.0%*		*70-130*	"	"	"
M5PFPeA	135			*84.5%*		*70-130*	"	"	"
M5PFHxA	137			*85.3%*		*70-130*	"	"	"
M4PFHpA	128			*80.0%*		*70-130*	"	"	"
M3PFHxS	125			*82.6%*		*70-130*	"	"	"
M3PFBS	123			*82.8%*		*70-130*	"	"	"
M2PFTreA	104	Q		*65.3%*		*70-130*	"	"	"
MPFDoA	125			*78.1%*		*70-130*	"	"	"
MPFBA	157			*97.8%*		*70-130*	"	"	"

GW-12607-072319-DA-011A (1907014-14) **Matrix: Water** **Sampled: Jul-23-19 13:00** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**	J		100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**	J		150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**19.0**	I		10.0	"	"	"	"	"
perfluorooctyl sulfonate	**155**	I		10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-011A (1907014-14) **Matrix: Water** **Sampled: Jul-23-19 13:00** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	126	*78.7%*	*70-130*	"	"	"
D3-N-MeFOSAA	121	*75.5%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	113	*73.8%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	114	*76.3%*	*70-130*	"	"	"
M9PFNA	121	*75.6%*	*70-130*	"	"	"
M8PFOSA	129	*80.6%*	*70-130*	"	"	"
M8PFOS	122	*79.9%*	*70-130*	"	"	"
M8PFOA	125	*78.3%*	*70-130*	"	"	"
M7PFUnA	126	*78.9%*	*70-130*	"	"	"
M6PFDA	126	*78.7%*	*70-130*	"	"	"
M5PFPeA	133	*83.1%*	*70-130*	"	"	"
M5PFHxA	129	*80.3%*	*70-130*	"	"	"
M4PFHpA	120	*74.8%*	*70-130*	"	"	"
M3PFHxS	123	*81.3%*	*70-130*	"	"	"
M3PFBS	129	*87.0%*	*70-130*	"	"	"
M2PFTreA	89.2	Q *55.7%*	*70-130*	"	"	"
MPFDoA	116	*72.4%*	*70-130*	"	"	"
MPFBA	159	*99.3%*	*70-130*	"	"	"

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US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-012A (1907014-15) **Matrix: Water** **Sampled: Jul-23-19 13:15** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	130	*81.4%*	*70-130*	"	"	"
D3-N-MeFOSAA	136	*84.7%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	116	*75.9%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	111	*74.0%*	*70-130*	"	"	"
M9PFNA	131	*82.1%*	*70-130*	"	"	"
M8PFOSA	131	*81.8%*	*70-130*	"	"	"
M8PFOS	128	*83.9%*	*70-130*	"	"	"

Environmental Protection Agency Region 5

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77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

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GW-12607-072319-DA-012A (1907014-15) **Matrix: Water** **Sampled: Jul-23-19 13:15** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	131			*82.1%*		*70-130*	*B19G041*	*Aug-01-19*	*Aug-03-19*
M7PFUnA	131			*82.1%*		*70-130*	"	"	"
M6PFDA	134			*83.8%*		*70-130*	"	"	"
M5PFPeA	135			*84.3%*		*70-130*	"	"	"
M5PFHxA	132			*82.8%*		*70-130*	"	"	"
M4PFHpA	130			*81.1%*		*70-130*	"	"	"
M3PFHxS	126			*83.3%*		*70-130*	"	"	"
M3PFBS	123			*83.0%*		*70-130*	"	"	"
M2PFTreA	107	Q		*66.6%*		*70-130*	"	"	"
MPFDoA	127			*79.6%*		*70-130*	"	"	"
MPFBA	150			*93.7%*		*70-130*	"	"	"

GW-12607-072319-DA-013A (1907014-16) **Matrix: Water** **Sampled: Jul-23-19 13:50** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**18.7**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**	J		10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-013A (1907014-16) **Matrix: Water** **Sampled: Jul-23-19 13:50** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	120	*74.8%*	*70-130*	"	"	"
D3-N-MeFOSAA	121	*75.7%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	111	*72.2%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	104 Q	*69.5%*	*70-130*	"	"	"
M9PFNA	122	*76.0%*	*70-130*	"	"	"
M8PFOSA	128	*79.9%*	*70-130*	"	"	"
M8PFOS	117	*76.6%*	*70-130*	"	"	"
M8PFOA	123	*77.2%*	*70-130*	"	"	"
M7PFUnA	126	*78.9%*	*70-130*	"	"	"
M6PFDA	122	*76.1%*	*70-130*	"	"	"
M5PFPeA	129	*80.4%*	*70-130*	"	"	"
M5PFHxA	125	*78.1%*	*70-130*	"	"	"
M4PFHpA	121	*75.9%*	*70-130*	"	"	"
M3PFHxS	126	*83.0%*	*70-130*	"	"	"
M3PFBS	124	*83.6%*	*70-130*	"	"	"
M2PFTreA	100 Q	*62.6%*	*70-130*	"	"	"
MPFDoA	117	*73.0%*	*70-130*	"	"	"
MPFBA	144	*90.0%*	*70-130*	"	"	"

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77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-014A (1907014-17) **Matrix: Water** **Sampled: Jul-23-19 14:00** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**20.0**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**	J		10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	Flags	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	124		*77.4%*	*70-130*	"	"	"
D3-N-MeFOSAA	122		*76.2%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	109		*71.1%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	103	Q	*68.8%*	*70-130*	"	"	"
M9PFNA	120		*74.8%*	*70-130*	"	"	"
M8PFOSA	122		*76.2%*	*70-130*	"	"	"
M8PFOS	120		*78.6%*	*70-130*	"	"	"

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77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
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GW-12607-072319-DA-014A (1907014-17) **Matrix: Water** **Sampled: Jul-23-19 14:00** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	121			*75.9%*		*70-130*	*B19G041*	*Aug-01-19*	*Aug-03-19*
M7PFUnA	123			*77.1%*		*70-130*	"	"	"
M6PFDA	120			*75.2%*		*70-130*	"	"	"
M5PFPeA	130			*81.4%*		*70-130*	"	"	"
M5PFHxA	125			*77.9%*		*70-130*	"	"	"
M4PFHpA	120			*75.3%*		*70-130*	"	"	"
M3PFHxS	122			*80.3%*		*70-130*	"	"	"
M3PFBS	121			*81.2%*		*70-130*	"	"	"
M2PFTreA	96.5	Q		*60.3%*		*70-130*	"	"	"
MPFDoA	116			*72.8%*		*70-130*	"	"	"
MPFBA	144			*90.2%*		*70-130*	"	"	"

GW-12607-072319-DA-015A (1907014-18) **Matrix: Water** **Sampled: Jul-23-19 14:00** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**	J		10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"

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77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-015A (1907014-18) **Matrix: Water** **Sampled: Jul-23-19 14:00** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**	J		10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result		%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	118		*73.8%*	*70-130*	"	"	"
D3-N-MeFOSAA	123		*77.0%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	107	Q	*69.7%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	104	Q	*69.8%*	*70-130*	"	"	"
M9PFNA	120		*75.2%*	*70-130*	"	"	"
M8PFOSA	124		*77.6%*	*70-130*	"	"	"
M8PFOS	120		*78.1%*	*70-130*	"	"	"
M8PFOA	122		*76.0%*	*70-130*	"	"	"
M7PFUnA	123		*76.7%*	*70-130*	"	"	"
M6PFDA	124		*77.5%*	*70-130*	"	"	"
M5PFPeA	131		*82.0%*	*70-130*	"	"	"
M5PFHxA	121		*75.9%*	*70-130*	"	"	"
M4PFHpA	119		*74.5%*	*70-130*	"	"	"
M3PFHxS	121		*79.7%*	*70-130*	"	"	"
M3PFBS	120		*80.6%*	*70-130*	"	"	"
M2PFTreA	98.5	Q	*61.6%*	*70-130*	"	"	"
MPFDoA	117		*73.4%*	*70-130*	"	"	"
MPFBA	148		*92.4%*	*70-130*	"	"	"

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77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-016A (1907014-19) **Matrix: Water** **Sampled: Jul-23-19 14:20** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
perfluorobutanoate	**U**			50.0	ng/L	1	B19G041	Aug-01-19	Aug-03-19
perfluoropentanoate	**U**			50.0	"	"	"	"	"
perfluorohexanoate	**U**			100	"	"	"	"	"
perfluoroheptanoate	**U**			15.0	"	"	"	"	"
perfluorooctanoate	**U**			10.0	"	"	"	"	"
perfluorononanoate	**U**			150	"	"	"	"	"
perfluorodecanoate	**U**			10.0	"	"	"	"	"
perfluoroundecanoate	**U**			10.0	"	"	"	"	"
perfluorododecanoate	**U**			10.0	"	"	"	"	"
perfluorotridecanoate	**U**			10.0	"	"	"	"	"
perfluorotetradecanoate	**U**	J		10.0	"	"	"	"	"
perfluorobutyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorohexyl sulfonate	**U**			10.0	"	"	"	"	"
perfluorooctyl sulfonate	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"	"	"	"	"
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"	"	"	"	"
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"	"	"	"	"
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"	"	"	"	"
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**	J		10.0	"	"	"	"	"
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"	"	"	"	"
N-MeFOSAA	**U**			10.0	"	"	"	"	"
N-EtFOSAA	**U**			10.0	"	"	"	"	"
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"	"	"	"	"

Surrogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
D5-N-EtFOSAA	122	*76.1%*	*70-130*	"	"	"
D3-N-MeFOSAA	121	*75.6%*	*70-130*	"	"	"
perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	108	*70.2%*	*70-130*	"	"	"
perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:2 FTS	113	*75.8%*	*70-130*	"	"	"
M9PFNA	120	*74.8%*	*70-130*	"	"	"
M8PFOSA	125	*78.0%*	*70-130*	"	"	"
M8PFOS	120	*78.6%*	*70-130*	"	"	"

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS

US EPA Region 5 LSASD Analytical Services Branch

GW-12607-072319-DA-016A (1907014-19) **Matrix: Water** **Sampled: Jul-23-19 14:20** **Received: Jul-24-19 10:45**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Surrogate	Result			%REC		%REC Limits	Batch	Prepared	Analyzed
M8PFOA	124			*77.2%*		*70-130*	*B19G041*	*Aug-01-19*	*Aug-03-19*
M7PFUnA	123			*76.9%*		*70-130*	"	"	"
M6PFDA	119			*74.6%*		*70-130*	"	"	"
M5PFPeA	130			*81.2%*		*70-130*	"	"	"
M5PFHxA	129			*80.9%*		*70-130*	"	"	"
M4PFHpA	118			*73.9%*		*70-130*	"	"	"
M3PFHxS	118			*78.1%*		*70-130*	"	"	"
M3PFBS	117			*78.7%*		*70-130*	"	"	"
M2PFTreA	103	Q		*64.1%*		*70-130*	"	"	"
MPFDoA	118			*73.6%*		*70-130*	"	"	"
MPFBA	143			*89.4%*		*70-130*	"	"	"

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

Blank (B19G041-BLK1) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**U**			50.0	ng/L						
perfluoropentanoate	**U**			50.0	"						
perfluorohexanoate	**50.4**	Q		10.0	"						
perfluoroheptanoate	**U**			10.0	"						
perfluorooctanoate	**U**			10.0	"						
perfluorononanoate	**U**			10.0	"						
perfluorodecanoate	**U**			10.0	"						
perfluoroundecanoate	**U**			10.0	"						
perfluorododecanoate	**U**			10.0	"						
perfluorotridecanoate	**U**			10.0	"						
perfluorotetradecanoate	**U**			10.0	"						
perfluorobutyl sulfonate	**U**			10.0	"						
perfluorohexyl sulfonate	**U**			10.0	"						
perfluorooctyl sulfonate	**U**			10.0	"						
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"						
perfluoro-1-pentanesulfonate (PFPeS)	**U**			10.0	"						
perfluoro-1-heptanesulfonate (PFHpS)	**U**			10.0	"						
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"						
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"						
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"						
N-MeFOSAA	**U**			10.0	"						
N-EtFOSAA	**U**			10.0	"						
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"						
Surrogate: D5-N-EtFOSAA	*144*				*"*	*160.0*		*90.1%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*146*				*"*	*160.0*		*91.4%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*128*				*"*	*153.3*		*83.2%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*125*				*"*	*149.6*		*83.3%*	*70-130*		
Surrogate: M9PFNA	*144*				*"*	*160.0*		*90.1%*	*70-130*		

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

Blank (B19G041-BLK1) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: M8PFOSA	*144*				*ng/L*	*160.0*		*90.1%*	*70-130*		
Surrogate: M8PFOS	*145*				*"*	*153.1*		*94.8%*	*70-130*		
Surrogate: M8PFOA	*147*				*"*	*160.0*		*91.9%*	*70-130*		
Surrogate: M7PFUnA	*145*				*"*	*160.0*		*90.7%*	*70-130*		
Surrogate: M6PFDA	*145*				*"*	*160.0*		*90.5%*	*70-130*		
Surrogate: M5PFPeA	*147*				*"*	*160.0*		*92.1%*	*70-130*		
Surrogate: M5PFHxA	*146*				*"*	*160.0*		*91.0%*	*70-130*		
Surrogate: M4PFHpA	*141*				*"*	*160.0*		*88.2%*	*70-130*		
Surrogate: M3PFHxS	*141*				*"*	*151.4*		*93.2%*	*70-130*		
Surrogate: M3PFBS	*134*				*"*	*148.6*		*90.3%*	*70-130*		
Surrogate: M2PFTreA	*132*				*"*	*160.0*		*82.4%*	*70-130*		
Surrogate: MPFDoA	*142*				*"*	*160.0*		*88.5%*	*70-130*		
Surrogate: MPFBA	*158*				*"*	*160.0*		*99.1%*	*70-130*		

Blank (B19G041-BLK2) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**U**			50.0	ng/L						
perfluoropentanoate	**U**			50.0	"						
perfluorohexanoate	**U**			10.0	"						
perfluoroheptanoate	**U**			10.0	"						
perfluorooctanoate	**U**			10.0	"						
perfluorononanoate	**U**			10.0	"						
perfluorodecanoate	**U**			10.0	"						
perfluoroundecanoate	**U**			10.0	"						
perfluorododecanoate	**U**			10.0	"						
perfluorotridecanoate	**U**			10.0	"						
perfluorotetradecanoate	**U**			10.0	"						
perfluorobutyl sulfonate	**U**			10.0	"						
perfluorohexyl sulfonate	**U**			10.0	"						
perfluorooctyl sulfonate	**U**			10.0	"						
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"						

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

Blank (B19G041-BLK2) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluoro-1-pentanesulfonate (PFPeS)	U			10.0	ng/L						
perfluoro-1-heptanesulfonate (PFHpS)	U			10.0	"						
perfluoro-1-octanesulfonamide (FOSA)	U			10.0	"						
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	U			10.0	"						
perfluoro-1-nonanesulfonate (PFNS)	U			10.0	"						
N-MeFOSAA	U			10.0	"						
N-EtFOSAA	U			10.0	"						
perfluoro-1-decanesulfonate (PFDS)	U			10.0	"						
Surrogate: D5-N-EtFOSAA	*159*				*"*	*160.0*		*99.3%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*155*				*"*	*160.0*		*97.1%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*134*				*"*	*153.3*		*87.1%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*131*				*"*	*149.6*		*87.4%*	*70-130*		
Surrogate: M9PFNA	*153*				*"*	*160.0*		*95.9%*	*70-130*		
Surrogate: M8PFOSA	*155*				*"*	*160.0*		*96.6%*	*70-130*		
Surrogate: M8PFOS	*147*				*"*	*153.1*		*95.8%*	*70-130*		
Surrogate: M8PFOA	*153*				*"*	*160.0*		*95.9%*	*70-130*		
Surrogate: M7PFUnA	*154*				*"*	*160.0*		*96.1%*	*70-130*		
Surrogate: M6PFDA	*153*				*"*	*160.0*		*95.5%*	*70-130*		
Surrogate: M5PFPeA	*154*				*"*	*160.0*		*96.1%*	*70-130*		
Surrogate: M5PFHxA	*147*				*"*	*160.0*		*92.0%*	*70-130*		
Surrogate: M4PFHpA	*149*				*"*	*160.0*		*93.2%*	*70-130*		
Surrogate: M3PFHxS	*146*				*"*	*151.4*		*96.3%*	*70-130*		
Surrogate: M3PFBS	*137*				*"*	*148.6*		*91.9%*	*70-130*		
Surrogate: M2PFTreA	*142*				*"*	*160.0*		*88.8%*	*70-130*		
Surrogate: MPFDoA	*150*				*"*	*160.0*		*94.0%*	*70-130*		
Surrogate: MPFBA	*170*				*"*	*160.0*		*106%*	*70-130*		

LCS (B19G041-BS1) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**769**			50.0	ng/L	800.0		96.1%	70-130		

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

LCS (B19G041-BS1) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluoropentanoate	**708**			50.0	ng/L	800.0		88.5%	70-130		
perfluorohexanoate	**144**			10.0	"	160.0		89.9%	70-130		
perfluoroheptanoate	**140**			10.0	"	160.0		87.2%	70-130		
perfluorooctanoate	**160**			10.0	"	160.0		100%	70-130		
perfluorononanoate	**149**			10.0	"	160.0		92.9%	70-130		
perfluorodecanoate	**142**			10.0	"	160.0		88.6%	70-130		
perfluoroundecanoate	**140**			10.0	"	160.0		87.5%	70-130		
perfluorododecanoate	**137**			10.0	"	160.0		85.5%	70-130		
perfluorotridecanoate	**139**			10.0	"	160.0		86.7%	70-130		
perfluorotetradecanoate	**137**			10.0	"	160.0		85.4%	70-130		
perfluorobutyl sulfonate	**139**			10.0	"	160.0		86.7%	70-130		
perfluorohexyl sulfonate	**137**			10.0	"	160.0		85.8%	70-130		
perfluorooctyl sulfonate	**148**			10.0	"	160.0		92.4%	70-130		
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**140**			10.0	"	160.0		87.4%	70-130		
perfluoro-1-pentanesulfonate (PFPeS)	**148**			10.0	"	160.0		92.4%	70-130		
perfluoro-1-heptanesulfonate (PFHpS)	**146**			10.0	"	160.0		91.4%	70-130		
perfluoro-1-octanesulfonamide (FOSA)	**139**			10.0	"	160.0		86.7%	70-130		
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**142**			10.0	"	160.0		88.6%	70-130		
perfluoro-1-nonanesulfonate (PFNS)	**148**			10.0	"	160.0		92.7%	70-130		
N-MeFOSAA	**142**			10.0	"	160.0		88.6%	70-130		
N-EtFOSAA	**140**			10.0	"	160.0		87.7%	70-130		
perfluoro-1-decanesulfonate (PFDS)	**148**			10.0	"	160.0		92.3%	70-130		
Surrogate: D5-N-EtFOSAA	*143*				*"*	*160.0*		*89.1%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*146*				*"*	*160.0*		*91.1%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*145*				*"*	*153.3*		*94.7%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*131*				*"*	*149.6*		*87.3%*	*70-130*		
Surrogate: M9PFNA	*142*				*"*	*160.0*		*88.5%*	*70-130*		
Surrogate: M8PFOSA	*152*				*"*	*160.0*		*95.1%*	*70-130*		
Surrogate: M8PFOS	*141*				*"*	*153.1*		*92.0%*	*70-130*		

Environmental Protection Agency Region 5

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

LCS (B19G041-BS1) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: M8PFOA	*145*				*ng/L*	*160.0*		*90.3%*	*70-130*		
Surrogate: M7PFUnA	*145*				*"*	*160.0*		*90.4%*	*70-130*		
Surrogate: M6PFDA	*143*				*"*	*160.0*		*89.2%*	*70-130*		
Surrogate: M5PFPeA	*148*				*"*	*160.0*		*92.4%*	*70-130*		
Surrogate: M5PFHxA	*142*				*"*	*160.0*		*89.0%*	*70-130*		
Surrogate: M4PFHpA	*141*				*"*	*160.0*		*88.3%*	*70-130*		
Surrogate: M3PFHxS	*140*				*"*	*151.4*		*92.2%*	*70-130*		
Surrogate: M3PFBS	*134*				*"*	*148.6*		*89.9%*	*70-130*		
Surrogate: M2PFTreA	*142*				*"*	*160.0*		*88.6%*	*70-130*		
Surrogate: MPFDoA	*146*				*"*	*160.0*		*91.3%*	*70-130*		
Surrogate: MPFBA	*164*				*"*	*160.0*		*102%*	*70-130*		

LCS Dup (B19G041-BSD1) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**812**			50.0	ng/L	800.0		101%	70-130	5.46	30
perfluoropentanoate	**750**			50.0	"	800.0		93.8%	70-130	5.78	30
perfluorohexanoate	**155**			10.0	"	160.0		96.6%	70-130	7.21	30
perfluoroheptanoate	**163**			10.0	"	160.0		102%	70-130	15.3	30
perfluorooctanoate	**157**			10.0	"	160.0		98.2%	70-130	1.77	30
perfluorononanoate	**150**			10.0	"	160.0		93.9%	70-130	1.02	30
perfluorodecanoate	**146**			10.0	"	160.0		91.4%	70-130	3.10	30
perfluoroundecanoate	**148**			10.0	"	160.0		92.2%	70-130	5.29	30
perfluorododecanoate	**144**			10.0	"	160.0		90.0%	70-130	5.18	30
perfluorotridecanoate	**142**			10.0	"	160.0		88.7%	70-130	2.25	30
perfluorotetradecanoate	**138**			10.0	"	160.0		86.2%	70-130	0.892	30
perfluorobutyl sulfonate	**142**			10.0	"	160.0		88.5%	70-130	2.06	30
perfluorohexyl sulfonate	**153**			10.0	"	160.0		95.4%	70-130	10.5	30
perfluorooctyl sulfonate	**155**			10.0	"	160.0		97.0%	70-130	4.91	30
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**147**			10.0	"	160.0		92.1%	70-130	5.23	30
perfluoro-1-pentanesulfonate (PFPeS)	**153**			10.0	"	160.0		95.9%	70-130	3.73	30
perfluoro-1-heptanesulfonate (PFHpS)	**154**			10.0	"	160.0		96.0%	70-130	4.93	30

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

LCS Dup (B19G041-BSD1) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluoro-1-octanesulfonamide (FOSA)	**151**			10.0	ng/L	160.0		94.2%	70-130	8.25	30
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**154**			10.0	"	160.0		96.3%	70-130	8.37	30
perfluoro-1-nonanesulfonate (PFNS)	**152**			10.0	"	160.0		95.3%	70-130	2.81	30
N-MeFOSAA	**150**			10.0	"	160.0		93.6%	70-130	5.49	30
N-EtFOSAA	**147**			10.0	"	160.0		92.1%	70-130	4.82	30
perfluoro-1-decanesulfonate (PFDS)	**150**			10.0	"	160.0		93.7%	70-130	1.51	30
Surrogate: D5-N-EtFOSAA	*152*				*"*	*160.0*		*95.3%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*153*				*"*	*160.0*		*95.8%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*145*				*"*	*153.3*		*94.3%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*135*				*"*	*149.6*		*90.5%*	*70-130*		
Surrogate: M9PFNA	*150*				*"*	*160.0*		*93.5%*	*70-130*		
Surrogate: M8PFOSA	*150*				*"*	*160.0*		*93.6%*	*70-130*		
Surrogate: M8PFOS	*145*				*"*	*153.1*		*94.6%*	*70-130*		
Surrogate: M8PFOA	*151*				*"*	*160.0*		*94.5%*	*70-130*		
Surrogate: M7PFUnA	*150*				*"*	*160.0*		*93.9%*	*70-130*		
Surrogate: M6PFDA	*150*				*"*	*160.0*		*93.9%*	*70-130*		
Surrogate: M5PFPeA	*151*				*"*	*160.0*		*94.3%*	*70-130*		
Surrogate: M5PFHxA	*148*				*"*	*160.0*		*92.7%*	*70-130*		
Surrogate: M4PFHpA	*143*				*"*	*160.0*		*89.5%*	*70-130*		
Surrogate: M3PFHxS	*145*				*"*	*151.4*		*96.1%*	*70-130*		
Surrogate: M3PFBS	*141*				*"*	*148.6*		*94.8%*	*70-130*		
Surrogate: M2PFTreA	*143*				*"*	*160.0*		*89.4%*	*70-130*		
Surrogate: MPFDoA	*147*				*"*	*160.0*		*91.8%*	*70-130*		
Surrogate: MPFBA	*162*				*"*	*160.0*		*101%*	*70-130*		

Duplicate (B19G041-DUP1) **Source: 1907014-14** **Prepared: Aug-01-19 Analyzed: Aug-03-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**U**			50.0	ng/L		10.0				30
perfluoropentanoate	**U**			50.0	"		U				30
perfluorohexanoate	**3.08**	J, Q		10.0	"		5.43			55.3	30
perfluoroheptanoate	**4.72**			10.0	"		5.34			12.2	30

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

Duplicate (B19G041-DUP1) **Source: 1907014-14** **Prepared: Aug-01-19 Analyzed: Aug-03-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorooctanoate	**7.38**			10.0	ng/L		7.20			2.36	30
perfluorononanoate	**84.1**	J, Q		10.0	"		15.0			140	30
perfluorodecanoate	**3.20**			10.0	"		2.56			22.5	30
perfluoroundecanoate	**U**			10.0	"		U				30
perfluorododecanoate	**U**			10.0	"		U				30
perfluorotridecanoate	**U**			10.0	"		U				30
perfluorotetradecanoate	**U**	J		10.0	"		U				30
perfluorobutyl sulfonate	**4.43**			10.0	"		4.77			7.35	30
perfluorohexyl sulfonate	**19.7**	I		10.0	"		19.0			3.72	30
perfluorooctyl sulfonate	**158**	I		10.0	"		155			2.09	30
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**U**			10.0	"		U				30
perfluoro-1-pentanesulfonate (PFPeS)	**3.90**			10.0	"		3.66			6.52	30
perfluoro-1-heptanesulfonate (PFHpS)	**7.10**			10.0	"		6.78			4.59	30
perfluoro-1-octanesulfonamide (FOSA)	**U**			10.0	"		U				30
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**U**			10.0	"		U				30
perfluoro-1-nonanesulfonate (PFNS)	**U**			10.0	"		U				30
N-MeFOSAA	**U**			10.0	"		U				30
N-EtFOSAA	**U**			10.0	"		U				30
perfluoro-1-decanesulfonate (PFDS)	**U**			10.0	"		U				30
Surrogate: D5-N-EtFOSAA	*126*				"	*160.0*		*78.9%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*134*				"	*160.0*		*83.5%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*112*				"	*153.3*		*73.4%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*112*				"	*149.6*		*75.0%*	*70-130*		
Surrogate: M9PFNA	*124*				"	*160.0*		*77.2%*	*70-130*		
Surrogate: M8PFOSA	*128*				"	*160.0*		*80.1%*	*70-130*		
Surrogate: M8PFOS	*119*				"	*153.1*		*77.9%*	*70-130*		
Surrogate: M8PFOA	*125*				"	*160.0*		*78.2%*	*70-130*		
Surrogate: M7PFUnA	*128*				"	*160.0*		*79.8%*	*70-130*		
Surrogate: M6PFDA	*131*				"	*160.0*		*81.9%*	*70-130*		

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

Duplicate (B19G041-DUP1) **Source: 1907014-14** **Prepared: Aug-01-19 Analyzed: Aug-03-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: M5PFPeA	*133*				*ng/L*	*160.0*		*83.3%*	*70-130*		
Surrogate: M5PFHxA	*130*				*"*	*160.0*		*81.5%*	*70-130*		
Surrogate: M4PFHpA	*126*				*"*	*160.0*		*79.0%*	*70-130*		
Surrogate: M3PFHxS	*123*				*"*	*151.4*		*81.0%*	*70-130*		
Surrogate: M3PFBS	*128*				*"*	*148.6*		*86.1%*	*70-130*		
Surrogate: M2PFTreA	*92.6*	Q			*"*	*160.0*		*57.9%*	*70-130*		
Surrogate: MPFDoA	*120*				*"*	*160.0*		*75.0%*	*70-130*		
Surrogate: MPFBA	*156*				*"*	*160.0*		*97.4%*	*70-130*		

MRL Check (B19G041-MRL1) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**53.6**			50.0	ng/L	50.00		107%	50-150		
perfluoropentanoate	**46.3**			50.0	"	50.00		92.7%	50-150		
perfluorohexanoate	**11.4**			10.0	"	10.00		114%	50-150		
perfluoroheptanoate	**8.77**			10.0	"	10.00		87.7%	50-150		
perfluorooctanoate	**9.62**			10.0	"	10.00		96.2%	50-150		
perfluorononanoate	**11.0**			10.0	"	10.00		110%	50-150		
perfluorodecanoate	**8.45**			10.0	"	10.00		84.5%	50-150		
perfluoroundecanoate	**8.43**			10.0	"	10.00		84.3%	50-150		
perfluorododecanoate	**7.94**			10.0	"	10.00		79.4%	50-150		
perfluorotridecanoate	**8.28**			10.0	"	10.00		82.8%	50-150		
perfluorotetradecanoate	**6.35**			10.0	"	10.00		63.5%	50-150		
perfluorobutyl sulfonate	**8.47**			10.0	"	10.00		84.7%	50-150		
perfluorohexyl sulfonate	**8.27**			10.0	"	10.00		82.7%	50-150		
perfluorooctyl sulfonate	**6.36**			10.0	"	10.00		63.6%	50-150		
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**8.68**			10.0	"	10.00		86.8%	50-150		
perfluoro-1-pentanesulfonate (PFPeS)	**8.24**			10.0	"	10.00		82.4%	50-150		
perfluoro-1-heptanesulfonate (PFHpS)	**9.57**			10.0	"	10.00		95.7%	50-150		
perfluoro-1-octanesulfonamide (FOSA)	**9.11**			10.0	"	10.00		91.1%	50-150		

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

MRL Check (B19G041-MRL1) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**10.9**			10.0	ng/L	10.00		109%	50-150		
perfluoro-1-nonanesulfonate (PFNS)	**9.56**			10.0	"	10.00		95.6%	50-150		
N-MeFOSAA	**8.93**			10.0	"	10.00		89.3%	50-150		
N-EtFOSAA	**8.66**			10.0	"	10.00		86.6%	50-150		
perfluoro-1-decanesulfonate (PFDS)	**8.36**			10.0	"	10.00		83.6%	50-150		
Surrogate: D5-N-EtFOSAA	*152*				*"*	*160.0*		*95.2%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*153*				*"*	*160.0*		*95.7%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*134*				*"*	*153.3*		*87.6%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*129*				*"*	*149.6*		*86.5%*	*70-130*		
Surrogate: M9PFNA	*148*				*"*	*160.0*		*92.3%*	*70-130*		
Surrogate: M8PFOSA	*150*				*"*	*160.0*		*94.0%*	*70-130*		
Surrogate: M8PFOS	*148*				*"*	*153.1*		*96.9%*	*70-130*		
Surrogate: M8PFOA	*152*				*"*	*160.0*		*94.8%*	*70-130*		
Surrogate: M7PFUnA	*149*				*"*	*160.0*		*93.3%*	*70-130*		
Surrogate: M6PFDA	*149*				*"*	*160.0*		*92.9%*	*70-130*		
Surrogate: M5PFPeA	*151*				*"*	*160.0*		*94.5%*	*70-130*		
Surrogate: M5PFHxA	*147*				*"*	*160.0*		*91.7%*	*70-130*		
Surrogate: M4PFHpA	*146*				*"*	*160.0*		*91.5%*	*70-130*		
Surrogate: M3PFHxS	*145*				*"*	*151.4*		*95.9%*	*70-130*		
Surrogate: M3PFBS	*135*				*"*	*148.6*		*91.0%*	*70-130*		
Surrogate: M2PFTreA	*140*				*"*	*160.0*		*87.4%*	*70-130*		
Surrogate: MPFDoA	*145*				*"*	*160.0*		*90.7%*	*70-130*		
Surrogate: MPFBA	*175*				*"*	*160.0*		*110%*	*70-130*		

MRL Check (B19G041-MRL2) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**51.8**			50.0	ng/L	50.00		104%	50-150		
perfluoropentanoate	**53.8**			50.0	"	50.00		108%	50-150		
perfluorohexanoate	**16.2**	I, Q		10.0	"	10.00		162%	50-150		
perfluoroheptanoate	**10.0**			10.0	"	10.00		100%	50-150		
perfluorooctanoate	**14.3**			10.0	"	10.00		143%	50-150		

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

MRL Check (B19G041-MRL2) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorononanoate	**11.8**			10.0	ng/L	10.00		118%	50-150		
perfluorodecanoate	**8.86**			10.0	"	10.00		88.6%	50-150		
perfluoroundecanoate	**8.89**			10.0	"	10.00		88.9%	50-150		
perfluorododecanoate	**8.63**			10.0	"	10.00		86.3%	50-150		
perfluorotridecanoate	**8.36**			10.0	"	10.00		83.6%	50-150		
perfluorotetradecanoate	**7.89**			10.0	"	10.00		78.9%	50-150		
perfluorobutyl sulfonate	**8.39**			10.0	"	10.00		83.9%	50-150		
perfluorohexyl sulfonate	**10.0**			10.0	"	10.00		100%	50-150		
perfluorooctyl sulfonate	**8.08**			10.0	"	10.00		80.8%	50-150		
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**9.92**			10.0	"	10.00		99.2%	50-150		
perfluoro-1-pentanesulfonate (PFPeS)	**9.47**			10.0	"	10.00		94.7%	50-150		
perfluoro-1-heptanesulfonate (PFHpS)	**10.7**			10.0	"	10.00		107%	50-150		
perfluoro-1-octanesulfonamide (FOSA)	**9.39**			10.0	"	10.00		93.9%	50-150		
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**9.85**			10.0	"	10.00		98.5%	50-150		
perfluoro-1-nonanesulfonate (PFNS)	**9.37**			10.0	"	10.00		93.7%	50-150		
N-MeFOSAA	**9.67**			10.0	"	10.00		96.7%	50-150		
N-EtFOSAA	**11.8**	I		10.0	"	10.00		118%	50-150		
perfluoro-1-decanesulfonate (PFDS)	**10.3**			10.0	"	10.00		103%	50-150		
Surrogate: D5-N-EtFOSAA	*153*				*"*	*160.0*		*95.5%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*148*				*"*	*160.0*		*92.5%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*138*				*"*	*153.3*		*90.1%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*132*				*"*	*149.6*		*88.0%*	*70-130*		
Surrogate: M9PFNA	*149*				*"*	*160.0*		*93.3%*	*70-130*		
Surrogate: M8PFOSA	*144*				*"*	*160.0*		*89.9%*	*70-130*		
Surrogate: M8PFOS	*146*				*"*	*153.1*		*95.2%*	*70-130*		
Surrogate: M8PFOA	*147*				*"*	*160.0*		*91.6%*	*70-130*		
Surrogate: M7PFUnA	*149*				*"*	*160.0*		*93.2%*	*70-130*		
Surrogate: M6PFDA	*149*				*"*	*160.0*		*93.1%*	*70-130*		
Surrogate: M5PFPeA	*149*				*"*	*160.0*		*93.0%*	*70-130*		

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

MRL Check (B19G041-MRL2) **Prepared: Aug-01-19 Analyzed: Aug-02-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: M5PFHxA	*147*				*ng/L*	*160.0*		*91.9%*	*70-130*		
Surrogate: M4PFHpA	*147*				*"*	*160.0*		*91.7%*	*70-130*		
Surrogate: M3PFHxS	*139*				*"*	*151.4*		*91.8%*	*70-130*		
Surrogate: M3PFBS	*135*				*"*	*148.6*		*90.5%*	*70-130*		
Surrogate: M2PFTreA	*144*				*"*	*160.0*		*90.0%*	*70-130*		
Surrogate: MPFDoA	*148*				*"*	*160.0*		*92.4%*	*70-130*		
Surrogate: MPFBA	*164*				*"*	*160.0*		*102%*	*70-130*		

Matrix Spike (B19G041-MS1) **Source: 1907014-14** **Prepared: Aug-01-19 Analyzed: Aug-03-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**764**			50.0	ng/L	800.0	10.0	94.2%	70-130		
perfluoropentanoate	**645**			50.0	"	800.0	U	80.6%	70-130		
perfluorohexanoate	**135**			10.0	"	160.0	5.43	81.1%	70-130		
perfluoroheptanoate	**122**			10.0	"	160.0	5.34	73.2%	70-130		
perfluorooctanoate	**125**			10.0	"	160.0	7.20	73.5%	70-130		
perfluorononanoate	**152**			10.0	"	160.0	15.0	85.6%	70-130		
perfluorodecanoate	**120**			10.0	"	160.0	2.56	73.2%	70-130		
perfluoroundecanoate	**121**			10.0	"	160.0	U	75.4%	70-130		
perfluorododecanoate	**115**			10.0	"	160.0	U	72.0%	70-130		
perfluorotridecanoate	**106**	Q		10.0	"	160.0	U	66.4%	70-130		
perfluorotetradecanoate	**82.5**	Q		10.0	"	160.0	U	51.5%	70-130		
perfluorobutyl sulfonate	**133**			10.0	"	160.0	4.77	80.3%	70-130		
perfluorohexyl sulfonate	**144**			10.0	"	160.0	19.0	77.9%	70-130		
perfluorooctyl sulfonate	**297**	I		10.0	"	160.0	155	88.9%	70-130		
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**128**			10.0	"	160.0	U	79.7%	70-130		
perfluoro-1-pentanesulfonate (PFPeS)	**131**			10.0	"	160.0	3.66	79.8%	70-130		
perfluoro-1-heptanesulfonate (PFHpS)	**137**			10.0	"	160.0	6.78	81.4%	70-130		
perfluoro-1-octanesulfonamide (FOSA)	**128**			10.0	"	160.0	U	79.9%	70-130		
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**124**			10.0	"	160.0	U	77.8%	70-130		

Environmental Protection Agency Region 5

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RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

Matrix Spike (B19G041-MS1) **Source: 1907014-14** **Prepared: Aug-01-19 Analyzed: Aug-03-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluoro-1-nonanesulfonate (PFNS)	**125**			10.0	ng/L	160.0	U	78.3%	70-130		
N-MeFOSAA	**127**			10.0	"	160.0	U	79.7%	70-130		
N-EtFOSAA	**121**			10.0	"	160.0	U	75.9%	70-130		
perfluoro-1-decanesulfonate (PFDS)	**121**			10.0	"	160.0	U	75.9%	70-130		
Surrogate: D5-N-EtFOSAA	*127*				*"*	*160.0*		*79.1%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*131*				*"*	*160.0*		*81.6%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*119*				*"*	*153.3*		*77.3%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*119*				*"*	*149.6*		*79.8%*	*70-130*		
Surrogate: M9PFNA	*121*				*"*	*160.0*		*75.8%*	*70-130*		
Surrogate: M8PFOSA	*130*				*"*	*160.0*		*81.2%*	*70-130*		
Surrogate: M8PFOS	*126*				*"*	*153.1*		*82.4%*	*70-130*		
Surrogate: M8PFOA	*125*				*"*	*160.0*		*78.0%*	*70-130*		
Surrogate: M7PFUnA	*124*				*"*	*160.0*		*77.5%*	*70-130*		
Surrogate: M6PFDA	*127*				*"*	*160.0*		*79.4%*	*70-130*		
Surrogate: M5PFPeA	*136*				*"*	*160.0*		*84.9%*	*70-130*		
Surrogate: M5PFHxA	*131*				*"*	*160.0*		*81.8%*	*70-130*		
Surrogate: M4PFHpA	*122*				*"*	*160.0*		*76.1%*	*70-130*		
Surrogate: M3PFHxS	*125*				*"*	*151.4*		*82.3%*	*70-130*		
Surrogate: M3PFBS	*129*				*"*	*148.6*		*86.7%*	*70-130*		
Surrogate: M2PFTreA	*86.8*	Q			*"*	*160.0*		*54.3%*	*70-130*		
Surrogate: MPFDoA	*119*				*"*	*160.0*		*74.2%*	*70-130*		
Surrogate: MPFBA	*159*				*"*	*160.0*		*99.2%*	*70-130*		

Matrix Spike Dup (B19G041-MSD1) **Source: 1907014-14** **Prepared: Aug-01-19 Analyzed: Aug-03-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluorobutanoate	**828**			50.0	ng/L	800.0	10.0	102%	70-130	8.09	30
perfluoropentanoate	**698**			50.0	"	800.0	U	87.2%	70-130	7.84	30
perfluorohexanoate	**163**			10.0	"	160.0	5.43	98.5%	70-130	18.6	30
perfluoroheptanoate	**143**			10.0	"	160.0	5.34	86.2%	70-130	15.7	30
perfluorooctanoate	**147**			10.0	"	160.0	7.20	87.1%	70-130	16.0	30
perfluorononanoate	**183**			10.0	"	160.0	15.0	105%	70-130	18.3	30
perfluorodecanoate	**128**			10.0	"	160.0	2.56	78.6%	70-130	7.02	30

Environmental Protection Agency Region 5

US EPA Region 5 LSASD Analytical Services Branch

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

RRB, LCD, U.S. EPA Region 5	Project: RACER Livonia	
77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
US EPA Region 5 LSASD Analytical Services Branch

Batch B19G041 - *** DEFAULT PREP ***

Matrix Spike Dup (B19G041-MSD1) **Source: 1907014-14** **Prepared: Aug-01-19 Analyzed: Aug-03-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
perfluoroundecanoate	**130**			10.0	ng/L	160.0	U	81.5%	70-130	7.80	30
perfluorododecanoate	**121**			10.0	"	160.0	U	75.7%	70-130	5.00	30
perfluorotridecanoate	**114**			10.0	"	160.0	U	71.3%	70-130	7.08	30
perfluorotetradecanoate	**95.0**	Q		10.0	"	160.0	U	59.4%	70-130	14.1	30
perfluorobutyl sulfonate	**142**			10.0	"	160.0	4.77	85.6%	70-130	6.19	30
perfluorohexyl sulfonate	**155**			10.0	"	160.0	19.0	84.8%	70-130	7.36	30
perfluorooctyl sulfonate	**312**	I		10.0	"	160.0	155	98.2%	70-130	4.92	30
1H,1H,2H,2H-perfluorohexane sulfonate (4:2 FTS)	**133**			10.0	"	160.0	U	83.0%	70-130	4.00	30
perfluoro-1-pentanesulfonate (PFPeS)	**134**			10.0	"	160.0	3.66	81.7%	70-130	2.23	30
perfluoro-1-heptanesulfonate (PFHpS)	**140**			10.0	"	160.0	6.78	83.3%	70-130	2.14	30
perfluoro-1-octanesulfonamide (FOSA)	**132**			10.0	"	160.0	U	82.6%	70-130	3.37	30
1H,1H,2H,2H-perfluorodecane sulfonate (8:2 FTS)	**125**			10.0	"	160.0	U	78.2%	70-130	0.510	30
perfluoro-1-nonanesulfonate (PFNS)	**132**			10.0	"	160.0	U	82.3%	70-130	4.98	30
N-MeFOSAA	**132**			10.0	"	160.0	U	82.7%	70-130	3.77	30
N-EtFOSAA	**129**			10.0	"	160.0	U	80.8%	70-130	6.30	30
perfluoro-1-decanesulfonate (PFDS)	**124**			10.0	"	160.0	U	77.4%	70-130	1.92	30
Surrogate: D5-N-EtFOSAA	*131*				*"*	*160.0*		*81.6%*	*70-130*		
Surrogate: D3-N-MeFOSAA	*129*				*"*	*160.0*		*80.9%*	*70-130*		
Surrogate: perfluoro-(1,2-13C2)decanesulfonateC13(2)-8:2 FTS	*120*				*"*	*153.3*		*78.1%*	*70-130*		
Surrogate: perfluoro(1,2-13C2)hexanesulfonateC13(2)-4:	*118*				*"*	*149.6*		*78.7%*	*70-130*		
Surrogate: M9PFNA	*124*				*"*	*160.0*		*77.2%*	*70-130*		
Surrogate: M8PFOSA	*131*				*"*	*160.0*		*81.9%*	*70-130*		
Surrogate: M8PFOS	*130*				*"*	*153.1*		*84.6%*	*70-130*		
Surrogate: M8PFOA	*126*				*"*	*160.0*		*78.7%*	*70-130*		
Surrogate: M7PFUnA	*127*				*"*	*160.0*		*79.4%*	*70-130*		
Surrogate: M6PFDA	*126*				*"*	*160.0*		*79.0%*	*70-130*		
Surrogate: M5PFPeA	*134*				*"*	*160.0*		*83.5%*	*70-130*		
Surrogate: M5PFHxA	*129*				*"*	*160.0*		*80.5%*	*70-130*		
Surrogate: M4PFHpA	*122*				*"*	*160.0*		*76.4%*	*70-130*		

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77 W. Jackson Boulevard	Project Number: [none]	**Reported:**
Chicago IL, 60604	Project Manager: Zachary Sasnow	Aug-27-19 14:54

Analysis by LC MS MS - Quality Control
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Batch B19G041 - *** DEFAULT PREP ***

Matrix Spike Dup (B19G041-MSD1) **Source: 1907014-14** **Prepared: Aug-01-19 Analyzed: Aug-03-19**

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Surrogate: M3PFHxS	*124*				*ng/L*	*151.4*		*81.9%*	*70-130*		
Surrogate: M3PFBS	*124*				*"*	*148.6*		*83.4%*	*70-130*		
Surrogate: M2PFTreA	*92.7*	Q			*"*	*160.0*		*58.0%*	*70-130*		
Surrogate: MPFDoA	*118*				*"*	*160.0*		*73.8%*	*70-130*		
Surrogate: MPFBA	*150*				*"*	*160.0*		*93.7%*	*70-130*		

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Notes and Definitions

J	The identification of the analyte is acceptable; the reported value is an estimate.
I	Ion ratio criteria is not met for this analyte
U	Not Detected
NR	Not Reported
Q	QC limit Exceeded