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MEMORANDUM

7 January 2020
File No. 129862-011

TO: Ohio EPA
Sylvia Chinn-Levy

C: RACER Trust
Pam Barnett

FROM: Haley & Aldrich, Inc.
Lloyd S. Ross
Ban N. Aragona

SUBJECT: RACER Elyria
PFAS Groundwater Sampling Data Summary

Haley & Aldrich, Inc. (Haley & Aldrich) is pleased to submit this memorandum summarizing the results from the implementation of the 13 June 2019 *PFAS Groundwater Sampling Work Plan* (work plan). The objective of the work plan was to evaluated the presence of per- and poly-fluorinated alkyl substances (PFAS) at the RACER Elyria site (Site) (**Figure 1**).

According to the Interstate Technology and Regulatory Council (ITRC)[1], sources of per- and poly-fluoroalkyl substances (PFAS) in manufacturing may include electroplating, a process that was historically used at the Site (RCRA Facility Investigation Report, CRA, 2016). As such, sampling to determine if PFAS is present in groundwater at the Site was warranted.

The following sampling locations were selected to evaluate Site-wide groundwater, down-gradient of potential on-Site and off-Site sources:

Sample Location	Rationale
P-15T	Location considered background; non-Site impacted
P-16T	Downgradient of Site landfill containing plating residues
MW-22S*	Downgradient of former manufacturing operations and upgradient of the Site.
MW-23S	
MW-23D	
MW-26D	

[1] History and Use of per- and poly-fluoroalkyl substances (PFAS), ITRC, November 2017.

Sample Location	Rationale
MW-15R	Downgradient of potential off-Site source (3M Co.) and background locations
FD-04	
MW-17	Within/downgradient of AOI-2 Northern Sludge Drying Area
Outfall 001	Storm sewer receiving groundwater from various on-Site areas [former northern (AOI-6) and southern (AOI-7) die storage pads, southern trenches area (AOI-05), former fuel oil tank area (AOI-8), and northern sludge drying area (AOI-2)] and off-Site areas.
MW-16R	Within Northern Die Storage Pad/PCB Impacted Area, as requested by Ohio EPA

These locations are illustrated on **Figure 2**. MW-22S was damaged beyond repair, therefore, a sample was not collected during this event. Abandonment of this monitoring well will be completed during the next scheduled well inventory and repair event.

Activities described in the work plan were completed during the week of 9 September 2019 and included the following:

- Monitoring wells redevelopment prior to groundwater sampling;
- Replacement of damaged well pad and flush-mount protective cover at MW-23D prior to groundwater sampling;
- Collection of groundwater samples from select monitoring wells and a surface water sample from Outfall 001; and
- Submission of samples to Eurofins TestAmerica Laboratories, Inc. (Sacramento) for analysis of PFAS by EPA method 537 modified.

Equipment and materials used during this investigation were selected as described under *Sampling Handling and Equipment Decontamination* to minimize the potential of PFAS containing contaminates from the sampling. Haley & Aldrich field personnel washed hands with PFAS-free water (provided by the project laboratory) and Alconox before donning non-powdered nitrile gloves to mitigate possible cross-contamination or introduce PFAS to the samples.

Field Forms associated with the activities described below are provided as **Attachment 1**.

Well Redevelopment

Monitoring wells selected for sampling had not been accessed for sampling in several years. As such, redevelopment of the wells was completed to confirm representative samples are collected. Wells were evaluated prior to redevelopment to assess conditions. The well pad and flush-mount protective cover at MW-23D were removed and replaced due to damaged conditions.

Prior to redevelopment, equipment was decontaminated as described in the "Sampling and Equipment Decontamination" of the work plan. Monitoring wells were redeveloped using a peristaltic pump in accordance with the work plan. Water volume in each monitoring well was calculated prior to redevelopment. Groundwater static water level, depth to bottom of the well, and well diameter data were collected to determine the water volume in each well.

Additionally, water quality parameters were monitored during well redevelopment. These parameters included: pH, temperature, specific conductance, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity. Monitoring wells were considered to be redeveloped after 3 to 5 well volumes had been removed and water quality parameters had stabilized within 10% for two successive readings, and turbidity had been reduced to 5 nephelometric turbidity units (NTU) or less. Purge water from redevelopment and sampling was containerized and staged on-Site in 55-gallon drums for off-Site disposal.

Groundwater Sampling and Analysis

Monitoring wells were sampled using peristaltic pump and dedicated tubing, twenty-four (24) hours after redevelopment, in accordance with the work plan. A grab water sample was collected from the former Outfall 001 in accordance with the PFAS OP. Groundwater purging and sampling information was recorded on standard groundwater sampling forms. Static water level was measured for each monitoring well prior and throughout purging.

Representative samples were collected and placed into appropriate sample containers, as provided by the project laboratory. Quality assurance and quality control (QA/QC) samples collected during sampling included the following: field duplicate, field blanks, equipment blank and matrix spike/matrix spike duplicate (MS/MSD). A field blank was prepared at the end of each day of sampling. The field blank consisted of a laboratory sample container filled with PFAS -free water that was left open in the exclusion zone prior to sampling and closed at the end of each day of sampling. Samples were placed in a cooler with wet ice (double-bagged in resealable plastic, Ziploc® bags) and the cooler sealed with laboratory provided custody tape. Coolers were shipped via overnight courier under standard chain of custody protocol to the project laboratory. Samples collected during this investigation were analyzed for PFAS (EPA Method 537 modified) by Eurofins TestAmerica Laboratories, Inc. in Sacramento, California with a standard turn-around time of 15 days.

Sample Handling and Equipment Decontamination

Many consumer products and materials typically used to obtain environmental samples can potentially contain PFAS and create the potential for the reporting of false positives results. Due to the limited available published literature and/or guidance on which materials affect sampling results, a conservative approach was used to exclude materials of construction suspected to contain PFAS to limit the potential for contamination of the samples.

Special sample handling procedures for the collection of the groundwater and surface water samples for the analysis of PFAS included the following precautions:

- Field staff performing the sampling washed their hands with demonstrated PFAS-free water and Alconox® prior to donning non-powdered nitrile gloves and handling the sampling equipment or bottles.
- Samples for PFAS analysis were collected in two (2) laboratory supplied 250 mL, unpreserved polypropylene or HDPE bottles with non-Teflon® lined polypropylene or HDPE screw cap.
- During sampling, new disposable nitrile gloves were donned prior to sampling at each location and following contact with a potential contaminant source, the sample container and cap were always held by the sampler (i.e., not placed on the ground or in clothing pockets), and the inside of the sampling container and cap were not touched.
- PFAS field blanks were collected by opening a laboratory-supplied sample container of demonstrated PFAS-free water and exposing the water to atmospheric air within the exclusion area for the sampling effort.
- Following the collection of the PFAS project samples, the laboratory-provided demonstrated PFAS-free water was poured from the container into the laboratory-supplied sample bottles and submitted for the analysis of the PFAS TCL parameters.

Non-dedicated field sampling equipment used for the collection of PFAS project samples for laboratory analysis was decontaminated between sampling locations using PFAS-free water as the final rinse of the decontaminated equipment. The decontamination procedure should include the following steps:

1. Removal of all loose soils and particulate matter,
2. Brush using a polypropylene brush with potable water and Alconox® soap,
3. Rinse with deionized water,
4. Final rinse with PFAS free water.

Waste Handling and Disposal

Decontamination water, purge water, used sampling equipment, and personnel protective equipment was containerized for off-Site disposal at an appropriate facility after characterization.

Data Validation

Validation of the groundwater sample results was conducted in accordance with the work plan.

Sample data were qualified in accordance with laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and usable. Further information can be found in the Data Usability Report provided as **Attachment 2**.

Summary of Analytical Results

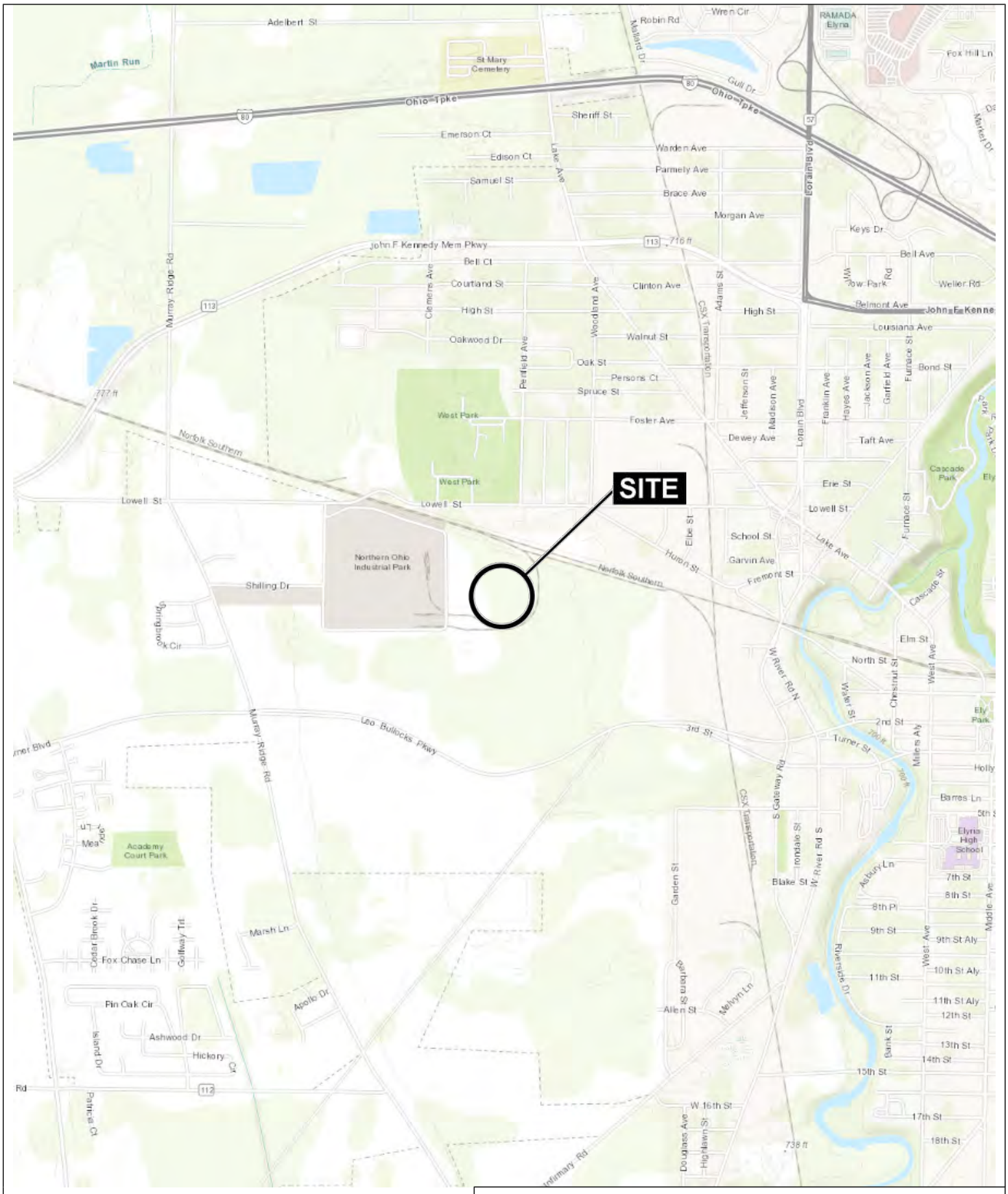
The results of this sampling event were screened against the U.S. EPA Health Advisory Limit (HAL) of 70 nanograms per liter (ng/L) for combined concentrations of PFOA and PFOS. The combined

concentrations of PFOA and PFAS ranged from 1.3 ng/L to 178.4 ng/L. Two wells (MW-23D and MW-26D) located upgradient of the Site, had combined PFOA and PFOS concentrations that exceeded the HAL. There we no exceedances of combined PFOA and PFAS concentrations greater than the HAL in groundwater samples collected from monitoring wells on Site. These results are summarized on **Table 1.**

Attachments

Figure 1 – Site Locus
Figure 2 – PFAS Sampling Locations and Exceedances
Table 1 – Groundwater Analytical Results
Attachment 1 – Field Forms
Attachment 2 – Laboratory Report
Attachment 3 – Data Usability Report

FIGURES



MAP SOURCE: ESRI

SITE COORDINATES: 41°22'18"N, 82°7'57"W

HALEY ALDRICH

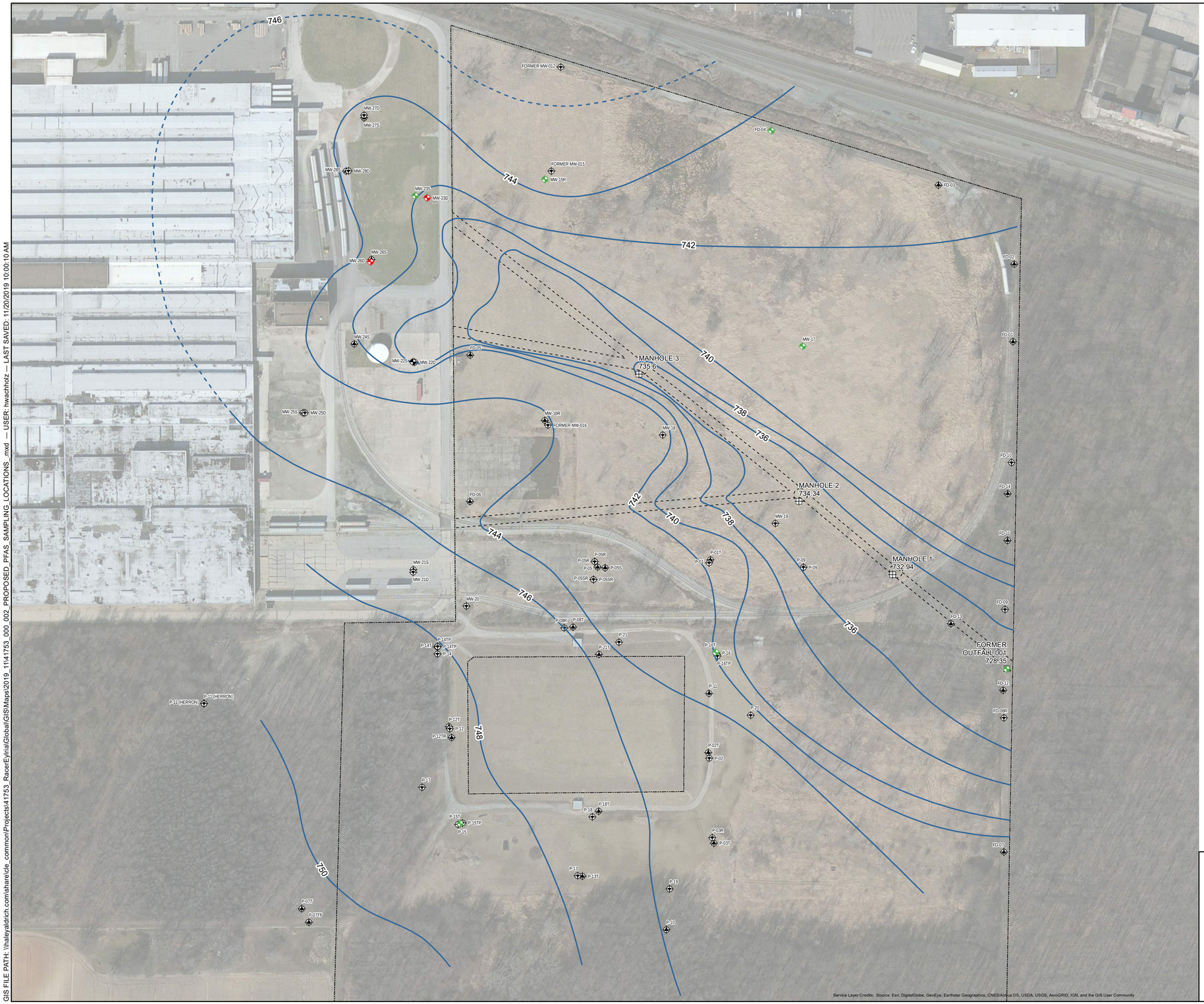
RACER ELYRIA
1400 LOWELL STREET
ELYRIA, OHIO

PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT
AUGUST 2018

FIGURE 1

129862-007_1_LOCUS.PDF



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LEGEND

- PROPOSED PFAS SAMPLING LOCATION
- COMBINED PFOA/PFOS CONCENTRATIONS BELOW U.S. EPA HEALTH ADVISORY LEVEL (70 ng/L)
- COMBINED PFOA/PFOS CONCENTRATIONS ABOVE U.S. EPA HEALTH ADVISORY LEVEL (70 ng/L)
- SEWER INVERT
- BEDROCK MONITORING WELL
- TILL MONITORING WELL
- INFERRED POTENTIOMETRIC SURFACE
- POTENTIOMETRIC SURFACE
- STORM SEWERS
- SITE BOUNDARY

NOTES

1. GROUNDWATER POTENTIOMETRIC SURFACE BASED UPON WATER LEVELS COLLECTED DURING THE APRIL 27, 2015 GAUGING EVENT.
2. ALL LOCATIONS AND ELEVATIONS BASED UPON A PRE-EXISTING SURVEY.
3. SEWER SURVEY INFORMATION UPDATED ON MAY 4, 2015.
4. AERIAL IMAGERY SOURCE: ESRI

N

0 100 200 300 400

SCALE IN FEET

HALEY ALDRICH

RACER ELYRIA
ELYRIA, OHIO

PROPOSED PFAS SAMPLING LOCATIONS

NOVEMBER 2019

FIGURE 2

GIS FILE PATH: \\haleyaldrich.com\share\cle_common\Projects\41753_RacerElyria\Global\GIS\Maps\2019_11\41753_000_002_PROPOSED_PFAS_SAMPLING_LOCATIONS_.mxd — USER: hwachholz — LAST SAVED: 11/20/2019 10:00:10 AM

TABLE

TABLE I
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
RACER ELYRIA
ELYRIA, OHIO

Location	U.S. EPA	Outfall 001	FD-04	FD-04	MW-15R	MW-16R	MW-16R	MW-17	MW-23D	MW-23S	MW-26D	P-15T	P-16T	QA/QC	QA/QC	QA/QC
Sample Date	Health	09/13/2019	09/12/2019	09/12/2019	09/13/2019	09/13/2019	09/13/2019	09/13/2019	09/12/2019	09/12/2019	09/12/2019	09/12/2019	09/13/2019	09/12/2019	09/12/2019	09/13/2019
Sample Type	Advisory Level	N	N	FD	N	N	FD	N	N	N	N	N	N	EB	FB	FB
PFAS (ng/L)																
Perfluorooctanesulfonic acid (PFOS)	-	**50**	**56 J**	**54 J**	**1.5 J**	ND (2) J	ND (1.9) J	ND (2)	**170**	**22**	**130**	**6.7**	**1.3 J**	ND (1.9)	ND (1.9)	ND (1.8)
Perfluorooctanoic Acid (PFOA)	-	**2.8**	**1.3 J**	**1.2 J**	**1.5 J**	**2.5 J**	**2.2 J**	ND (2)	**8.4**	**9.2**	**8.6**	**2.4**	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Combined (PFOS and PFOA)	70	**52.8**	**57.3**	**55.2**	**3**	**2.5**	**2.2**	ND (2)	**178.4**	**31.2**	**138.6**	**9.1**	**1.3**	ND (1.9)	ND (1.9)	ND (1.8)
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2 FTSA)	-	ND (19)	ND (20)	ND (20)	ND (19)	ND (20)	ND (19)	ND (20)	ND (19)	ND (20)	ND (20)	ND (19)	ND (19)	ND (19)	ND (19)	ND (18)
Fluorotelomer sulfonic acid (6:2 FTSA)	-	ND (19)	**55**	**48**	ND (19)	ND (20)	ND (19)	ND (20)	ND (19)	ND (20)	ND (20)	ND (19)	**4.4 J**	ND (19)	ND (19)	ND (18)
Fluorotelomer sulfonic acid (8:2 FTSA)	-	ND (19)	ND (20)	ND (20)	ND (19)	ND (20)	ND (19)	ND (20)	ND (19)	ND (20)	ND (20)	ND (19)	ND (19)	ND (19)	ND (19)	ND (18)
N-ethyl perfluorooctane sulfonamidoacetic acid (N-EtFOSAA)	-	ND (19)	ND (20)	ND (20)	ND (19)	ND (20)	ND (19)	ND (20)	ND (19)	ND (20)	ND (20)	ND (19)	ND (19)	ND (19)	ND (19)	ND (18)
N-methyl perfluorooctane sulfonamidoacetic acid (N-MeFOSAA)	-	ND (19)	ND (20)	ND (20)	ND (19)	ND (20)	ND (19)	ND (20)	ND (19)	ND (20)	ND (20)	ND (19)	ND (19)	ND (19)	ND (19)	ND (18)
Perfluorobutanesulfonic Acid (PFBS)	-	**90**	**2.7**	**2.5**	ND (1.9)	**11**	**12**	ND (2)	ND (1.9)	**3.6**	**3.6**	ND (1.9)	**0.59 J**	ND (1.9)	ND (1.9)	ND (1.8)
Perfluorobutanoic Acid (PFBA)	-	**16**	**3**	**3**	**3.2**	**11**	**11 J**	ND (2)	**7.2**	**13**	**8.1**	**3.1 J**	**0.34 J**	ND (1.9)	ND (1.9)	ND (1.8)
Perfluorodecane sulfonic Acid (PFDS)	-	ND (1.9)	ND (2)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	ND (2)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluorodecanoic acid (PFDA)	-	**0.3 J**	ND (2)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	**0.32 J**	ND (2)	ND (2)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluorododecanoic acid (PFDoDA)	-	ND (1.9)	ND (2) J	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	ND (2)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluoroheptane sulfonic acid (PFHpS)	-	**1.2 J**	**1.8 J**	**1.7 J**	ND (1.9)	ND (2)	ND (1.9)	ND (2)	**2.3**	**0.77 J**	**3.3**	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluoroheptanoic acid (PFHpA)	-	ND (1.9)	ND (2)	ND (2)	ND (1.9)	**3.9**	**2.9 J+**	ND (2)	**2.9**	**1.9 J**	**3**	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluorohexanesulfonic acid (PFHxS)	-	**6.7 J**	**8.3 J**	**8.8 J**	ND (0.87) J	**11 J**	**10 J**	ND (0.31)	**8.7**	**5.1**	**19**	ND (1.1)	ND (0.58)	ND (0.32)	ND (0.25)	ND (0.26)
Perfluorohexanoic acid (PFHxA)	-	ND (1.9)	ND (2)	ND (2)	ND (1.9)	**13**	**13 J**	ND (2)	**5.6**	**2.3**	**7.9**	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluorononane sulfonic acid (PFNS)	-	ND (1.9)	ND (2)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	ND (2)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluorononanoic Acid (PFNA)	-	ND (1.9)	ND (2)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	**0.75 J**	**0.36 J**	**0.32 J**	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluorooctane sulfonamide (FOSA)	-	**0.55 J**	**0.37 J**	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	**0.41 J**	ND (2)	ND (2)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluoropentane sulfonic acid (PFPeS)	-	**2.2**	**2.8 J**	**3.1 J**	ND (1.9)	**14 J**	**15 J**	ND (2)	ND (1.9)	**1.1 J**	**4.7**	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluoropentanoic Acid (PFPeA)	-	ND (1.9)	ND (2)	ND (2)	ND (1.9)	**2.6**	**2.4**	ND (2)	ND (1.9)	ND (2)	ND (2)	ND (1.9)	**0.64 J**	ND (1.9)	ND (1.9)	ND (1.8)
Perfluorotetradecanoic acid (PFTeDA)	-	ND (0.29)	**0.49 J**	ND (2)	ND (1.9)	ND (2)	ND (0.46)	ND (2)	**0.32 J**	**0.39 J**	**0.32 J**	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	**0.28 J**
Perfluorotridecanoic acid (PFTrDA)	-	ND (1.9)	ND (2)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	ND (2)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)
Perfluoroundecanoic acid (PFUnA)	-	ND (1.9)	ND (2)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	ND (1.9)	ND (2)	ND (2)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.9)	ND (1.8)

Notes:
1. Results in **bold** were detected.
2. ND: Not detected above the reporting limit
   J: Estimated value. Result is less than reporting limit but greater than MDL.
   J+: Estimated value, biased high. Result is less than reporting limit but greater than MDL.
3. Sample Type codes:
   N - Normal sample
   FD - Field duplicate
   FB - Field blank
   EB - Equipment blank.
4. Data has been validated by Haley & Aldrich, Inc. and may vary from original lab report.

ATTACHMENT 1

Field Forms

HALEY ALDRICH

SAMPLE IDENTIFICATION KEY

PROJECT: PFAS Gum
LOCATION: Elyria, OH
CLIENT: RACER Trust
CONTRACTOR: NA

H&A FILE NO. 129862
PROJECT MGR. B. Aragons

Sample ID	Parent Sample ID	Location ID	2019 Sample Date	Sample Time (military)	Sample Type Code	Filtered (Water Only T/D/N)	Composite Y/N	Soil Type	Depth To Top Of Sample	Depth To Bottom Of	C.O.C. Number	Notes	Collected By
FD04-091219-1055		FD-04	9-12	1055	WG	N							SP
7082-091219-0001	FD04-091219-1055	FD-04	9-12	1055	FD								
MW26D-091219-1145		MW-26D	9-12	1145	WG								
MW25S-091219-1225		MW-25S	9-12	1225	WG								
MW23D-091219-1320		MW-23D	9-12	1320	WG								
P15T-091219-1400		P-15T	9-12	1400	WG								
7082-091219-0002	Field Blank	South DW Storage	9-12		FB								
7082-091219-0003	Equipment Blank	Tubing	9-12		EB								
P16T-091319-0830		P-16T	9-13	0830	WG								
OF0001-091319-0915		OF-0001	9-13	0915	WS								
MW16R-091319-1050		MW-16R	9-13	1050	WG								
7082-091319-0001	MW16R-091319-1050	MW-16R	9-13	1050	MS/MSD								
MW15R-091319-1150		MW-15R	9-13	1150	WG								
MW17-091319-1215		MW-17	9-13	1215	WG								
7082-091319-0002	Field Blank	South DW Storage	9-13		FB	X							X

Notes:

Common Sample Type Codes:

N Normal Environmental Samp; WG Groundwater; WS Surface Water; SO Soil; GS Soil Gas; SE Sediment
WQ Water for Quality Control; FD Field Duplicate; EB Equipment Blank; TB Trip Blank; MS Matris Spike; MSD Matrix Spike Duplicate

see Memorandum dated 08/08/05 from Melanie Satanek "Sample Labeling for Submission to Analytical Laboratory" for less common codes

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.: MW-17	Date: 9-13-19	Time Started: 0945	File Number: 129862
Weather Conditions:		Time Ended:	Field Personnel: SNP

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.) 2
Measured Water Level (ft) 21.85	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box): Stainless Steel [ ] Carbon Steel [ ] PVC [✓]

Casing Condition:	OK	✓	Repair Required:
Cap Condition:	OK	✓	Repair Required:
Paint Condition:	OK	✓	Repair Required:
Lock Condition:	OK	✓	Repair Required:
Inner Casing Condition:	OK	✓	Repair Required:
Surface Seal Condition:	OK	✓	Repair Required:
Other:	OK		Repair Required:

Purge Information

Purging Method: Peristaltic Pump [ ] Bladder Pump [ ] Grundfos Pump [ ] Other:

Purge Start Time: 0955

Water Level Prior to Purging (TOR ft.)	Water Level After Purging (TOR ft.)
Amount Purged:	Flow Rate (mL per minute):
Comments:	

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0								
5	15.06 DRY	7.87	1.49	85	1.33	-127	22.87	
10								
15								
20								
25								
30								
35								
40								
45								
50								

Sampling Information

Date: 9-13-19	Time Sampled: 1215	Field Personnel: S.P.
Measured Water Level (TOR ft):		

Sampling Method: (place X in box) Stainless Steel Bailer [ ] Polyethylene Bailer [X] Peristaltic Pump [ ] Bladder Pump [ ] Grundfos Pump [ ] Teflon Bailer [ ] Other:

Analysis:

Sample ID: MW17-091319-1215

Odor: None Appearance: Turbid

QA/QC Samples Taken:

Comments: well purged DRY @ 1003, ~1 gallon

Sampler (Print): S. Pribyla Sampler (signature): Date: 9-13-19

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.: MW-16R	Date: 9-13-19	Time Started: 1020	File Number: 129862
Weather Conditions: 75°F Overcast		Time Ended:	Field Personnel: S.Rathfon

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.) 2
Measured Water Level (ft) 9.70	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box)			Stainless Steel		Carbon Steel	✓	PVC
Casing Condition:	OK	✓	Repair Required:				
Cap Condition:	OK	✓	Repair Required:				
Paint Condition:	OK	✓	Repair Required:				
Lock Condition:	OK	✓	Repair Required:				
Inner Casing Condition:	OK	✓	Repair Required:				
Surface Seal Condition:	OK	✓	Repair Required:				
Other:	OK		Repair Required:				

Purge Information

Purging Method:	✓	Peristaltic Pump		Bladder Pump		Grundfos Pump		Other:
Purge Start Time: 1025								
Water Level Prior to Purging (TOR ft.)					Water Level After Purging (TOR ft.)			
Amount Purged:					Flow Rate (mL per minute): 200			
Comments:								

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0								
5	15.13	7.05	1.48	0.0	0.58	-53	10.30	
10	15.10	7.04	1.46	0.00	0.00	-49	10.35	
15	15.11	7.05	1.47	0.0	0.00	-50	10.39	
20	15.09	7.05	1.47	0.0	0.0	-50	10.41	
25								
30								
35								
40								
45								
50								

Sampling Information

Date: 9-13-19	Time Sampled: 1050	Field Personnel:
Measured Water Level (TOR ft):		

Sampling Method: (place X in box)		Stainless Steel Bailer	✓	Peristaltic Pump		Grundfos Pump		Teflon Bailer
		Polyethylene Bailer		Bladder Pump		Other:		
Analysis:								
Sample ID: MW16R-091319-1050								
Odor:			Appearance:					
QA/QC Samples Taken: 7082-091319-0001			MS/MSD					
Comments:								

Sampler (Print): S.Rathfon | Sampler (signature): | Date: 9/13/19

HALEY ALDRICH

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.: MW-15R	Date: 9-13-19	Time Started: 1115	File Number: 129862
Weather Conditions:		Time Ended:	Field Personnel: S. Patyka

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.) 2
Measured Water Level (ft) 8.80	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box)			Stainless Steel		Carbon Steel	✓	PVC
Casing Condition:	OK	✓	Repair Required:				
Cap Condition:	OK	✓	Repair Required:				
Paint Condition:	OK	✓	Repair Required:				
Lock Condition:	OK	✓	Repair Required:				
Inner Casing Condition:	OK	✓	Repair Required:				
Surface Seal Condition:	OK	✓	Repair Required:				
Other:	OK		Repair Required:				

Purge Information

Purging Method:	✓	Peristaltic Pump		Bladder Pump		Grundfos Pump		Other:
Purge Start Time: 1120								
Water Level Prior to Purging (TOR ft.)					Water Level After Purging (TOR ft.)			
Amount Purged:					Flow Rate (mL per minute):			
Comments:								

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0	15.15	7.26	1.49	6.7	0.68	-21	9.00	
5	15.10	7.10	1.35	8.0	0.04	-22	9.00	
10	15.07	7.00	1.27	0.0	0.00	-30	9.04	
15	15.09	7.00	1.27	0.0	0.00	-30	9.05	
20	15.05	6.99	1.26	0.0	0.00	-31	9.05	
25								
30								
35								
40								
45								
50								

Sampling Information

Date: 9-13-19	Time Sampled: 1150	Field Personnel:
Measured Water Level (TOR ft):		

Sampling Method: (place X in box)		Stainless Steel Bailer	✓	Peristaltic Pump		Grundfos Pump		Teflon Bailer
		Polyethylene Bailer		Bladder Pump		Other:		

Analysis:

Sample ID: MW 15R- 091319- 1150

Odor: None

Appearance: Clear

QA/QC Samples Taken: NA

Comments:

Sampler (Print): S. Patyka

Sampler (signature):

Date: 9/13/19

HALEY ALDRICH

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.:	Date: 9-13-19	Time Started:	File Number: 129862
Weather Conditions:		Time Ended:	Field Personnel: SBartyka

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.)
Measured Water Level (ft)	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box)		Stainless Steel		Carbon Steel		PVC	
Casing Condition:	OK		Repair Required:				
Cap Condition:	OK		Repair Required:				
Paint Condition:	OK		Repair Required:				
Lock Condition:	OK		Repair Required:				
Inner Casing Condition:	OK		Repair Required:				
Surface Seal Condition:	OK		Repair Required:				
Other:	OK		Repair Required:				

Purge Information

Purging Method:		Peristaltic Pump		Bladder Pump		Grundfos Pump		Other:
Purge Start Time:								
Water Level Prior to Purging (TOR ft.)					Water Level After Purging (TOR ft.)			
Amount Purged:					Flow Rate (mL per minute):			
Comments:								

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0								
5								
10								
15								
20								
25								
30								
35								
40								
45								
50								

Sampling Information

Date: 9/13/19	Time Sampled:			Field Personnel:	
Measured Water Level (TOR ft):					
Sampling Method: (place X in box)	Stainless Steel Bailer	Peristaltic Pump	Grundfos Pump	Teflon Bailer	
	Polyethylene Bailer	Bladder Pump	Other:		
Analysis:					
Sample ID: 7082-091319-0002 /1245					
Odor:		Appearance:			
QA/QC Samples Taken:					
Comments: Field Blank. Opened @ 8am					
Sampler (Print): SBartyka	Sampler (signature):			Date: 9-13-19	

HALEY ALDRICH

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.: FD-04	Date: 9/12/19	Time Started: 0945	File Number: 129862
Weather Conditions:		Time Ended:	Field Personnel: S. Partyka

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.) 2
Measured Water Level (ft) 9.45	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box)			Stainless Steel		Carbon Steel	✓	PVC
Casing Condition:	OK	✓	Repair Required:				
Cap Condition:	OK	✓	Repair Required:				
Paint Condition:	OK	✓	Repair Required:				
Lock Condition:	OK	✓	Repair Required:				
Inner Casing Condition:	OK	✓	Repair Required:				
Surface Seal Condition:	OK	✓	Repair Required:				
Other:	OK		Repair Required:				

Purge Information

Purging Method:	✓	Peristaltic Pump	Bladder Pump	Grundfos Pump	Other:

Purge Start Time: 1030

Water Level Prior to Purging (TOR ft.)	Water Level After Purging (TOR ft.)
Amount Purged:	Flow Rate (mL per minute): 300
Comments:	

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0								
5	15.33	7.26	0.913	106	0.03	46	11.65	
10	15.27	7.06	0.895	9.0	0.00	-7	12.31	FR reduced to 200
15	15.10	7.02	0.913	2.5	0.00	-51	12.46	
20	15.06	6.99	0.914	2.5	0.00	-52	12.41	
25	15.05	6.98	0.916	2.4	0.00	-53	12.39	
30								
35								
40								
45								
50								

Sampling Information

Date: 9/12/19	Time Sampled: 1055	Field Personnel: SNP
Measured Water Level (TOR ft): 12.41		

Sampling Method: (place X in box)		Stainless Steel Bailer	✓	Peristaltic Pump	Grundfos Pump	Teflon Bailer
		Polyethylene Bailer		Bladder Pump	Other:	

Analysis: PFAS

Sample ID: FD-04-091219-1055

Odor: None Appearance: Clear

QA/QC Samples Taken: N/A Field Dup. 7082-091219-0001

Comments:

Sampler (Print) S. Partyka | Sampler (signature): | Date: 9/12/19

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.: MW-26D	Date: 9/12/19	Time Started: 1110	File Number: 129862
Weather Conditions:		Time Ended:	Field Personnel: SWP

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.) 2
Measured Water Level (ft) 6.91	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box)		Stainless Steel		Carbon Steel	✓	PVC
Casing Condition:	OK	✓	Repair Required:			
Cap Condition:	OK	✓	Repair Required:			
Paint Condition:	OK	✓	Repair Required:			
Lock Condition:	OK	✓	Repair Required:			
Inner Casing Condition:	OK	✓	Repair Required:			
Surface Seal Condition:	OK	✓	Repair Required:			
Other:	OK		Repair Required:			

Purge Information

Purging Method:	✓ Peristaltic Pump	Bladder Pump	Grundfos Pump	Other:

Purge Start Time: 1115

Water Level Prior to Purging (TOR ft.) | Water Level After Purging (TOR ft.)

Amount Purged: | Flow Rate (mL per minute): ~250

Comments:

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0								
5	16.53	7.47	1.38	9.8	0.83	-176	7.42	
10	16.53	7.62	1.38	1.2	0.10	-195	8.10	FR ↓ to 200 ml/min
15	16.38	7.60	1.39	0.0	0.04	-193	8.12	
20	16.35	7.61	1.39	0.0	0.04	-194	8.13	
25	16.32	7.62	1.40	0.0	0.03	-194	8.12	
30								
35								
40								
45								
50								

Sampling Information

Date: 9/12/19	Time Sampled: 1145	Field Personnel: SWP

Measured Water Level (TOR ft):

Sampling Method: (place X in box)		Stainless Steel Bailer	✓	Peristaltic Pump	Grundfos Pump	Teflon Bailer
		Polyethylene Bailer		Bladder Pump	Other:	

Analysis:

Sample ID: MW26D-091219.1145

Odor: None | Appearance: Clear

QA/QC Samples Taken: NA

Comments:

Sampler (Print) S. Partyka | Sampler (signature): | Date: 9/12/19

HALEY ALDRICH

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.: MW-23S	Date: 9/12/19	Time Started: 1155	File Number: 139862
Weather Conditions: 75°F Overcast/Humid		Time Ended:	Field Personnel: SMP

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.) 2
Measured Water Level (ft) 6.76	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box)		Stainless Steel	Carbon Steel	✓ PVC
Casing Condition:	OK ✓	Repair Required:		
Cap Condition:	OK ✓	Repair Required:		
Paint Condition:	OK ✓	Repair Required:		
Lock Condition:	OK ✓	Repair Required:		
Inner Casing Condition:	OK ✓	Repair Required:		
Surface Seal Condition:	OK ✓	Repair Required:		
Other:	OK	Repair Required:		

Purge Information

Purging Method:	✓ Peristaltic Pump	Bladder Pump	Grundfos Pump	Other:

Purge Start Time: 1200

Water Level Prior to Purging (TOR ft.)	Water Level After Purging (TOR ft.)
Amount Purged:	Flow Rate (mL per minute): 250
Comments:	

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0	17.56	7.08	1.36	0.0	0.24	-126	8.00	
5	17.56	7.06	1.37	0.0	0.33	-131	8.46	FR ↓ 250 ml/min
10	17.42	7.05	1.38	0.0	0.10	-147	8.74	
15	17.40	7.05	1.38	0.0	0.07	-147	9.02	
20	17.39	7.04	1.39	0.0	0.06	-148	9.11	
25								
30								
35								
40								
45								
50								

Sampling Information

Date: 9-12-19	Time Sampled: 1255	Field Personnel: SP
Measured Water Level (TOR ft):		

Sampling Method: (place X in box)	Stainless Steel Bailer	✓ Peristaltic Pump	Grundfos Pump	Teflon Bailer
	Polyethylene Bailer	Bladder Pump	Other:	

Analysis: PFAS

Sample ID: MW23S-091219-1225

Odor: None

Appearance: Clear

QA/QC Samples Taken: NA

Comments:

Sampler (Print) S. Portyka

Sampler (signature):

Date: 9/12/19

HALEY ALDRICH

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.: MW-23D	Date: 9/12/19	Time Started: 1235	File Number:
Weather Conditions:		Time Ended:	Field Personnel:

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.) 2
Measured Water Level (ft) 7.34	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box): Stainless Steel | Carbon Steel | PVC

Casing Condition:	OK	✓	Repair Required:
Cap Condition:	OK	✓	Repair Required:
Paint Condition:	OK	✓	Repair Required:
Lock Condition:	OK	✓	Repair Required:
Inner Casing Condition:	OK	✓	Repair Required:
Surface Seal Condition:	OK	✓	Repair Required:
Other:	OK		Repair Required:

Purge Information

Purging Method: ✓ Peristaltic Pump | Bladder Pump | Grundfos Pump | Other:

Purge Start Time: 1245

Water Level Prior to Purging (TOR ft.)	Water Level After Purging (TOR ft.)
Amount Purged:	Flow Rate (mL per minute): 850
Comments:	

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0								
5	16.49	7.30	0.986	1.7	0.12	-170	7.62	
10	16.49	7.47	0.928	0.0	0.00	-179	7.75	
15	16.42	7.55	0.898	0.0	0.00	-185	7.77	
20	16.39	7.55	0.897	0.0	0.00	-185	7.78	
25	16.40	7.56	0.899	0.0	0.00	-186	7.79	
30								
35								
40								
45								
50								

Sampling Information

Date: 9-13-19	Time Sampled: 1320	Field Personnel:
Measured Water Level (TOR ft):		

Sampling Method: (place X in box): Stainless Steel Bailer | ✓ Peristaltic Pump | Grundfos Pump | Teflon Bailer | Polyethylene Bailer | Bladder Pump | Other:

Analysis:

Sample ID: MW 23D-091219-1320

Odor: None

Appearance: Clear

QA/QC Samples Taken: NA

Comments:

Sampler (Print): S. Porter

Sampler (signature):

Date: 9/12/19

HALEY ALDRICH

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.: P-15T	Date: 9/12/19	Time Started: 1330	File Number:
Weather Conditions:		Time Ended:	Field Personnel:

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.) 2
Measured Water Level (ft) 9.95	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box): Stainless Steel | Carbon Steel | ✓ PVC

Casing Condition:	OK	✓	Repair Required:
Cap Condition:	OK	✓	Repair Required:
Paint Condition:	OK	✓	Repair Required:
Lock Condition:	OK	✓	Repair Required:
Inner Casing Condition:	OK	✓	Repair Required:
Surface Seal Condition:	OK	✓	Repair Required:
Other:	OK		Repair Required:

Purge Information

Purging Method: | Peristaltic Pump | Bladder Pump | Grundfos Pump | Other:

Purge Start Time: 1340

Water Level Prior to Purging (TOR ft.)	Water Level After Purging (TOR ft.)
Amount Purged:	Flow Rate (mL per minute):
Comments:	

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0	16.59	7.00	1.14	6.3	0.45	-45	10.45	
5	16.48	6.91	1.16	2.2	0.03	-47	10.50	
10	16.35	6.88	1.17	0	0	-53	10.50	
15	16.44	6.86	1.17	0	0	-55	10.55	
20	16.35	6.85	1.18	0	0	-56	10.50	
25								
30								
35								
40								
45								
50								

Sampling Information

Date: 9/12/19	Time Sampled: 1400	Field Personnel: SNP
Measured Water Level (TOR ft):		

Sampling Method: (place X in box): ✓ Stainless Steel Bailer | ✓ Polyethylene Bailer | Peristaltic Pump | Bladder Pump | Grundfos Pump | Teflon Bailer | Other:

Analysis:

Sample ID: P15T-091219-1400

Odor: None | Appearance: Clear

QA/QC Samples Taken:

Comments:

Sampler (Print): S. Partyka | Sampler (signature): [signature] | Date: 9/12/19

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.:	Date:	Time Started:	File Number: 129862
Weather Conditions:		Time Ended:	Field Personnel: S. Bartyka

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.)
Measured Water Level (ft)	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box)		Stainless Steel		Carbon Steel	X	PVC
Casing Condition:	OK		Repair Required:			
Cap Condition:	OK		Repair Required:			
Paint Condition:	OK		Repair Required:			
Lock Condition:	OK		Repair Required:			
Inner Casing Condition:	OK		Repair Required:			
Surface Seal Condition:	OK		Repair Required:			
Other:	OK		Repair Required:			

Purge Information

Purging Method:	Peristaltic Pump	X	Bladder Pump	Grundfos Pump	Other:

Purge Start Time:

Water Level Prior to Purging (TOR ft.)	Water Level After Purging (TOR ft.)
Amount Purged:	Flow Rate (mL per minute):

Comments:

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0								
5								
10								
15								
20								
25								
30								
35								
40								
45								
50								

Sampling Information

Date: 9-12-19	Time Sampled:	Field Personnel:

Measured Water Level (TOR ft):

Sampling Method: (place X in box)		Stainless Steel Bailer		Peristaltic Pump		Grundfos Pump		Teflon Bailer
		Polyethylene Bailer	X	Bladder Pump		Other:		

Analysis:

Sample ID: 7082-091219-0002

Odor: Appearance:

QA/QC Samples Taken: Field Blank Collected on S. De Storage Pad

Comments: Open 8hrs.

Sampler (Print) | Sampler (signature): | Date:

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.: P-16T	Date: 9/12/19	Time Started: 1435	File Number: 129862
Weather Conditions: 75°F Overcast / Humid		Time Ended:	Field Personnel:

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.) 2
Measured Water Level (ft) 10.14	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box)			Stainless Steel		Carbon Steel	✓	PVC
Casing Condition:	OK	✓	Repair Required:				
Cap Condition:	OK	✓	Repair Required:				
Paint Condition:	OK	✓	Repair Required:				
Lock Condition:	OK	✓	Repair Required:				
Inner Casing Condition:	OK	✓	Repair Required:				
Surface Seal Condition:	OK	✓	Repair Required:				
Other:	OK		Repair Required:				

Purge Information

Purging Method:	✓ Peristaltic Pump	Bladder Pump	Grundfos Pump	Other:	
Purge Start Time: 1440					
Water Level Prior to Purging (TOR ft.)		Water Level After Purging (TOR ft.)			
Amount Purged:		Flow Rate (mL per minute): 250			
Comments:					

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0	19.45	6.96	1.33	129	1.70	-36	10.14	
5	18.05	7.15	1.38	23.2	1.39	39	10.37	
10	17.88	7.18	1.36	38	2.73	68	10.72	
15	17.68	7.14	1.37	22.9	3.60	83	11.10	
20	~~17.62~~	DRY			~~3.41~~			
25								
30								
35								
40								
45								
50								

Sampling Information

Date:	Time Sampled:			Field Personnel:	
Measured Water Level (TOR ft):					
Sampling Method: (place X in box)	Stainless Steel Bailer	✓ Peristaltic Pump	Grundfos Pump	Teflon Bailer	
	Polyethylene Bailer	Bladder Pump	Other:		
Analysis: PFAS					
Sample ID: P16T-091219-					
Odor:	Appearance:				
QA/QC Samples Taken: None					
Comments: Well purged dry @ 2.5 gal @ 1505					
Sampler (Print) S. Portyka	Sampler (signature):		Date: 9/12/19		

LOW-FLOW SAMPLING FIELD FORM

Monitoring Well I.D.:	Date:	Time Started:	File Number: 121862
Weather Conditions:		Time Ended:	Field Personnel: S. Rutter

Initial Readings

Measured Well Bottom (ft)	Riser Pipe Diameter (in.) 2
Measured Water Level (ft)	PID background (ppm) NA
Notes:	PID headspace (ppm) NA

Well Condition

Well Riser Type (place an X in one box)		Stainless Steel		Carbon Steel		PVC	
Casing Condition:	OK		Repair Required:				
Cap Condition:	OK		Repair Required:				
Paint Condition:	OK		Repair Required:				
Lock Condition:	OK		Repair Required:				
Inner Casing Condition:	OK		Repair Required:				
Surface Seal Condition:	OK		Repair Required:				
Other:	OK		Repair Required:				

Purge Information

Purging Method:	Peristaltic Pump	Bladder Pump	Grundfos Pump	Other:

Purge Start Time:

Water Level Prior to Purging (TOR ft.)	Water Level After Purging (TOR ft.)
Amount Purged:	Flow Rate (mL per minute):

Comments:

Time Elapsed (min)	Temperature (deg C)	pH	Conductivity (mS/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	Redox (ORP)	Water Level (TOR ft)	Comments
0								
5								
10								
15								
20								
25								
30								
35								
40								
45								
50								

Sampling Information

Date: 9-12-19	Time Sampled:	Field Personnel:

Measured Water Level (TOR ft):

Sampling Method: (place X in box)		Stainless Steel Bailer		Peristaltic Pump		Grundfos Pump		Teflon Bailer
		Polyethylene Bailer		Bladder Pump		Other:		

Analysis:

Sample ID: 7682 - 091219 - 0003

Odor: Appearance:

QA/QC Samples Taken: E.B.

Comments: Pumped through disposable HDPE Tubing. Lab grade PFAS free DI

Sampler: (Print) S. Rutter	Sampler (signature):	Date: 9-12-19

HALEY ALDRICH

MONITORING WELL DEVELOPMENT REPORT

Well No. P-15T

Page 1 of 1

PROJECT	PFAS Groundwater Monitoring Well Development and Repairs	H&A FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Aragona
CLIENT	RACER Trust and Properties	FIELD REP.	S. Partyka
CONTRACTOR	EnviroCore, Inc.	DATE	9/9/19

SUBTRAHENI _____ Elevation: _____ Datum: _____

Estimated Volume Of Water Lost During Drilling: _____ gallons

Comments: NA

Depth To Water Before Development: 1015 time 9.64 feet

Comments:

Depth To Well Bottom Before Development: 15.98 feet

Comments: Hard Bottom

Turbidity Of Water Before Development: 31.5 NTU

Comments:

Volume Of Water Removed: 8 gallons 8 well volumes

Theoretical Volume Of Water: Height of H_2O Column (ft) = 6.54 ft X _____ (0.16 gal/ft for 2"; 0.65 gal/ft for 4") = 1 gal

Comments:

Method Of Removal (bailing, pumping): PERISTALTIC

Comments: POLYETHYLENE TUBING

Depth To Water After Development: 1130 time 9.95 feet

Comments:

Depth To Well Bottom After Development: 15.98 feet

Comments:

Turbidity Of Water After Development: 6.2 NTU

Comments:

Form 3006

WELL DEVELOPMENT REPORT FORM

PROJECT	PFAS Guam + Well Redevelopment	**FILE NO.**	129861
LOCATION	Elyria, OH	**PROJECT MGR.**	B. Aragona
CLIENT	RACER	**FIELD REP**	S. Partyka
CONTRACTOR	Environcore, Inc	**DATE**	9/9/19

Sampling Data:

Well ID: P-15T | Well Depth: 15.98 ~~9.64~~ ft | Initial Depth To Water: 9.64 ft | Purging Device: Peristaltic Pump

Start time: 1045 | Depth To Top Of Screen: ~~9.95~~ ft | Depth Of Pump Intake: 9.95 ft | Tubing Present In Well: Yes No

Finish Time: 1125 | Depth To Bottom Of Screen ft | Tubing Type: HDPE

Elapsed Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (ml/min) or (gal/min)	Purge Rate (ml/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp-erature (°F) or (°C)	pH	Conduct-ivity (us/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mv)	Comments
1045	9.64	N/A	750	[illegible]	23.85	6.77	1.04	2.38	31.5	135	
1050	9.67				22.65	6.43	1.09	0.49	4.6	45	
1055	9.72				22.23	6.42	1.10	0.49	2.5	20	
1100	9.77				22.22	6.44	1.08	0.48	2.3	10	
1105	9.84				22.23	6.45	1.07	0.48	2.5	8	
1110	9.86				22.21	6.44	1.09	0.47	2.4	5	
1115	9.89				22.21	6.46	1.05	0.29	2.0	1	
1120	9.91				22.23	6.46	1.04	0.26	0.3	0	
1125	9.95		X	8	22.24	6.46	1.03	0.26	0.0	-1	

HALEY ALDRICH

MONITORING WELL DEVELOPMENT REPORT

Well No. P-16T

Page 1 of 1

PROJECT	PFAS Groundwater Monitoring Well Development and Repairs	H&A FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Aragona
CLIENT	RACER Trust and Properties	FIELD REP.	S. Partyka
CONTRACTOR	EnviroCore, Inc.	DATE	9/9/19

SUBTRAHEND _____ Elevation: _____ Datum: _____

Estimated Volume Of Water Lost During Drilling: _____ gallons

Comments: NA

Depth To Water Before Development: 1150 time 9.96 feet

Comments:

Depth To Well Bottom Before Development: 12.18 feet

Comments:

Turbidity Of Water Before Development: _____ NTU

Comments:

Volume Of Water Removed: 3.5 gallons 7 well volumes

Theoretical Volume Of Water: Height of H_2O Column (ft) = 2.22 ft X _____ (0.16 gal/ft for 2"; 0.65 gal/ft for 4") = 0.36 ≈ .5 gal

Comments:

Method Of Removal (bailing, pumping): Peristaltic

Comments:

Depth To Water After Development: 1217 time 12.18 feet

Comments: Well purged dry @ 3.5 gal

Depth To Well Bottom After Development: 12.18 feet

Comments:

Turbidity Of Water After Development: _____ NTU

Comments:

WELL DEVELOPMENT REPORT FORM

Page 1 of 1

PROJECT	PFAS GWM & Well Redevelopment	**FILE NO.**	129862
LOCATION	Elyria, OH	**PROJECT MGR.**	B. Aragona
CLIENT	RACER Trust	**FIELD REP**	S. Pytka
CONTRACTOR	EnviroCore	**DATE**	9/9

Sampling Data:

Well ID: P-16T | Well Depth: 12.18 ft | Initial Depth To Water: 9.96 ft | Purging Device: Peristaltic

Start time: 1150 | Depth To Top Of Screen: ft | Depth Of Pump Intake: 12.18 ft | Tubing Present In Well: Yes No

Finish Time: 1217 | Depth To Bottom Of Screen ft | Tubing Type: HDPE

Elapsed Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (ml/min) or (gal/min)	Purge Rate (ml/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp-erature (°F) or (°C)	pH	Conduct-ivity (us/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mv)	Comments
1200	10.68		1000		23.46	6.74	1.04	6.28	3.1	69	
1205	11.32		↓		21.56	6.70	1.12	5.65	30.6	75	
1210	11.91		↓		21.15	6.69	1.15	4.99	99.9	78	
1215	DRY	@ 3.75	GAL	3.75							

HALEY ALDRICH

MONITORING WELL DEVELOPMENT REPORT

Well No. MW-26D

Page 1 of 1

PROJECT	PFAS Groundwater Monitoring Well Development and Repairs	H&A FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Aragona
CLIENT	RACER Trust and Properties	FIELD REP.	S. Pastyka
CONTRACTOR	EnviroCore, Inc.	DATE	9/9/19

SUBTRAHENI _____ Elevation: _____ Datum: _____

Estimated Volume Of Water Lost During Drilling: _____ gallons

Comments: _____

Depth To Water Before Development: 1235 time 6.41 feet

Comments: _____

Depth To Well Bottom Before Development: 22.92 feet

Comments: Semi-Hard Well Bottom, possible silty bottom

Turbidity Of Water Before Development: _____ NTU

Comments: _____

Volume Of Water Removed: 8.25 gallons ~3 well volumes

Theoretical Volume Of Water: Height of H_2O Column (ft) = 16.51 ft X _____ (0.16 gal/ft for 2"; 0.65 gal/ft for 4") = 2.75 gal

Comments: _____

Method Of Removal (bailing, pumping): Peristaltic

Comments: _____

Depth To Water After Development: 1326 time 8.51 feet

Comments: _____

Depth To Well Bottom After Development: 22.94 feet

Comments: _____

Turbidity Of Water After Development: 3.9 NTU

Comments: _____

Form 3006

WELL DEVELOPMENT REPORT FORM

PROJECT	PFAS GWM & Well Redevelopment	**FILE NO.**	129862
LOCATION	Elyria, OH	**PROJECT MGR.**	B. Amgang
CLIENT	RACER Trust	**FIELD REP**	S. Partyka
CONTRACTOR	Envirocore	**DATE**	9/9/19

Sampling Data:

Well ID: MW-26D | Well Depth: 22.94 ft | Initial Depth To Water: 6.41 ft | Purging Device: Peristaltic

Start time: 1235 | Depth To Top Of Screen: ft | Depth Of Pump Intake: ft | Tubing Present In Well: Yes No

Finish Time: 1326 | Depth To Bottom Of Screen ft | Tubing Type: HDPE

Elapsed Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (ml/min) or (gal/min)	Purge Rate (ml/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp-erature (°F) or (°C)	pH	Conduct-ivity (us/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mv)	Comments
1240	6.49	N/A	1000		21.73	7.15	1.11	7.48	467	10	
1245	6.60				20.67	7.29	1.12	5.46	72.8	-49	
1250	6.81				20.69	7.30	1.12	3.89	75.6	-56	
1255	6.97				20.66	7.31	1.13	2.80	17	-57	
1300	7.15				20.91	7.30	1.12	1.99	24.3	-57	
1305	7.56				21.18	7.30	1.11	1.00	13.9	-56	
1310	7.92				21.54	7.30	1.10	0.66	7.1	-57	
1315	8.01				21.85	7.30	1.10	0.50	3.6	-57	
1320	8.19				21.55	7.30	1.10	0.48	4.2	-57	
1325	8.51		X	8.25	21.57	7.29	1.10	0.48	3.9	-57	

HALEY ALDRICH

MONITORING WELL DEVELOPMENT REPORT

Well No. MW-23S

Page 1 of 1

PROJECT	PFAS Groundwater Monitoring Well Development and Repairs	H&A FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Aragona
CLIENT	RACER Trust and Properties	FIELD REP.	S. Partyka
CONTRACTOR	EnviroCore, Inc.	DATE	9/9/19

SUBTRAHEND: _____ Elevation: _____ Datum: _____

Estimated Volume Of Water Lost During Drilling: _____ gallons

Comments: NA

Depth To Water Before Development: 1340 time 6.61 feet

Comments:

Depth To Well Bottom Before Development: 11.05 feet

Comments: Hard Well Bottom

Turbidity Of Water Before Development: 69.9 NTU

Comments:

Volume Of Water Removed: 4 gallons ~5.3 well volumes

Theoretical Volume Of Water: Height of H_2O Column (ft) = 4.44 ft X _____ (0.16 gal/ft for 2", 0.65 gal/ft for 4") = 0.75 gal

Comments:

Method Of Removal (bailing, pumping): Peristaltic

Comments:

Depth To Water After Development: 1415 time 10.55 feet

Comments:

Depth To Well Bottom After Development: 11.05 feet

Comments:

Turbidity Of Water After Development: 0.0 NTU

Comments:

Form 3006

WELL DEVELOPMENT REPORT FORM

PROJECT	PFAS Gum + Well Redevelopment	FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Aragon
CLIENT	RACER Trust	FIELD REP	S. Partyka
CONTRACTOR	Enviro Core	DATE	9/9/19

Sampling Data:

Well ID: MW-23S | Well Depth: 11.05 ft | Initial Depth To Water: 6.61 ft | Purging Device: Peristaltic

Start time: 1340 | Depth To Top Of Screen: ft | Depth Of Pump Intake: ft | Tubing Present In Well: Yes No

Finish Time: 1415 | Depth To Bottom Of Screen ft | Tubing Type: HDPE

Elapsed Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (ml/min) or (gal/min)	Purge Rate (ml/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp-erature (°F) or (°C)	pH	Conduct-ivity (us/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mv)	Comments
1350	6.75	N/A	1000		25.16	6.71	1.04	5.00	69.9	-67	
1355	7.64				25.15	6.67	1.04	3.94	0.0	-69	
1400	8.70				25.12	6.68	1.05	2.50	0.0	-76	
1405	9.28				25.15	6.69	1.11	2.11	0.0	-77	
1410	9.87				25.15	6.69	1.11	2.11	0.0	-77	
1415	10.55		X	4	25.16	6.69	1.12	2.09	0.0	-79	

HALEY ALDRICH

MONITORING WELL DEVELOPMENT REPORT

Well No. FD-04

Page 1 of 1

PROJECT	PFAS Groundwater Monitoring Well Development and Repairs	**H&A FILE NO.**	129862
LOCATION	Elyria, OH	**PROJECT MGR.**	B. Aragona
CLIENT	RACER Trust and Properties	**FIELD REP.**	S. Partyka
CONTRACTOR	EnviroCore, Inc.	**DATE**	9/9/19

SUBTRAHENI _____ **Elevation:** _____ **Datum:** _____

Estimated Volume Of Water Lost During Drilling: _____ gallons

Comments: _____

Depth To Water Before Development: 1435 time 9.13 feet

Comments: _____

Depth To Well Bottom Before Development: 16.96 feet

Comments: Hard Well Bottom

Turbidity Of Water Before Development: 334 NTU

Comments: _____

Volume Of Water Removed: 4.5 gallons 3 well volumes

Theoretical Volume Of Water: Height of H_2O Column (ft) = 7.83 ft X _____ (0.16 gal/ft for 2"; 0.65 gal/ft for 4") = 1.5 gal

Comments: _____

Method Of Removal (bailing, pumping): Peristaltic

Comments: _____

Depth To Water After Development: 1516 time 12.22 feet

Comments: _____

Depth To Well Bottom After Development: 16.96 feet

Comments: _____

Turbidity Of Water After Development: 0.0 NTU

Comments: _____

WELL DEVELOPMENT REPORT FORM

PROJECT	RACER PFAS GWM+ Well Redevelopment	**FILE NO.**	129862
LOCATION	Elyria, OH	**PROJECT MGR.**	B. Aragona
CLIENT	RACER Trust	**FIELD REP**	S. Fortney
CONTRACTOR	EnviroCore	**DATE**	9/9/19

Sampling Data:

Well ID: ~~[illegible]~~ FD-84 | Well Depth: 16.96 ft | Initial Depth To Water: 9.13 ft | Purging Device: Peristaltic

Start time: 1435 | Depth To Top Of Screen: ft | Depth Of Pump Intake: ft | Tubing Present In Well: Yes No

Finish Time: 1516 | Depth To Bottom Of Screen ft | Tubing Type: HDPE

Elapsed Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (ml/min) or (gal/min)	Purge Rate (ml/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp-erature (°F) or (°C)	pH	Conduct-ivity (us/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mv)	Comments
		N/A									
1445	9.48		~~250~~		24.85	6.95	0.806	7.41	334	-39	
1450	10.01		↓		24.67	6.79	0.806	2.52	56.4	-13	
1455	10.86				24.68	6.79	0.806	0.10	13.2	-11	
1500	11.24				24.65	6.80	0.806	0.08	0.0	-12	
1505	11.78			↓	24.68	6.80	0.806	0.10	0.0	-12	
1510	12.22		X	4.5	24.69	6.80	0.806	0.11	0.0	-12	

HALEY ALDRICH

MONITORING WELL DEVELOPMENT REPORT

Well No. MW-15R

Page 1 of 1

PROJECT	PFAS Groundwater Monitoring Well Development and Repairs	**H&A FILE NO.**	129862
LOCATION	Elyria, OH	**PROJECT MGR.**	B. Aragona
CLIENT	RACER Trust and Properties	**FIELD REP.**	S. Partyka
CONTRACTOR	EnviroCore, Inc.	**DATE**	9/10/19

SUBTRAHENI _____ **Elevation:** _____ **Datum:** _____

Estimated Volume Of Water Lost During Drilling: _____ gallons

Comments: NA

Depth To Water Before Development: 1215 time 8.66 feet

Comments:

Depth To Well Bottom Before Development: 30.07 feet

Comments:

Turbidity Of Water Before Development: _____ NTU

Comments:

Volume Of Water Removed: 10.5 gallons ~3 well volumes

Theoretical Volume Of Water: Height of H_2O Column (ft) = 21.41 ft X _____ (0.16 gal/ft for 2"; 0.65 gal/ft for 4") = 3.5 gal

Comments:

Method Of Removal (bailing, pumping): _____

Comments:

Depth To Water After Development: 1306 time 9.175 feet

Comments:

Depth To Well Bottom After Development: 30.07 feet

Comments:

Turbidity Of Water After Development: _____ NTU

Comments:

WELL DEVELOPMENT REPORT FORM

Page 1 of 1

PROJECT	PFAS GWM + Well Redevelopment	FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Aragona
CLIENT	RACER Trust	FIELD REP	S. Pa[illegible]yer
CONTRACTOR	EnviroCore	DATE	3/20/19

Sampling Data:

Well ID: MW-15R | Well Depth: 30.07 ft | Initial Depth To Water: 8.66 ft | Purging Device: Peristaltic

Start time: 1215 | Depth To Top Of Screen: ft | Depth Of Pump Intake: ft | Tubing Present In Well: Yes No

Finish Time: 1306 | Depth To Bottom Of Screen ft | Tubing Type: HDPE

Elapsed Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (ml/min) or (gal/min)	Purge Rate (ml/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp-erature (°F) or (°C)	pH	Conduct-ivity (us/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mv)	Comments
1225	8.70	N/A	500		17.04	7.29	0.817	0.54	56.3	170	
1230	8.73				16.52	6.85	0.746	0.29	2.5	89	
1235	8.79				16.29	6.64	0.702	0.20	0.0	26	
1240	8.84				16.14	6.57	0.745	0.16	0.0	16	
1245	8.90				16.17	6.53	0.736	0.14	0.0	12	
1250	8.96				16.06	6.51	0.730	0.14	0.0	11	
1255	9.01				16.51	6.49	0.729	0.11	0.0	10	
1300	9.09				16.55	6.49	0.729	0.10	0.0	9	
1305	9.17		X	10.5	16.59	6.48	0.728	0.10	0.0	9	

HALEY ALDRICH

MONITORING WELL DEVELOPMENT REPORT

Well No. MW-16R

Page 1 of 1

PROJECT	PFAS Groundwater Monitoring Well Development and Repairs	H&A FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Aragona
CLIENT	RACER Trust and Properties	FIELD REP.	S. Partyka
CONTRACTOR	EnviroCore, Inc.	DATE	9/10/19

SUBTRAHEND _____ Elevation: _____ Datum: _____

Estimated Volume Of Water Lost During Drilling: _____ gallons

Comments: NA

Depth To Water Before Development: 1325 time 9.53 feet

Comments:

Depth To Well Bottom Before Development: 21.93 feet

Comments:

Turbidity Of Water Before Development: 121 NTU

Comments:

Volume Of Water Removed: 6.5 gallons 3.25 well volumes

Theoretical Volume Of Water: Height of H_2O Column (ft) = 12.41 ft X _____ (0.16 gal/ft for 2"; 0.65 gal/ft for 4") = 2 gal

Comments:

Method Of Removal (bailing, pumping): Peristaltic

Comments:

Depth To Water After Development: 1402 time 11.60 feet

Comments:

Depth To Well Bottom After Development: 21.93 feet

Comments:

Turbidity Of Water After Development: 0.0 NTU

Comments:

WELL DEVELOPMENT REPORT FORM

Page 1 of 1

PROJECT	PFAS GWM & Well Redevelopment	FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Argeropoulos
CLIENT	RACER Trust	FIELD REP	S. Partyka
CONTRACTOR	EnviroCore	DATE	9/16/19

Sampling Data:

Well ID: MW-16R | Well Depth: 21.93 ft | Initial Depth To Water: 9.53 ft | Purging Device: Peristaltic

Start time: 1325 | Depth To Top Of Screen: ft | Depth Of Pump Intake: ft | Tubing Present In Well: Yes No

Finish Time: 1402 | Depth To Bottom Of Screen ft | Tubing Type: HDPE

Elapsed Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (ml/min) or (gal/min)	Purge Rate (ml/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp-erature (°F) or (°C)	pH	Conduct-ivity (us/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mv)	Comments
1335	9.72	N/A	900		21.90	6.98	0.888	6.63	121	129	
1340	9.91				18.75	6.87	0.852	6.11	0.0	110	
1345	10.16				17.97	6.65	0.865	0.05	0.0	22	
1350	10.79				17.65	6.59	0.867	0.03	0.0	5	
1355	11.08			↓	17.61	6.57	0.868	0.01	0.0	3	
1400	11.60	↓	↓	6.5	17.62	6.56	0.867	0.02	0.0	2	

HALEY ALDRICH

MONITORING WELL DEVELOPMENT REPORT

Well No. MW-17

Page 1 of 1

PROJECT	PFAS Groundwater Monitoring Well Development and Repairs	**H&A FILE NO.**	129862
LOCATION	Elyria, OH	**PROJECT MGR.**	B. Aragona
CLIENT	RACER Trust and Properties	**FIELD REP.**	S. Partyka
CONTRACTOR	EnviroCore, Inc.	**DATE**	9/10/19

SUBTRAHENI _____ **Elevation:** _____ **Datum:** _____

Estimated Volume Of Water Lost During Drilling: _____ gallons

Comments: _____

Depth To Water Before Development: 1420 time 7.50 feet

Comments: _____

Depth To Well Bottom Before Development: 23.36 feet

Comments: _____

Turbidity Of Water Before Development: 78 NTU

Comments: _____

Volume Of Water Removed: 5.5 gallons 1.5 well volumes

Theoretical Volume Of Water: Height of H_2O Column (ft) = 15.86 ft X _____ (0.16 gal/ft for 2"; 0.65 gal/ft for 4") = 2.75 gal

Comments: _____

Method Of Removal (bailing, pumping): Peristaltic

Comments: _____

Depth To Water After Development: 1430 time 23.36 feet

Comments: Well Purged Dry @ 5.5 gal

Depth To Well Bottom After Development: 23.36 feet

Comments: _____

Turbidity Of Water After Development: 29 NTU

Comments: _____

WELL DEVELOPMENT REPORT FORM

PROJECT	PFAS GWM & Well Redevelopment	FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Aragona
CLIENT	RACER Trust	FIELD REP	S. Parfitt
CONTRACTOR	EnviroCore	DATE	9/10/19

Sampling Data:

Well ID: MW-17 | Well Depth: 23.36 ft | Initial Depth To Water: ft | Purging Device:

Start time: 1420 | Depth To Top Of Screen: ft | Depth Of Pump Intake: ft | Tubing Present In Well: Yes No

Finish Time: 1435 | Depth To Bottom Of Screen ft | Tubing Type:

Elapsed Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (ml/min) or (gal/min)	Purge Rate (ml/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp-erature (°F) or (°C)	pH	Conduct-ivity (us/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mv)	Comments
1420	8.95	N/A	1000	↓	21.38	7.25	0.718	7.30	78	-94	
1425	12.68		↓	↓	21.00	7.46	0.705	4.61	82	-144	
1430	16.91		↓	↓	21.12	7.43	0.663	3.20	42	-151	
1435	20.99		↓	↓	21.21	7.41	0.672	1.77	29	-155	
1440	DRY		X	5.5							

HALEY ALDRICH

MONITORING WELL DEVELOPMENT REPORT

Well No. MW-23D

Page 1 of 1

PROJECT	PFAS Groundwater Monitoring Well Development and Repairs	H&A FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Aragona
CLIENT	RACER Trust and Properties	FIELD REP.	S. Partyka
CONTRACTOR	EnviroCore, Inc.	DATE	9/11/19

SUBTRAHEND _____ Elevation: _____ Datum: _____

Estimated Volume Of Water Lost During Drilling: _____ gallons

Comments: NA

Depth To Water Before Development: 0900 time 7.54 feet

Comments:

Depth To Well Bottom Before Development: 19.00 feet

Comments:

Turbidity Of Water Before Development: _____ NTU

Comments:

Volume Of Water Removed: 7 gallons 2.15 well volumes

Theoretical Volume Of Water: Height of H_2O Column (ft) = 11.46 ft X _____ (0.16 gal/ft for 2"; 0.65 gal/ft for 4") = 2 gal

Comments:

Method Of Removal (bailing, pumping): Peristaltic

Comments:

Depth To Water After Development: 0932 time 9.87 ~~12.00~~ feet

Comments:

Depth To Well Bottom After Development: 19.00 feet

Comments:

Turbidity Of Water After Development: _____ NTU

Comments:

WELL DEVELOPMENT REPORT FORM

PROJECT	PFAS GWM & Well Redevelopment	FILE NO.	129862
LOCATION	Elyria, OH	PROJECT MGR.	B. Aragona
CLIENT	RACER Trust	FIELD REP	S. Pavlyles
CONTRACTOR	Envirocore	DATE	9/11/19

Sampling Data:

Well ID: MW-23D | Well Depth: 19.00 ft | Initial Depth To Water: 7.54 ft | Purging Device: Peristaltic

Start time: 0900 | Depth To Top Of Screen: ft | Depth Of Pump Intake: ft | Tubing Present In Well: Yes No

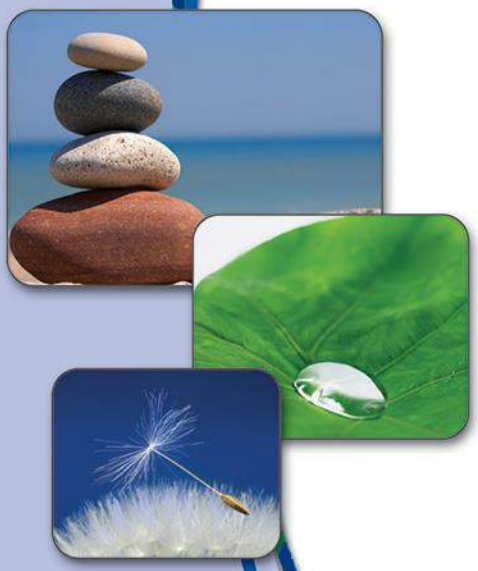
Finish Time: 0932 | Depth To Bottom Of Screen ft | Tubing Type: HDPE

Elapsed Time (24 hour)	Depth To Water From Casing (ft)	Pump Setting (ml/min) or (gal/min)	Purge Rate (ml/min) or (gal/min)	Cumulative Purge Vol. (liters) or (gal)	Temp-erature (°F) or (°C)	pH	Conduct-ivity (us/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	ORP/eH (mv)	Comments
0905	7.88	N/A	900		23.41	7.89	0.806	5.85	568	-153	
0910	8.15				22.45	7.24	0.824	0.37	13.5	-156	
0915	8.73				21.29	7.15	0.859	0.17	2.2	-142	
0920	9.02				20.84	7.13	0.868	0.15	1.9	-138	
0925	9.34			↓	20.92	7.12	0.869	0.14	1.5	-130	
0930	9.87		↓	7	20.95	7.11	0.870	0.13	1.5	-137	

ATTACHMENT 2

Laboratory Report

eurofins | Environment Testing TestAmerica



ANALYTICAL REPORT

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

Laboratory Job ID: 240-118855-1
Client Project/Site: Racer Elyria

For:
Haley & Aldrich, Inc.
455 E. Eisenhower Parkway
Suite 210
Ann Arbor, Michigan 48108-2280

Attn: Ban Aragona

Leslie A Howell

Authorized for release by:
10/21/2019 1:00:47 PM

Leslie Howell, Project Manager I
(330)966-9266
leslie.howell@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
B	Compound was found in the blank and sample.
CI	The peak identified by the data system exhibited chromatographic interference that could not be resolved. There is reason to suspect there may be a high bias.
F1	MS and/or MSD Recovery is outside acceptance limits.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)

Job ID: 240-118855-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: Haley & Aldrich, Inc.

Project: Racer Elyria

Report Number: 240-118855-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The PFC_IDA Perfluorinated Hydrocarbons analysis was performed at the Eurofins TestAmerica, Sacramento laboratory.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 9/13/2019 2:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1° C.

PERFLUORINATED HYDROCARBONS

Samples FD-04-091219-1055 (240-118855-1), 7082-04-091219-001 (240-118855-2), MW26D-091219-1145 (240-118855-3), MW23S-091219-1225 (240-118855-4), MW23D-091219-1320 (240-118855-5), P15T-091219-1400 (240-118855-6), 7082-091219-0002 (240-118855-7), 7082-091219-0003 (240-118855-8), P16T-091319-0830 (240-118855-9), OF0001-091319-0915 (240-118855-10), MW16R-091319-1050 (240-118855-11), 7082-091319-0001 (240-118855-12), MW15R-091319-1150 (240-118855-13), MW17-091319-1215 (240-118855-14) and 7082-091319-0002 (240-118855-15) were analyzed for Perfluorinated Hydrocarbons in accordance with SOP WS-OC-0025. The samples were prepared on 09/23/2019 and analyzed on 09/24/2019, 10/10/2019 and 10/14/2019.

Perfluorohexanesulfonic acid (PFHxS) was detected in method blank MB 320-325436/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Job ID: 240-118855-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

Perfluorobutanoic acid (PFBA) failed the recovery criteria high for the MS and MSD of sample 7082-091319-0001 (240-118855-12) in batch 320-330074.

Refer to the QC report for details.

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead.

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead. (ICV 320-325346/11)

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte Perfluorobutanesulfonic acid (PFBS) and/or perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS was quantitated versus 18O2-PFHxS instead.

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead. (ICV 320-327639/11)

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) for: OF0001-091319-0915 (240-118855-10), MW16R-091319-1050 (240-118855-11), 7082-091319-0001 (240-118855-12[MSD]) and MW15R-091319-1150 (240-118855-13).

The matrix spike duplicate (MSD) recoveries for preparation batch 320-325436 and analytical batch 320-325657 were outside control limits for Perfluorobutanoic acid (PFBA). Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead for (ICV 320-330186/11).

Isotope Dilution Analyte (IDA) M2-4:2 FTS and M2-6:2 FTS recoveries were above the method recommended limit for the following samples: MW23D-091219-1320 (240-118855-5) and OF0001-091319-0915 (240-118855-10). 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.

Isotope Dilution Analyte (IDA) M2-4:2 FTS recovery is above the method recommended limit for the following sample: MW26D-091219-1145 (240-118855-3). The sample was re-analyzed with concurring results. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

The matrix spike (MS) recoveries for preparation batch 320-325436 and analytical batch 320-330074 were outside control limits for Perfluorobutanoic acid (PFBA). Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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) have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s) for: FD-04-091219-1055 (240-118855-1), 7082-04-091219-001 (240-118855-2), OF0001-091319-0915 (240-118855-10), 7082-091319-0001 (240-118855-12) and 7082-091319-0001 (240-118855-12[MS]).

The following sample has chromatographic interferences that could adversely impact the identification and quantitation of Perfluoroheptanoic acid (PFHpA): 7082-091319-0001 (240-118855-12) These interferences could cause false positive results.

Job ID: 240-118855-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

The following samples were observed to contain sediment prior to extraction: MW23D-091219-1320 (240-118855-5), P15T-091219-1400 (240-118855-6), MW16R-091319-1050 (240-118855-11) and MW17-091319-1215 (240-118855-14).

The following samples were observed to be a light yellow color prior to extraction: MW23S-091219-1225 (240-118855-4) and OF0001-091319-0915 (240-118855-10).

The following sample contains non-settleable particulate matter which clogged the solid-phase extraction column:MW17-091319-1215 (240-118855-14).

The following samples were observed to be light yellow after final voluming: MW23D-091219-1320 (240-118855-5), MW16R-091319-1050 (240-118855-11), 7082-091319-0001 (240-118855-12), 7082-091319-0001 (240-118855-12[MS]) and 7082-091319-0001 (240-118855-12[MSD]).

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

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

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

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-118855-1	FD-04-091219-1055	Water	09/12/19 10:55	09/13/19 14:45	
240-118855-2	7082-04-091219-001	Water	09/12/19 00:00	09/13/19 14:45	
240-118855-3	MW26D-091219-1145	Water	09/12/19 11:45	09/13/19 14:45	
240-118855-4	MW23S-091219-1225	Water	09/12/19 12:25	09/13/19 14:45	
240-118855-5	MW23D-091219-1320	Water	09/12/19 13:20	09/13/19 14:45	
240-118855-6	P15T-091219-1400	Water	09/12/19 14:00	09/13/19 14:45	
240-118855-7	7082-091219-0002	Water	09/12/19 16:00	09/13/19 14:45	
240-118855-8	7082-091219-0003	Water	09/12/19 16:15	09/13/19 14:45	
240-118855-9	P16T-091319-0830	Water	09/13/19 08:30	09/13/19 14:45	
240-118855-10	OF0001-091319-0915	Water	09/13/19 09:15	09/13/19 14:45	
240-118855-11	MW16R-091319-1050	Water	09/13/19 10:50	09/13/19 14:45	
240-118855-12	7082-091319-0001	Water	09/13/19 10:50	09/13/19 14:45	
240-118855-13	MW15R-091319-1150	Water	09/13/19 11:50	09/13/19 14:45	
240-118855-14	MW17-091319-1215	Water	09/13/19 12:15	09/13/19 14:45	
240-118855-15	7082-091319-0002	Water	09/13/19 12:45	09/13/19 14:45	

Detection Summary

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: FD-04-091219-1055 — Lab Sample ID: 240-118855-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.0		2.0	0.35	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.3	J	2.0	0.84	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.49	J	2.0	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.7		2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	2.8	I	2.0	0.30	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.3	I B	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	J I	2.0	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	56	I	2.0	0.53	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	0.37	J	2.0	0.35	ng/L	1		537 (modified)	Total/NA
6:2 FTS	55		20	2.0	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 7082-04-091219-001 — Lab Sample ID: 240-118855-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.0		2.0	0.34	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	2.0	0.83	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.5		2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	3.1	I	2.0	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.8	I B	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.7	J I	2.0	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	54	I	2.0	0.53	ng/L	1		537 (modified)	Total/NA
6:2 FTS	48		20	2.0	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW26D-091219-1145 — Lab Sample ID: 240-118855-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.1		2.0	0.35	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	7.9		2.0	0.57	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.0		2.0	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.6		2.0	0.84	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.32	J	2.0	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.32	J	2.0	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.6		2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	4.7		2.0	0.30	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	19	B	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	3.3		2.0	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	130		2.0	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW23S-091219-1225 — Lab Sample ID: 240-118855-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	13		2.0	0.34	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.3		2.0	0.57	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.9	J	2.0	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	9.2		2.0	0.84	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.36	J	2.0	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.39	J	2.0	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.6		2.0	0.20	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW23S-091219-1225 (Continued) — Lab Sample ID: 240-118855-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanesulfonic acid (PFPeS)	1.1	J	2.0	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.1	B	2.0	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.77	J	2.0	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	22		2.0	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW23D-091219-1320 — Lab Sample ID: 240-118855-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.2		1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.6		1.9	0.54	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.9		1.9	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.4		1.9	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.75	J	1.9	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.32	J	1.9	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.32	J	1.9	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.7	B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	2.3		1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	170		1.9	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	0.41	J	1.9	0.33	ng/L	1		537 (modified)	Total/NA

Client Sample ID: P15T-091219-1400 — Lab Sample ID: 240-118855-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.1		1.9	0.33	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.4		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.1	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	6.7		1.9	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 7082-091219-0002 — Lab Sample ID: 240-118855-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.25	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 7082-091219-0003 — Lab Sample ID: 240-118855-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.32	J B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: P16T-091319-0830 — Lab Sample ID: 240-118855-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.34	J	1.9	0.34	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.64	J	1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.59	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)	1.3	J	1.9	0.52	ng/L	1		537 (modified)	Total/NA
6:2 FTS	4.4	J	19	1.9	ng/L	1		537 (modified)	Total/NA

Client Sample ID: OF0001-091319-0915 — Lab Sample ID: 240-118855-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	16		1.9	0.33	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: OF0001-091319-0915 (Continued) — Lab Sample ID: 240-118855-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	2.8		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.30	J	1.9	0.30	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.29	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	90		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	2.2		1.9	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.7	I B	1.9	0.16	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	1.2	J I	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	50		1.9	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	0.55	J	1.9	0.33	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW16R-091319-1050 — Lab Sample ID: 240-118855-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	11		2.0	0.34	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.6		2.0	0.48	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	13		2.0	0.57	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.9		2.0	0.25	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.5	I	2.0	0.83	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	11		2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	14	I	2.0	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11	I B	2.0	0.17	ng/L	1		537 (modified)	Total/NA

Client Sample ID: 7082-091319-0001 — Lab Sample ID: 240-118855-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	11	F1	1.9	0.34	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.4		1.9	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	13	I	1.9	0.56	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.9	I CI	2.9	2.9	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.2	I	1.9	0.82	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.46	J	1.9	0.28	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	12		1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	15	I	1.9	0.29	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	10	I B	1.9	0.16	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW15R-091319-1150 — Lab Sample ID: 240-118855-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.2		1.9	0.34	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.5	J	1.9	0.83	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.87	J I B	1.9	0.17	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.5	J I	1.9	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW17-091319-1215 — Lab Sample ID: 240-118855-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.31	J B	2.0	0.17	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: 7082-091319-0002

Lab Sample ID: 240-118855-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.28	J	1.8	0.27	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.26	J B	1.8	0.16	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: FD-04-091219-1055
Date Collected: 09/12/19 10:55
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-1
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.0**		2.0	0.35	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.48	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.57	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorooctanoic acid (PFOA)	**1.3**	**J**	2.0	0.84	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorododecanoic acid (PFDoA)	2.0	U I	2.0	0.54	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorotetradecanoic acid (PFTeA)	**0.49**	**J**	2.0	0.29	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorobutanesulfonic acid (PFBS)	**2.7**		2.0	0.20	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluoropentanesulfonic acid (PFPeS)	**2.8**	**I**	2.0	0.30	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorohexanesulfonic acid (PFHxS)	**8.3**	**I B**	2.0	0.17	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.8**	**J I**	2.0	0.19	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorooctanesulfonic acid (PFOS)	**56**	**I**	2.0	0.53	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		09/23/19 04:56	10/10/19 20:37	1
Perfluorooctanesulfonamide (FOSA)	**0.37**	**J**	2.0	0.35	ng/L		09/23/19 04:56	10/10/19 20:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		09/23/19 04:56	10/10/19 20:37	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		09/23/19 04:56	10/10/19 20:37	1
4:2 FTS	20	U	20	5.1	ng/L		09/23/19 04:56	10/10/19 20:37	1
6:2 FTS	**55**		20	2.0	ng/L		09/23/19 04:56	10/10/19 20:37	1
8:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	10/10/19 20:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*73*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C5 PFPeA	*99*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C2 PFHxA	*104*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C4 PFHpA	*110*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C4 PFOA	*106*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C5 PFNA	*107*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C2 PFDA	*102*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C2 PFUnA	*96*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C2 PFDoA	*100*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C2 PFTeDA	*95*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
18O2 PFHxS	*112*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C4 PFOS	*108*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
13C8 FOSA	*101*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
d3-NMeFOSAA	*92*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
d5-NEtFOSAA	*95*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
M2-6:2 FTS	*92*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*
M2-8:2 FTS	*95*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:37*	*1*

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: FD-04-091219-1055
Date Collected: 09/12/19 10:55
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	133		25 - 150	09/23/19 04:56	10/10/19 20:37	1

Client Sample ID: 7082-04-091219-001
Date Collected: 09/12/19 00:00
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-2
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.0**		2.0	0.34	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.48	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.57	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.24	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorooctanoic acid (PFOA)	**1.2**	**J**	2.0	0.83	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.26	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.30	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.54	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.28	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorobutanesulfonic acid (PFBS)	**2.5**		2.0	0.20	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluoropentanesulfonic acid (PFPeS)	**3.1**	**I**	2.0	0.29	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorohexanesulfonic acid (PFHxS)	**8.8**	**I B**	2.0	0.17	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.7**	**J I**	2.0	0.19	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorooctanesulfonic acid (PFOS)	**54**	**I**	2.0	0.53	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.31	ng/L		09/23/19 04:56	10/10/19 20:47	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.34	ng/L		09/23/19 04:56	10/10/19 20:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.0	ng/L		09/23/19 04:56	10/10/19 20:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		09/23/19 04:56	10/10/19 20:47	1
4:2 FTS	20	U	20	5.1	ng/L		09/23/19 04:56	10/10/19 20:47	1
6:2 FTS	**48**		20	2.0	ng/L		09/23/19 04:56	10/10/19 20:47	1
8:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	10/10/19 20:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*72*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C5 PFPeA	*94*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C2 PFHxA	*101*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C4 PFHpA	*105*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C4 PFOA	*103*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C5 PFNA	*107*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C2 PFDA	*100*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C2 PFUnA	*100*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C2 PFDoA	*103*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C2 PFTeDA	*86*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
18O2 PFHxS	*109*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C4 PFOS	*106*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
13C8 FOSA	*103*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
M2-6:2 FTS	*91*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
M2-8:2 FTS	*89*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*
M2-4:2 FTS	*125*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:47*	*1*

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: MW26D-091219-1145
Date Collected: 09/12/19 11:45
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-3
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.1**		2.0	0.35	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.48	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorohexanoic acid (PFHxA)	**7.9**		2.0	0.57	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluoroheptanoic acid (PFHpA)	**3.0**		2.0	0.25	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorooctanoic acid (PFOA)	**8.6**		2.0	0.84	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorononanoic acid (PFNA)	**0.32**	**J**	2.0	0.27	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.54	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorotetradecanoic acid (PFTeA)	**0.32**	**J**	2.0	0.29	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorobutanesulfonic acid (PFBS)	**3.6**		2.0	0.20	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluoropentanesulfonic acid (PFPeS)	**4.7**		2.0	0.30	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorohexanesulfonic acid (PFHxS)	**19**	**B**	2.0	0.17	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	**3.3**		2.0	0.19	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorooctanesulfonic acid (PFOS)	**130**		2.0	0.53	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		09/23/19 04:56	10/10/19 20:56	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		09/23/19 04:56	10/10/19 20:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		09/23/19 04:56	10/10/19 20:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		09/23/19 04:56	10/10/19 20:56	1
4:2 FTS	20	U	20	5.1	ng/L		09/23/19 04:56	10/10/19 20:56	1
6:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	10/10/19 20:56	1
8:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	10/10/19 20:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*55*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C5 PFPeA	*83*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C2 PFHxA	*93*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C4 PFHpA	*102*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C4 PFOA	*104*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C5 PFNA	*103*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C2 PFDA	*98*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C2 PFUnA	*92*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C2 PFDoA	*89*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C2 PFTeDA	*83*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
18O2 PFHxS	*104*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C4 PFOS	*100*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
13C8 FOSA	*98*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
d5-NEtFOSAA	*91*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
M2-6:2 FTS	*128*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
M2-8:2 FTS	*90*		*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*
M2-4:2 FTS	*151*	*	*25 - 150*	*09/23/19 04:56*	*10/10/19 20:56*	*1*

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: MW23S-091219-1225
Date Collected: 09/12/19 12:25
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-4
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**13**		2.0	0.34	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.48	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorohexanoic acid (PFHxA)	**2.3**		2.0	0.57	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluoroheptanoic acid (PFHpA)	**1.9**	**J**	2.0	0.25	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorooctanoic acid (PFOA)	**9.2**		2.0	0.84	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorononanoic acid (PFNA)	**0.36**	**J**	2.0	0.27	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.30	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.54	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorotetradecanoic acid (PFTeA)	**0.39**	**J**	2.0	0.28	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorobutanesulfonic acid (PFBS)	**3.6**		2.0	0.20	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluoropentanesulfonic acid (PFPeS)	**1.1**	**J**	2.0	0.29	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorohexanesulfonic acid (PFHxS)	**5.1**	**B**	2.0	0.17	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.77**	**J**	2.0	0.19	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorooctanesulfonic acid (PFOS)	**22**		2.0	0.53	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.31	ng/L		09/23/19 04:56	10/10/19 21:06	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.34	ng/L		09/23/19 04:56	10/10/19 21:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.0	ng/L		09/23/19 04:56	10/10/19 21:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		09/23/19 04:56	10/10/19 21:06	1
4:2 FTS	20	U	20	5.1	ng/L		09/23/19 04:56	10/10/19 21:06	1
6:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	10/10/19 21:06	1
8:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	10/10/19 21:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*58*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C5 PFPeA	*83*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C2 PFHxA	*92*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C4 PFHpA	*101*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C4 PFOA	*103*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C5 PFNA	*102*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C2 PFDA	*94*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C2 PFUnA	*89*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C2 PFDoA	*80*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C2 PFTeDA	*72*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
18O2 PFHxS	*103*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C4 PFOS	*98*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
13C8 FOSA	*97*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
d3-NMeFOSAA	*82*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
d5-NEtFOSAA	*80*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
M2-6:2 FTS	*127*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
M2-8:2 FTS	*93*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*
M2-4:2 FTS	*142*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:06*	*1*

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: MW23D-091219-1320
Date Collected: 09/12/19 13:20
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-5
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.2**		1.9	0.33	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorohexanoic acid (PFHxA)	**5.6**		1.9	0.54	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluoroheptanoic acid (PFHpA)	**2.9**		1.9	0.23	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorooctanoic acid (PFOA)	**8.4**		1.9	0.79	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorononanoic acid (PFNA)	**0.75**	**J**	1.9	0.25	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorodecanoic acid (PFDA)	**0.32**	**J**	1.9	0.29	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorotetradecanoic acid (PFTeA)	**0.32**	**J**	1.9	0.27	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorohexanesulfonic acid (PFHxS)	**8.7**	**B**	1.9	0.16	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluoroheptanesulfonic Acid (PFHpS)	**2.3**		1.9	0.18	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorooctanesulfonic acid (PFOS)	**170**		1.9	0.50	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		09/23/19 04:56	10/10/19 21:16	1
Perfluorooctanesulfonamide (FOSA)	**0.41**	**J**	1.9	0.33	ng/L		09/23/19 04:56	10/10/19 21:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		09/23/19 04:56	10/10/19 21:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		09/23/19 04:56	10/10/19 21:16	1
4:2 FTS	19	U	19	4.9	ng/L		09/23/19 04:56	10/10/19 21:16	1
6:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	10/10/19 21:16	1
8:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	10/10/19 21:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*59*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C5 PFPeA	*84*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C2 PFHxA	*92*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C4 PFHpA	*100*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C4 PFOA	*103*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C5 PFNA	*98*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C2 PFDA	*102*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C2 PFUnA	*95*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C2 PFDoA	*99*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
18O2 PFHxS	*108*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C4 PFOS	*98*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
13C8 FOSA	*103*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
d3-NMeFOSAA	*88*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
d5-NEtFOSAA	*89*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
M2-6:2 FTS	*155*	*	*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
M2-8:2 FTS	*121*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*
M2-4:2 FTS	*167*	*	*25 - 150*	*09/23/19 04:56*	*10/10/19 21:16*	*1*

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: P15T-091219-1400
Date Collected: 09/12/19 14:00
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-6
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.1**		1.9	0.33	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.47	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.55	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.24	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorooctanoic acid (PFOA)	**2.4**		1.9	0.81	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.52	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.29	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorohexanesulfonic acid (PFHxS)	**1.1**	**J B**	1.9	0.16	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorooctanesulfonic acid (PFOS)	**6.7**		1.9	0.51	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		09/23/19 04:56	10/14/19 13:43	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		09/23/19 04:56	10/14/19 13:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		09/23/19 04:56	10/14/19 13:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		09/23/19 04:56	10/14/19 13:43	1
4:2 FTS	19	U	19	4.9	ng/L		09/23/19 04:56	10/14/19 13:43	1
6:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	10/14/19 13:43	1
8:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	10/14/19 13:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*45*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C5 PFPeA	*80*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C2 PFHxA	*83*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C4 PFHpA	*95*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C4 PFOA	*102*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C5 PFNA	*100*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C2 PFDA	*96*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C2 PFUnA	*96*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C2 PFDoA	*95*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C2 PFTeDA	*86*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
18O2 PFHxS	*105*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C4 PFOS	*91*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
13C8 FOSA	*86*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
d3-NMeFOSAA	*86*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
d5-NEtFOSAA	*83*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
M2-6:2 FTS	*124*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
M2-8:2 FTS	*102*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*
M2-4:2 FTS	*124*		*25 - 150*	*09/23/19 04:56*	*10/14/19 13:43*	*1*

Client Sample ID: 7082-091219-0002

Date Collected: 09/12/19 16:00
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-7

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.9	U	1.9	0.33	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.46	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.54	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.23	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.80	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.25	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.29	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.0	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.51	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.27	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.28	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorohexanesulfonic acid (PFHxS)	**0.25**	**J B**	1.9	0.16	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.51	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.30	ng/L		09/23/19 04:56	09/24/19 04:12	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.33	ng/L		09/23/19 04:56	09/24/19 04:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	2.9	ng/L		09/23/19 04:56	09/24/19 04:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		09/23/19 04:56	09/24/19 04:12	1
4:2 FTS	19	U	19	4.9	ng/L		09/23/19 04:56	09/24/19 04:12	1
6:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	09/24/19 04:12	1
8:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	09/24/19 04:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*100*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C5 PFPeA	*103*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C2 PFHxA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C4 PFHpA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C4 PFOA	*105*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C5 PFNA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C2 PFDA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C2 PFUnA	*96*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C2 PFDoA	*94*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C2 PFTeDA	*92*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
18O2 PFHxS	*115*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C4 PFOS	*109*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
13C8 FOSA	*107*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
d5-NEtFOSAA	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
M2-6:2 FTS	*107*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
M2-8:2 FTS	*113*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*
M2-4:2 FTS	*109*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:12*	*1*

Client Sample ID: 7082-091219-0003

Date Collected: 09/12/19 16:15
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-8

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.9	U	1.9	0.34	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.47	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.56	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.24	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.82	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.29	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorohexanesulfonic acid (PFHxS)	**0.32**	**J B**	1.9	0.16	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U	1.9	0.52	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		09/23/19 04:56	09/24/19 04:41	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.34	ng/L		09/23/19 04:56	09/24/19 04:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		09/23/19 04:56	09/24/19 04:41	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		09/23/19 04:56	09/24/19 04:41	1
4:2 FTS	19	U	19	5.0	ng/L		09/23/19 04:56	09/24/19 04:41	1
6:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	09/24/19 04:41	1
8:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	09/24/19 04:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C5 PFPeA	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C2 PFHxA	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C4 PFHpA	*103*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C4 PFOA	*103*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C5 PFNA	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C2 PFDA	*105*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C2 PFUnA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C2 PFDoA	*96*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C2 PFTeDA	*97*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
18O2 PFHxS	*118*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C4 PFOS	*110*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
13C8 FOSA	*104*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
d3-NMeFOSAA	*94*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
d5-NEtFOSAA	*103*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
M2-6:2 FTS	*112*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
M2-8:2 FTS	*114*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*
M2-4:2 FTS	*106*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:41*	*1*

Client Sample ID: P16T-091319-0830
Date Collected: 09/13/19 08:30
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-9
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.34**	**J**	1.9	0.34	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluoropentanoic acid (PFPeA)	**0.64**	**J**	1.9	0.47	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.56	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.24	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorooctanoic acid (PFOA)	1.9	U	1.9	0.82	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.3	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorobutanesulfonic acid (PFBS)	**0.59**	**J**	1.9	0.19	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.29	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorohexanesulfonic acid (PFHxS)	**0.58**	**J B**	1.9	0.16	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorooctanesulfonic acid (PFOS)	**1.3**	**J**	1.9	0.52	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		09/23/19 04:56	09/24/19 04:50	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.34	ng/L		09/23/19 04:56	09/24/19 04:50	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		09/23/19 04:56	09/24/19 04:50	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		09/23/19 04:56	09/24/19 04:50	1
4:2 FTS	19	U	19	5.0	ng/L		09/23/19 04:56	09/24/19 04:50	1
6:2 FTS	**4.4**	**J**	19	1.9	ng/L		09/23/19 04:56	09/24/19 04:50	1
8:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	09/24/19 04:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*78*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C5 PFPeA	*103*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C2 PFHxA	*103*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C4 PFHpA	*104*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C4 PFOA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C5 PFNA	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C2 PFDA	*100*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C2 PFUnA	*92*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C2 PFDoA	*89*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
18O2 PFHxS	*122*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C4 PFOS	*112*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
13C8 FOSA	*110*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
d3-NMeFOSAA	*100*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
d5-NEtFOSAA	*109*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
M2-6:2 FTS	*120*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
M2-8:2 FTS	*116*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*
M2-4:2 FTS	*131*		*25 - 150*	*09/23/19 04:56*	*09/24/19 04:50*	*1*

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: OF0001-091319-0915
Date Collected: 09/13/19 09:15
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-10
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**16**		1.9	0.33	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.47	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.55	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.24	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorooctanoic acid (PFOA)	**2.8**		1.9	0.81	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorodecanoic acid (PFDA)	**0.30**	**J**	1.9	0.30	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.2	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorotetradecanoic acid (PFTeA)	**0.29**	**J**	1.9	0.28	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorobutanesulfonic acid (PFBS)	**90**		1.9	0.19	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluoropentanesulfonic acid (PFPeS)	**2.2**		1.9	0.29	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorohexanesulfonic acid (PFHxS)	**6.7**	**I B**	1.9	0.16	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluoroheptanesulfonic Acid (PFHpS)	**1.2**	**J I**	1.9	0.18	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorooctanesulfonic acid (PFOS)	**50**		1.9	0.52	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		09/23/19 04:56	10/10/19 21:25	1
Perfluorooctanesulfonamide (FOSA)	**0.55**	**J**	1.9	0.33	ng/L		09/23/19 04:56	10/10/19 21:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		09/23/19 04:56	10/10/19 21:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		09/23/19 04:56	10/10/19 21:25	1
4:2 FTS	19	U	19	5.0	ng/L		09/23/19 04:56	10/10/19 21:25	1
6:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	10/10/19 21:25	1
8:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	10/10/19 21:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*66*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C5 PFPeA	*87*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C2 PFHxA	*94*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C4 PFHpA	*102*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C4 PFOA	*105*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C5 PFNA	*105*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C2 PFDA	*102*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C2 PFUnA	*97*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C2 PFDoA	*88*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C2 PFTeDA	*78*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
18O2 PFHxS	*105*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C4 PFOS	*103*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
13C8 FOSA	*102*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
M2-6:2 FTS	*168*	*	*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*
M2-8:2 FTS	*141*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:25*	*1*

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: OF0001-091319-0915
Date Collected: 09/13/19 09:15
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-10
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	153	*	25 - 150	09/23/19 04:56	10/10/19 21:25	1

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: MW16R-091319-1050
Date Collected: 09/13/19 10:50
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-11
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**11**		2.0	0.34	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluoropentanoic acid (PFPeA)	**2.6**		2.0	0.48	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorohexanoic acid (PFHxA)	**13**		2.0	0.57	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluoroheptanoic acid (PFHpA)	**3.9**		2.0	0.25	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorooctanoic acid (PFOA)	**2.5**	**I**	2.0	0.83	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.30	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.54	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.28	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorobutanesulfonic acid (PFBS)	**11**		2.0	0.20	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluoropentanesulfonic acid (PFPeS)	**14**	**I**	2.0	0.29	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorohexanesulfonic acid (PFHxS)	**11**	**I B**	2.0	0.17	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U I	2.0	0.53	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.31	ng/L		09/23/19 04:56	09/24/19 05:09	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.34	ng/L		09/23/19 04:56	09/24/19 05:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.0	ng/L		09/23/19 04:56	09/24/19 05:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		09/23/19 04:56	09/24/19 05:09	1
4:2 FTS	20	U	20	5.1	ng/L		09/23/19 04:56	09/24/19 05:09	1
6:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	09/24/19 05:09	1
8:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	09/24/19 05:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*67*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C5 PFPeA	*94*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C2 PFHxA	*99*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C4 PFHpA	*95*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C4 PFOA	*103*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C5 PFNA	*104*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C2 PFDA	*97*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C2 PFUnA	*88*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C2 PFDoA	*89*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C2 PFTeDA	*87*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
18O2 PFHxS	*114*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C4 PFOS	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
13C8 FOSA	*105*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
d3-NMeFOSAA	*88*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
d5-NEtFOSAA	*95*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
M2-6:2 FTS	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
M2-8:2 FTS	*111*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*
M2-4:2 FTS	*149*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:09*	*1*

Client Sample ID: 7082-091319-0001

Date Collected: 09/13/19 10:50
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-12

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**11**	**F1**	1.9	0.34	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluoropentanoic acid (PFPeA)	**2.4**		1.9	0.47	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorohexanoic acid (PFHxA)	**13**	**I**	1.9	0.56	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluoroheptanoic acid (PFHpA)	**2.9**	**I CI**	2.9	2.9	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorooctanoic acid (PFOA)	**2.2**	**I**	1.9	0.82	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.53	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.3	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorotetradecanoic acid (PFTeA)	**0.46**	**J**	1.9	0.28	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorobutanesulfonic acid (PFBS)	**12**		1.9	0.19	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluoropentanesulfonic acid (PFPeS)	**15**	**I**	1.9	0.29	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorohexanesulfonic acid (PFHxS)	**10**	**I B**	1.9	0.16	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.18	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorooctanesulfonic acid (PFOS)	1.9	U I	1.9	0.52	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.15	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		09/23/19 04:56	10/10/19 21:35	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.34	ng/L		09/23/19 04:56	10/10/19 21:35	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		09/23/19 04:56	10/10/19 21:35	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.8	ng/L		09/23/19 04:56	10/10/19 21:35	1
4:2 FTS	19	U	19	5.0	ng/L		09/23/19 04:56	10/10/19 21:35	1
6:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	10/10/19 21:35	1
8:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	10/10/19 21:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*63*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C5 PFPeA	*96*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C2 PFHxA	*99*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C4 PFHpA	*102*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C4 PFOA	*105*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C5 PFNA	*105*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C2 PFDA	*100*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C2 PFUnA	*94*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C2 PFDoA	*85*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C2 PFTeDA	*90*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
18O2 PFHxS	*107*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C4 PFOS	*108*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
13C8 FOSA	*101*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
d5-NEtFOSAA	*87*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
M2-6:2 FTS	*89*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
M2-8:2 FTS	*87*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*
M2-4:2 FTS	*113*		*25 - 150*	*09/23/19 04:56*	*10/10/19 21:35*	*1*

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: MW15R-091319-1150

Date Collected: 09/13/19 11:50
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-13

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.2**		1.9	0.34	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluoropentanoic acid (PFPeA)	1.9	U	1.9	0.48	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorohexanoic acid (PFHxA)	1.9	U	1.9	0.57	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	1.9	0.24	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorooctanoic acid (PFOA)	**1.5**	**J**	1.9	0.83	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorononanoic acid (PFNA)	1.9	U	1.9	0.26	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorodecanoic acid (PFDA)	1.9	U	1.9	0.30	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	1.9	1.1	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorododecanoic acid (PFDoA)	1.9	U	1.9	0.54	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorotridecanoic acid (PFTriA)	1.9	U	1.9	1.3	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	1.9	0.28	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	1.9	0.19	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluoropentanesulfonic acid (PFPeS)	1.9	U	1.9	0.29	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorohexanesulfonic acid (PFHxS)	**0.87**	**J I B**	1.9	0.17	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	1.9	0.19	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorooctanesulfonic acid (PFOS)	**1.5**	**J I**	1.9	0.53	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorononanesulfonic acid (PFNS)	1.9	U	1.9	0.16	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorodecanesulfonic acid (PFDS)	1.9	U	1.9	0.31	ng/L		09/23/19 04:56	09/24/19 05:47	1
Perfluorooctanesulfonamide (FOSA)	1.9	U	1.9	0.34	ng/L		09/23/19 04:56	09/24/19 05:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	19	3.0	ng/L		09/23/19 04:56	09/24/19 05:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	19	1.9	ng/L		09/23/19 04:56	09/24/19 05:47	1
4:2 FTS	19	U	19	5.1	ng/L		09/23/19 04:56	09/24/19 05:47	1
6:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	09/24/19 05:47	1
8:2 FTS	19	U	19	1.9	ng/L		09/23/19 04:56	09/24/19 05:47	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*74*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C5 PFPeA	*99*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C2 PFHxA	*104*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C4 PFHpA	*106*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C4 PFOA	*106*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C5 PFNA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C2 PFDA	*93*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C2 PFUnA	*92*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C2 PFDoA	*88*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C2 PFTeDA	*77*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
18O2 PFHxS	*123*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C4 PFOS	*105*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
13C8 FOSA	*109*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
d3-NMeFOSAA	*90*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
d5-NEtFOSAA	*91*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
M2-6:2 FTS	*112*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
M2-8:2 FTS	*114*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*
M2-4:2 FTS	*144*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:47*	*1*

Client Sample ID: MW17-091319-1215

Date Collected: 09/13/19 12:15
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-14

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.0	U	2.0	0.35	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.48	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.57	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.84	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.54	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorohexanesulfonic acid (PFHxS)	**0.31**	**J B**	2.0	0.17	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.53	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		09/23/19 04:56	09/24/19 05:57	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		09/23/19 04:56	09/24/19 05:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		09/23/19 04:56	09/24/19 05:57	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		09/23/19 04:56	09/24/19 05:57	1
4:2 FTS	20	U	20	5.1	ng/L		09/23/19 04:56	09/24/19 05:57	1
6:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	09/24/19 05:57	1
8:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	09/24/19 05:57	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*91*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C5 PFPeA	*95*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C2 PFHxA	*90*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C4 PFHpA	*96*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C4 PFOA	*94*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C5 PFNA	*92*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C2 PFDA	*84*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C2 PFUnA	*70*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C2 PFDoA	*54*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C2 PFTeDA	*54*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
18O2 PFHxS	*106*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C4 PFOS	*90*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
13C8 FOSA	*95*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
d3-NMeFOSAA	*75*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
d5-NEtFOSAA	*70*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
M2-6:2 FTS	*93*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
M2-8:2 FTS	*88*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*
M2-4:2 FTS	*96*		*25 - 150*	*09/23/19 04:56*	*09/24/19 05:57*	*1*

Client Sample ID: 7082-091319-0002
Date Collected: 09/13/19 12:45
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-15
Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.8	U	1.8	0.32	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluoropentanoic acid (PFPeA)	1.8	U	1.8	0.45	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorohexanoic acid (PFHxA)	1.8	U	1.8	0.53	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluoroheptanoic acid (PFHpA)	1.8	U	1.8	0.23	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorooctanoic acid (PFOA)	1.8	U	1.8	0.78	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorononanoic acid (PFNA)	1.8	U	1.8	0.25	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorodecanoic acid (PFDA)	1.8	U	1.8	0.29	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluoroundecanoic acid (PFUnA)	1.8	U	1.8	1.0	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorododecanoic acid (PFDoA)	1.8	U	1.8	0.51	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorotridecanoic acid (PFTriA)	1.8	U	1.8	1.2	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorotetradecanoic acid (PFTeA)	**0.28**	**J**	1.8	0.27	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorobutanesulfonic acid (PFBS)	1.8	U	1.8	0.18	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluoropentanesulfonic acid (PFPeS)	1.8	U	1.8	0.28	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorohexanesulfonic acid (PFHxS)	**0.26**	**J B**	1.8	0.16	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.8	U	1.8	0.17	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorooctanesulfonic acid (PFOS)	1.8	U	1.8	0.50	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorononanesulfonic acid (PFNS)	1.8	U	1.8	0.15	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorodecanesulfonic acid (PFDS)	1.8	U	1.8	0.29	ng/L		09/23/19 04:56	09/24/19 06:06	1
Perfluorooctanesulfonamide (FOSA)	1.8	U	1.8	0.32	ng/L		09/23/19 04:56	09/24/19 06:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	18	U	18	2.9	ng/L		09/23/19 04:56	09/24/19 06:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	18	U	18	1.7	ng/L		09/23/19 04:56	09/24/19 06:06	1
4:2 FTS	18	U	18	4.8	ng/L		09/23/19 04:56	09/24/19 06:06	1
6:2 FTS	18	U	18	1.8	ng/L		09/23/19 04:56	09/24/19 06:06	1
8:2 FTS	18	U	18	1.8	ng/L		09/23/19 04:56	09/24/19 06:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C5 PFPeA	*106*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C2 PFHxA	*99*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C4 PFHpA	*106*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C4 PFOA	*100*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C5 PFNA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C2 PFDA	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C2 PFUnA	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C2 PFDoA	*97*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C2 PFTeDA	*88*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
18O2 PFHxS	*115*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C4 PFOS	*105*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
13C8 FOSA	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
d3-NMeFOSAA	*95*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
M2-6:2 FTS	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
M2-8:2 FTS	*112*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*
M2-4:2 FTS	*103*		*25 - 150*	*09/23/19 04:56*	*09/24/19 06:06*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-325436/1-A
Matrix: Water
Analysis Batch: 325657

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 325436

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		09/23/19 04:56	09/24/19 02:56	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.0	0.49	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.0	0.58	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.0	0.25	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.0	0.85	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorononanoic acid (PFNA)	2.0	U	2.0	0.27	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorodecanoic acid (PFDA)	2.0	U	2.0	0.31	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.0	1.1	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.0	0.55	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorotridecanoic acid (PFTriA)	2.0	U	2.0	1.3	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	2.0	0.29	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.0	0.20	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluoropentanesulfonic acid (PFPeS)	2.0	U	2.0	0.30	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorohexanesulfonic acid (PFHxS)	0.313	J	2.0	0.17	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.0	0.19	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorooctanesulfonic acid (PFOS)	2.0	U	2.0	0.54	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorononanesulfonic acid (PFNS)	2.0	U	2.0	0.16	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorodecanesulfonic acid (PFDS)	2.0	U	2.0	0.32	ng/L		09/23/19 04:56	09/24/19 02:56	1
Perfluorooctanesulfonamide (FOSA)	2.0	U	2.0	0.35	ng/L		09/23/19 04:56	09/24/19 02:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	20	U	20	3.1	ng/L		09/23/19 04:56	09/24/19 02:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	20	U	20	1.9	ng/L		09/23/19 04:56	09/24/19 02:56	1
4:2 FTS	20	U	20	5.2	ng/L		09/23/19 04:56	09/24/19 02:56	1
6:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	09/24/19 02:56	1
8:2 FTS	20	U	20	2.0	ng/L		09/23/19 04:56	09/24/19 02:56	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*100*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C5 PFPeA	*102*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C2 PFHxA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C4 PFHpA	*99*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C4 PFOA	*105*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C5 PFNA	*97*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C2 PFDA	*101*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C2 PFUnA	*92*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C2 PFDoA	*94*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C2 PFTeDA	*95*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
18O2 PFHxS	*114*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C4 PFOS	*106*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
13C8 FOSA	*103*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
d3-NMeFOSAA	*96*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
d5-NEtFOSAA	*105*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
M2-6:2 FTS	*105*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
M2-8:2 FTS	*117*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*
M2-4:2 FTS	*106*		*25 - 150*	*09/23/19 04:56*	*09/24/19 02:56*	*1*

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

Lab Sample ID: LCS 320-325436/2-A
Matrix: Water
Analysis Batch: 325657

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 325436

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	43.3		ng/L		108	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	39.5		ng/L		99	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	40.8		ng/L		102	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	38.8		ng/L		97	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	37.8		ng/L		94	64 - 124
Perfluorononanoic acid (PFNA)	40.0	40.7		ng/L		102	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	38.9		ng/L		97	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	41.1		ng/L		103	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	36.7		ng/L		92	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	37.3		ng/L		93	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	37.7		ng/L		94	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	32.7		ng/L		93	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	37.5	34.8		ng/L		93	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.9		ng/L		88	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.9		ng/L		107	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	37.9		ng/L		102	67 - 127
Perfluorononanesulfonic acid (PFNS)	38.4	39.4		ng/L		103	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	36.5		ng/L		95	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	39.1		ng/L		98	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.8		ng/L		102	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	40.9		ng/L		102	65 - 125
4:2 FTS	37.4	39.6		ng/L		106	70 - 130
6:2 FTS	37.9	39.7		ng/L		105	66 - 126
8:2 FTS	38.3	39.2		ng/L		102	67 - 127

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*101*		*25 - 150*
13C5 PFPeA	*104*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C4 PFHpA	*105*		*25 - 150*
13C4 PFOA	*106*		*25 - 150*
13C5 PFNA	*103*		*25 - 150*
13C2 PFDA	*108*		*25 - 150*
13C2 PFUnA	*98*		*25 - 150*
13C2 PFDoA	*93*		*25 - 150*
13C2 PFTeDA	*99*		*25 - 150*
18O2 PFHxS	*117*		*25 - 150*
13C4 PFOS	*103*		*25 - 150*

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

Lab Sample ID: LCS 320-325436/2-A
Matrix: Water
Analysis Batch: 325657

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 325436

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C8 FOSA	*104*		*25 - 150*
d3-NMeFOSAA	*99*		*25 - 150*
d5-NEtFOSAA	*99*		*25 - 150*
M2-6:2 FTS	*108*		*25 - 150*
M2-8:2 FTS	*111*		*25 - 150*
M2-4:2 FTS	*104*		*25 - 150*

Lab Sample ID: 240-118855-12 MS
Matrix: Water
Analysis Batch: 330074

Client Sample ID: 7082-091319-0001
Prep Type: Total/NA
Prep Batch: 325436

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	11	F1	37.7	68.4	F1	ng/L		153	70 - 130
Perfluoropentanoic acid (PFPeA)	2.4		37.7	39.1		ng/L		104	66 - 126
Perfluorohexanoic acid (PFHxA)	13	I	37.7	51.3		ng/L		101	66 - 126
Perfluoroheptanoic acid (PFHpA)	2.9	I CI	37.7	40.7		ng/L		100	66 - 126
Perfluorooctanoic acid (PFOA)	2.2	I	37.7	38.4		ng/L		96	64 - 124
Perfluorononanoic acid (PFNA)	1.9	U	37.7	39.5		ng/L		105	68 - 128
Perfluorodecanoic acid (PFDA)	1.9	U	37.7	40.7		ng/L		108	69 - 129
Perfluoroundecanoic acid (PFUnA)	1.9	U	37.7	35.2		ng/L		93	60 - 120
Perfluorododecanoic acid (PFDoA)	1.9	U	37.7	40.2		ng/L		107	71 - 131
Perfluorotridecanoic acid (PFTriA)	1.9	U	37.7	37.6		ng/L		100	72 - 132
Perfluorotetradecanoic acid (PFTeA)	0.46	J	37.7	37.1		ng/L		97	68 - 128
Perfluorobutanesulfonic acid (PFBS)	12		33.3	47.7		ng/L		108	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	15	I	35.4	49.3		ng/L		98	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	10	I B	34.3	40.6	I	ng/L		88	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	35.9	37.5		ng/L		105	68 - 128
Perfluorooctanesulfonic acid (PFOS)	1.9	U I	35.0	35.0		ng/L		100	67 - 127
Perfluorononanesulfonic acid (PFNS)	1.9	U	36.2	34.9		ng/L		96	70 - 130
Perfluorodecanesulfonic acid (PFDS)	1.9	U	36.3	36.0		ng/L		99	68 - 128
Perfluorooctanesulfonamide (FOSA)	1.9	U	37.7	36.4		ng/L		97	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	37.7	38.5		ng/L		102	67 - 127
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	37.7	37.6		ng/L		100	65 - 125
4:2 FTS	19	U	35.2	38.8		ng/L		110	70 - 130
6:2 FTS	19	U	35.7	38.5		ng/L		108	66 - 126
8:2 FTS	19	U	36.1	37.1		ng/L		103	67 - 127

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

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFBA	64		25 - 150
13C5 PFPeA	96		25 - 150
13C2 PFHxA	99		25 - 150
13C4 PFHpA	103		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	106		25 - 150
13C2 PFDA	97		25 - 150
13C2 PFUnA	93		25 - 150
13C2 PFDoA	94		25 - 150
13C2 PFTeDA	93		25 - 150
18O2 PFHxS	109		25 - 150
13C4 PFOS	104		25 - 150
13C8 FOSA	101		25 - 150
d3-NMeFOSAA	85		25 - 150
d5-NEtFOSAA	91		25 - 150
M2-6:2 FTS	90		25 - 150
M2-8:2 FTS	87		25 - 150
M2-4:2 FTS	108		25 - 150

Lab Sample ID: 240-118855-12 MSD
Matrix: Water
Analysis Batch: 325657

Client Sample ID: 7082-091319-0001
Prep Type: Total/NA
Prep Batch: 325436

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	11	F1	39.3	84.6	F1	ng/L		188	70 - 130	21	30
Perfluoropentanoic acid (PFPeA)	2.4		39.3	41.2		ng/L		105	66 - 126	5	30
Perfluorohexanoic acid (PFHxA)	13	I	39.3	51.3		ng/L		97	66 - 126	0	30
Perfluoroheptanoic acid (PFHpA)	2.9	I CI	39.3	39.5		ng/L		93	66 - 126	3	30
Perfluorooctanoic acid (PFOA)	2.2	I	39.3	38.8		ng/L		93	64 - 124	1	30
Perfluorononanoic acid (PFNA)	1.9	U	39.3	42.9		ng/L		109	68 - 128	8	30
Perfluorodecanoic acid (PFDA)	1.9	U	39.3	42.5		ng/L		108	69 - 129	4	30
Perfluoroundecanoic acid (PFUnA)	1.9	U	39.3	33.3		ng/L		85	60 - 120	6	30
Perfluorododecanoic acid (PFDoA)	1.9	U	39.3	40.6		ng/L		103	71 - 131	1	30
Perfluorotridecanoic acid (PFTriA)	1.9	U	39.3	37.4		ng/L		95	72 - 132	1	30
Perfluorotetradecanoic acid (PFTeA)	0.46	J	39.3	39.1		ng/L		98	68 - 128	5	30
Perfluorobutanesulfonic acid (PFBS)	12		34.7	47.9		ng/L		104	73 - 133	0	30
Perfluoropentanesulfonic acid (PFPeS)	15	I	36.9	53.4		ng/L		105	70 - 130	8	30
Perfluorohexanesulfonic acid (PFHxS)	10	I B	35.8	40.6	I	ng/L		85	63 - 123	0	30
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	37.4	40.4		ng/L		108	68 - 128	7	30
Perfluorooctanesulfonic acid (PFOS)	1.9	U I	36.5	37.3		ng/L		102	67 - 127	6	30
Perfluorononanesulfonic acid (PFNS)	1.9	U	37.7	36.2		ng/L		96	70 - 130	4	30
Perfluorodecanesulfonic acid (PFDS)	1.9	U	37.9	34.7		ng/L		92	68 - 128	4	30
Perfluorooctanesulfonamide (FOSA)	1.9	U	39.3	37.6		ng/L		96	70 - 130	3	30

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

Lab Sample ID: 240-118855-12 MSD
Matrix: Water
Analysis Batch: 325657

Client Sample ID: 7082-091319-0001
Prep Type: Total/NA
Prep Batch: 325436

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	19	U	39.3	41.8		ng/L		106	67 - 127	8	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	19	U	39.3	39.7		ng/L		101	65 - 125	6	30
4:2 FTS	19	U	36.7	39.8		ng/L		108	70 - 130	2	30
6:2 FTS	19	U	37.3	40.3		ng/L		108	66 - 126	5	30
8:2 FTS	19	U	37.7	39.9		ng/L		106	67 - 127	7	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFBA	*76*		*25 - 150*
13C5 PFPeA	*97*		*25 - 150*
13C2 PFHxA	*99*		*25 - 150*
13C4 PFHpA	*99*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C5 PFNA	*95*		*25 - 150*
13C2 PFDA	*97*		*25 - 150*
13C2 PFUnA	*101*		*25 - 150*
13C2 PFDoA	*87*		*25 - 150*
13C2 PFTeDA	*84*		*25 - 150*
18O2 PFHxS	*113*		*25 - 150*
13C4 PFOS	*107*		*25 - 150*
13C8 FOSA	*108*		*25 - 150*
d3-NMeFOSAA	*92*		*25 - 150*
d5-NEtFOSAA	*97*		*25 - 150*
M2-6:2 FTS	*110*		*25 - 150*
M2-8:2 FTS	*110*		*25 - 150*
M2-4:2 FTS	*141*		*25 - 150*

LCMS

Prep Batch: 325436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-118855-1	FD-04-091219-1055	Total/NA	Water	3535	
240-118855-2	7082-04-091219-001	Total/NA	Water	3535	
240-118855-3	MW26D-091219-1145	Total/NA	Water	3535	
240-118855-4	MW23S-091219-1225	Total/NA	Water	3535	
240-118855-5	MW23D-091219-1320	Total/NA	Water	3535	
240-118855-6	P15T-091219-1400	Total/NA	Water	3535	
240-118855-7	7082-091219-0002	Total/NA	Water	3535	
240-118855-8	7082-091219-0003	Total/NA	Water	3535	
240-118855-9	P16T-091319-0830	Total/NA	Water	3535	
240-118855-10	OF0001-091319-0915	Total/NA	Water	3535	
240-118855-11	MW16R-091319-1050	Total/NA	Water	3535	
240-118855-12	7082-091319-0001	Total/NA	Water	3535	
240-118855-13	MW15R-091319-1150	Total/NA	Water	3535	
240-118855-14	MW17-091319-1215	Total/NA	Water	3535	
240-118855-15	7082-091319-0002	Total/NA	Water	3535	
MB 320-325436/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-325436/2-A	Lab Control Sample	Total/NA	Water	3535	
240-118855-12 MS	7082-091319-0001	Total/NA	Water	3535	
240-118855-12 MSD	7082-091319-0001	Total/NA	Water	3535	

Analysis Batch: 325657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-118855-7	7082-091219-0002	Total/NA	Water	537 (modified)	325436
240-118855-8	7082-091219-0003	Total/NA	Water	537 (modified)	325436
240-118855-9	P16T-091319-0830	Total/NA	Water	537 (modified)	325436
240-118855-11	MW16R-091319-1050	Total/NA	Water	537 (modified)	325436
240-118855-13	MW15R-091319-1150	Total/NA	Water	537 (modified)	325436
240-118855-14	MW17-091319-1215	Total/NA	Water	537 (modified)	325436
240-118855-15	7082-091319-0002	Total/NA	Water	537 (modified)	325436
MB 320-325436/1-A	Method Blank	Total/NA	Water	537 (modified)	325436
LCS 320-325436/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	325436
240-118855-12 MSD	7082-091319-0001	Total/NA	Water	537 (modified)	325436

Analysis Batch: 330074

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-118855-1	FD-04-091219-1055	Total/NA	Water	537 (modified)	325436
240-118855-2	7082-04-091219-001	Total/NA	Water	537 (modified)	325436
240-118855-3	MW26D-091219-1145	Total/NA	Water	537 (modified)	325436
240-118855-4	MW23S-091219-1225	Total/NA	Water	537 (modified)	325436
240-118855-5	MW23D-091219-1320	Total/NA	Water	537 (modified)	325436
240-118855-10	OF0001-091319-0915	Total/NA	Water	537 (modified)	325436
240-118855-12	7082-091319-0001	Total/NA	Water	537 (modified)	325436
240-118855-12 MS	7082-091319-0001	Total/NA	Water	537 (modified)	325436

Analysis Batch: 330786

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-118855-6	P15T-091219-1400	Total/NA	Water	537 (modified)	325436

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: FD-04-091219-1055
Lab Sample ID: 240-118855-1
Date Collected: 09/12/19 10:55
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	330074	10/10/19 20:37	VPM	TAL SAC

Client Sample ID: 7082-04-091219-001
Lab Sample ID: 240-118855-2
Date Collected: 09/12/19 00:00
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	330074	10/10/19 20:47	VPM	TAL SAC

Client Sample ID: MW26D-091219-1145
Lab Sample ID: 240-118855-3
Date Collected: 09/12/19 11:45
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	330074	10/10/19 20:56	VPM	TAL SAC

Client Sample ID: MW23S-091219-1225
Lab Sample ID: 240-118855-4
Date Collected: 09/12/19 12:25
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	330074	10/10/19 21:06	VPM	TAL SAC

Client Sample ID: MW23D-091219-1320
Lab Sample ID: 240-118855-5
Date Collected: 09/12/19 13:20
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	330074	10/10/19 21:16	VPM	TAL SAC

Client Sample ID: P15T-091219-1400
Lab Sample ID: 240-118855-6
Date Collected: 09/12/19 14:00
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	330786	10/14/19 13:43	KJP	TAL SAC

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: 7082-091219-0002
Lab Sample ID: 240-118855-7
Date Collected: 09/12/19 16:00
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	325657	09/24/19 04:12	VPM	TAL SAC

Client Sample ID: 7082-091219-0003
Lab Sample ID: 240-118855-8
Date Collected: 09/12/19 16:15
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	325657	09/24/19 04:41	VPM	TAL SAC

Client Sample ID: P16T-091319-0830
Lab Sample ID: 240-118855-9
Date Collected: 09/13/19 08:30
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	325657	09/24/19 04:50	VPM	TAL SAC

Client Sample ID: OF0001-091319-0915
Lab Sample ID: 240-118855-10
Date Collected: 09/13/19 09:15
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	330074	10/10/19 21:25	VPM	TAL SAC

Client Sample ID: MW16R-091319-1050
Lab Sample ID: 240-118855-11
Date Collected: 09/13/19 10:50
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	325657	09/24/19 05:09	VPM	TAL SAC

Client Sample ID: 7082-091319-0001
Lab Sample ID: 240-118855-12
Date Collected: 09/13/19 10:50
Matrix: Water
Date Received: 09/13/19 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	330074	10/10/19 21:35	VPM	TAL SAC

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Client Sample ID: MW15R-091319-1150
Date Collected: 09/13/19 11:50
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-13
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	325657	09/24/19 05:47	VPM	TAL SAC

Client Sample ID: MW17-091319-1215
Date Collected: 09/13/19 12:15
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-14
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	325657	09/24/19 05:57	VPM	TAL SAC

Client Sample ID: 7082-091319-0002
Date Collected: 09/13/19 12:45
Date Received: 09/13/19 14:45

Lab Sample ID: 240-118855-15
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			325436	09/23/19 04:56	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	325657	09/24/19 06:06	VPM	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

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
Connecticut	State	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-16-00404	12-28-19
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-20
West Virginia DEP	State	210	12-31-19

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State Program	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	Dept. of Energy	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	08-09-21
Arizona	State	AZ0708	08-11-20
Arkansas DEQ	State	19-042-0	06-17-20
Arkansas DEQ	State Program	88-0691	06-17-20
California	State	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert No.>	01-29-20
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-19
Louisiana	NELAP	01944	06-30-20
Maine	State	2018009	04-14-20
Maine	State Program	CA0004	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
Nevada	State	CA000442020-1	07-31-20
Nevada	State Program	CA00044	07-31-20
New Hampshire	NELAP	2997	04-20-20
New Hampshire	NELAP	2997	04-18-20
New Jersey	NELAP	CA005	06-30-20

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Laboratory: Eurofins TestAmerica, Sacramento (Continued)

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

Authority	Program	Identification Number	Expiration Date
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	US Federal Programs	P330-18-00239	07-31-21
USEPA UCMR	Federal	CA00044	12-31-20
Utah	NELAP	CA00044	02-29-20
Vermont	State	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

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

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone: 916-373-5600 Fax: 916-372-1059

24/3.1

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: S. Portelli	Lab PM: Howell, Leslie	Carrier Tracking No(s):	COC No: 240-63850-26895.2
Client Contact: ~~Mr. Travis Bukach~~ Sam Portelli	Phone: 440.610 4604	E-Mail: leslie.howell@testamericainc.com		Page: Page 2 of 2
Company: Haley & Aldrich, Inc.				Job #:

Analysis Requested

Address: 6500 Rockside Road Suite 200	Due Date Requested:
City: Cleveland	TAT Requested (days): 15
State, Zip: OH, 44131	
Phone: 734-454-4917(Tel) 734-454-1233(Fax)	PO #: 129862-~~009~~ 011
Email: tsbukach@haleyaldrich.com	WO #:
Project Name: Racer Elyria	Project #: 24018828
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:

Sample Identification	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 - (MOD) PFAS, Standard List (24 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N		
FD-04-091219-1055	9-12-19	1055	G	Water	N		X		
7082-091219-0001	9-12-19		G	Water	N		X		
MW26D-091219-1145	9-12-19	1145	G	Water	N		X		
MW23S-091219-1225	9-12-19	1225	G	Water	N		X		
MW23D-091219-1320	9-12-19	1328	G	Water	N		X		
P15T-091219-1400	9-12-19	1400	G	Water	N		X		
7082-091219-0002	9-12-19	1600	G	Water	N		X		
7082-091219-0003	9-12-19	1615	G	Water	N		X		
P16T-091319-0830	9-13-19	0830	G	Water	N		X		
OF0001-091319-0915	9-13-19	0915	G	Water	N		X		
MW16R-091319-1050	9-13-19	1050	G	Water	N		X		

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

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)

Special Instructions/QC Requirements:

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

Relinquished by:	Date/Time: 9/13/19 1445	Company: H+A	Received by:	Date/Time: 9-13 14:45	Company
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:

Ver: 01/16/2019

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone: 916-373-5600 Fax: 916-372-1059

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: S. Partyka	Lab PM: Howell, Leslie	Carrier Tracking No(s):	COC No: 240-63850-26895.1
Client Contact: ~~Mr. Travis Bukach~~ Sam Partyka	Phone: 440.610.4604	E-Mail: leslie.howell@testamericainc.com		Page: Page 1 of 2
Company: Haley & Aldrich, Inc.		Analysis Requested		Job #:
Address: 6500 Rockside Road Suite 200	Due Date Requested:			Preservation Codes:
City: Cleveland	TAT Requested (days): 15			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: OH, 44131				
Phone: 734-454-4917(Tel) 734-454-1233(Fax)	PO #: 129862-~~009~~ 011			Other:
Email: tsbukach@haleyaldrich.com	WO #:			
Project Name: Racer Elyria	Project #: 24018828			
Site:	SSOW#:			

Sample Identification	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 - (MOD) PFAS, Standard List (24 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N		
7082-091319-0001	9-13-19	1050	G	Water	N	Y	X		MS/MSD
MW15R-091319-1150	9-13-19	1150	G	Water	N		X		
MW17-091319-1215	9-13-19	1215	G	Water	N		X		
7082-091319-~~0002~~	9-13-19	1245	G	Water	N		X		
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					
				Water					

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

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)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 9/13/19 1445	Company: H&A	Received by:	Date/Time: 9-13-19	Company: 14:45
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:

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 178855

Client H+A Site Name

Cooler unpacked by:

Cooler Received on 9.13.19 Opened on 9.14.19

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

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

TestAmerica Cooler # 1A Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. 2.4 °C Corrected Cooler Temp. 3.1 °C
   IR GUN #IR-11 (CF +0.9°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# HC991818
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) were further preserved in the laboratory.
Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen:

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Howell, Leslie	Carrier Tracking No(s):	COC No: 240-110045.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: leslie.howell@testamericainc.com	State of Origin: Ohio	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-118855-1
Address: 880 Riverside Parkway,	Due Date Requested: 9/19/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Racer Elyria	Project #: 24018828			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_PFC (MOD) PFAS, Standard List (24 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
FD-04-091219-1055 (240-118855-1)	9/12/19	10:55 Eastern		Water			X	2	
7082-04-091219-001 (240-118855-2)	9/12/19	Eastern		Water			X	2	
MW26D-091219-1145 (240-118855-3)	9/12/19	11:45 Eastern		Water			X	2	
MW23S-091219-1225 (240-118855-4)	9/12/19	12:25 Eastern		Water			X	2	
MW23D-091219-1320 (240-118855-5)	9/12/19	13:20 Eastern		Water			X	2	
P15T-091219-1400 (240-118855-6)	9/12/19	14:00 Eastern		Water			X	2	
7082-091219-0002 (240-118855-7)	9/12/19	16:00 Eastern		Water			X	2	
7082-091219-0003 (240-118855-8)	9/12/19	16:15 Eastern		Water			X	2	
P16T-091319-0830 (240-118855-9)	9/13/19	08:30 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 compliance 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	[signature]	9-16-19 1352	240	[signature]	17 Sept 19 09:00	ETAW Sac
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: 1.3°C / 1.8°C Corr

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: Howell, Leslie	Carrier Tracking No(s):	COC No: 240-110045.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: leslie.howell@testamericainc.com	State of Origin: Ohio	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #: 240-118855-1
Address: 880 Riverside Parkway,	Due Date Requested: 9/19/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Racer Elyria	Project #: 24018828			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_PFC (MOD) PFAS, Standard List (24 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
OF0001-091319-0915 (240-118855-10)	9/13/19	09:15 Eastern		Water			X	2	
MW16R-091319-1050 (240-118855-11)	9/13/19	10:50 Eastern		Water			X	2	
7082-091319-0001 (240-118855-12)	9/13/19	10:50 Eastern		Water			X	4	
7082-091319-0001 (240-118855-12MS)	9/13/19	10:50 Eastern	MS	Water			X	1	
7082-091319-0001 (240-118855-12MSD)	9/13/19	10:50 Eastern	MSD	Water			X	1	
MW15R-091319-1150 (240-118855-13)	9/13/19	11:50 Eastern		Water			X	2	
MW17-091319-1215 (240-118855-14)	9/13/19	12:15 Eastern		Water			X	2	
7082-091319-0002 (240-118855-15)	9/13/19	12:45 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 M	9-16-19 1352	240		17 Sept 19 09:00	ETAW Stc
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: 1.3°c / 1.8°c correction

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 240-118855-1

Login Number: 118855
List Number: 2
Creator: Thompson, Sarah W

List Source: Eurofins TestAmerica, Sacramento
List Creation: 09/17/19 01:00 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	1.3c cor 1.8c
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	

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Sacramento Sample Receiving Notes

Tracking # : 1103 6124 0850

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: AC-11 Corr. Factor: +0.5°C

Ice_____ Wet X Gel_____ Other_____

Cooler Custody Seal: —

Sample Custody Seal: —

Cooler ID: —

Temp Observed: 1.3°C Corrected: 1.8°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: _____ Date: 17 Sept 19

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

WZK

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-118855-1	FD-04-091219-1055	73	99	104	110	106	107	102	96
240-118855-2	7082-04-091219-001	72	94	101	105	103	107	100	100
240-118855-3	MW26D-091219-1145	55	83	93	102	104	103	98	92
240-118855-4	MW23S-091219-1225	58	83	92	101	103	102	94	89
240-118855-5	MW23D-091219-1320	59	84	92	100	103	98	102	95
240-118855-6	P15T-091219-1400	45	80	83	95	102	100	96	96
240-118855-7	7082-091219-0002	100	103	101	101	105	101	101	96
240-118855-8	7082-091219-0003	101	102	102	103	103	102	105	101
240-118855-9	P16T-091319-0830	78	103	103	104	101	102	100	92
240-118855-10	OF0001-091319-0915	66	87	94	102	105	105	102	97
240-118855-11	MW16R-091319-1050	67	94	99	95	103	104	97	88
240-118855-12	7082-091319-0001	63	96	99	102	105	105	100	94
240-118855-12 MS	7082-091319-0001	64	96	99	103	103	106	97	93
240-118855-12 MSD	7082-091319-0001	76	97	99	99	103	95	97	101
240-118855-13	MW15R-091319-1150	74	99	104	106	106	101	93	92
240-118855-14	MW17-091319-1215	91	95	90	96	94	92	84	70
240-118855-15	7082-091319-0002	101	106	99	106	100	101	102	102
LCS 320-325436/2-A	Lab Control Sample	101	104	100	105	106	103	108	98
MB 320-325436/1-A	Method Blank	100	102	101	99	105	97	101	92

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)	M262FTS (25-150)
240-118855-1	FD-04-091219-1055	100	95	112	108	101	92	95	92
240-118855-2	7082-04-091219-001	103	86	109	106	103	91	92	91
240-118855-3	MW26D-091219-1145	89	83	104	100	98	89	91	128
240-118855-4	MW23S-091219-1225	80	72	103	98	97	82	80	127
240-118855-5	MW23D-091219-1320	99	88	108	98	103	88	89	155 *
240-118855-6	P15T-091219-1400	95	86	105	91	86	86	83	124
240-118855-7	7082-091219-0002	94	92	115	109	107	98	102	107
240-118855-8	7082-091219-0003	96	97	118	110	104	94	103	112
240-118855-9	P16T-091319-0830	89	98	122	112	110	100	109	120
240-118855-10	OF0001-091319-0915	88	78	105	103	102	91	92	168 *
240-118855-11	MW16R-091319-1050	89	87	114	102	105	88	95	102
240-118855-12	7082-091319-0001	85	90	107	108	101	89	87	89
240-118855-12 MS	7082-091319-0001	94	93	109	104	101	85	91	90
240-118855-12 MSD	7082-091319-0001	87	84	113	107	108	92	97	110
240-118855-13	MW15R-091319-1150	88	77	123	105	109	90	91	112
240-118855-14	MW17-091319-1215	54	54	106	90	95	75	70	93
240-118855-15	7082-091319-0002	97	88	115	105	102	95	98	101
LCS 320-325436/2-A	Lab Control Sample	93	99	117	103	104	99	99	108
MB 320-325436/1-A	Method Blank	94	95	114	106	103	96	105	105

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)						
240-118855-1	FD-04-091219-1055	95	133						
240-118855-2	7082-04-091219-001	89	125						
240-118855-3	MW26D-091219-1145	90	151 *						
240-118855-4	MW23S-091219-1225	93	142						
240-118855-5	MW23D-091219-1320	121	167 *						

Isotope Dilution Summary

Client: Haley & Aldrich, Inc.
Project/Site: Racer Elyria

Job ID: 240-118855-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)									
		M282FTS	M242FTS								
Lab Sample ID	Client Sample ID	(25-150)	(25-150)								
240-118855-6	P15T-091219-1400	102	124								
240-118855-7	7082-091219-0002	113	109								
240-118855-8	7082-091219-0003	114	106								
240-118855-9	P16T-091319-0830	116	131								
240-118855-10	OF0001-091319-0915	141	153 *								
240-118855-11	MW16R-091319-1050	111	149								
240-118855-12	7082-091319-0001	87	113								
240-118855-12 MS	7082-091319-0001	87	108								
240-118855-12 MSD	7082-091319-0001	110	141								
240-118855-13	MW15R-091319-1150	114	144								
240-118855-14	MW17-091319-1215	88	96								
240-118855-15	7082-091319-0002	112	103								
LCS 320-325436/2-A	Lab Control Sample	111	104								
MB 320-325436/1-A	Method Blank	117	106								

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
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

ATTACHMENT 3

Data Usability Report

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

Data Usability Summary Report

Project Name: RACER Elyria

Analytical Laboratory: Eurofins TestAmerica Laboratories, Inc. – North Canton, OH

Validation Performed by: Vanessa Godard

Validation Reviewed by: Katherine Miller/Denis Conley

Validation Date: November 26, 2019

Haley & Aldrich, Inc., prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the RACER Elyria groundwater samples collected on 12 & 13 September 2019. The analytical results for Sample Delivery Group(s) (SDG) listed below were reviewed to determine the data's usability.

This data validation and usability assessment was performed per the guidance and requirements established by the U.S. Environmental Protection Agency's (EPA) *Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537* and the *Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3, Table B-15*. The QSM was used as a reference only. These samples were not analyzed in accordance with DoD protocol. The following quality assurance/quality control (QA/QC) criteria from the analysis of the project samples were reviewed as applicable:

1. Sample Delivery Group Number 240-118855-1

- Holding Times/Preservation
- Reporting Limits and Sample Dilution
- Sample Preparation
- Blank Sample Analysis
- Laboratory Control Samples
- Matrix Spike Samples
- Extraction Internal Standards
- Laboratory and Field Duplicate Sample Analysis
- System Performance and Overall Assessment

Analytical precision and accuracy were evaluated based on the laboratory control, matrix spike, or laboratory duplicate analyses performed concurrently with the project samples or based on field duplicates collected at the site.

Data reported in this sampling event were reported to the laboratory method detection limit (MDL). Results found between the MDL and RL are flagged "J" estimated.

Sample data were qualified in accordance with laboratory's standard operating procedures (SOPs). The results presented in each laboratory report were found to be compliant with the data quality objectives for the project and usable; any exceptions are noted in the following pages.

1. Sample Delivery Group Number 240-118855-1

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 240-118855-1, dated 10/21/2019. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol. Samples were also received appropriately, identified correctly, and analyzed according to the chain of custody. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel with the following exceptions:

- Custody seals were not utilized on the sample cooler(s).
- PFAS analysis was performed at the TestAmerica West Sacramento facility.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods	Holding Time
FD-04-091219-1055	N	240-118855-1	9/12/2019	Groundwater	Per- and Polyfluoroalkyl Substances (PFAS) by EPA 537 Modified	14 days extraction; 28 days analysis
7082-04-091219-001	FD	240-118855-2	9/12/2019	Groundwater		
MW26D-091219-1145	N	240-118855-3	9/12/2019	Groundwater		
MW23S-091219-1225	N	240-118855-4	9/12/2019	Groundwater		
MW23D-091219-1320	N	240-118855-5	9/12/2019	Groundwater		
P15T-091219-1400	N	240-118855-6	9/12/2019	Groundwater		
7082-091219-0002	FB	240-118855-7	9/12/2019	Blank		
7082-091219-0003	EB	240-118855-8	9/12/2019	Blank		
P16T-091319-0830	N	240-118855-9	9/13/2019	Groundwater		
OF0001-091319-0915	N	240-118855-10	9/13/2019	Groundwater		
MW16R-091319-1050	N	240-118855-11	9/13/2019	Groundwater		
7082-091319-0001	FD	240-118855-12	9/13/2019	Groundwater		
MW15R-091319-1150	N	240-118855-13	9/13/2019	Groundwater		
MW17-091319-1215	N	240-118855-14	9/13/2019	Groundwater		
7082-091319-0002	FB	240-118855-15	9/13/2019	Blank		

1.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol.

Cooler temperature on arrival to the laboratory was: 3.1; 1.8 Degrees C.

1.3 REPORTING LIMITS AND SAMPLE DILUTION

No dilutions were performed for the analysis of the samples in this report.

1.4 SAMPLE PREPARATION

Analysis of Per- and Polyfluoroalkyl Substances (PFAS) requires specific sample preparation. Aqueous samples must be prepared using Solid Phase Extraction (SPE), unless samples are known to contain high PFAS concentrations or the samples are injected directly into the LC/MS/MS instrument. Samples with > 1% solids may require centrifugation prior to SPE extraction. The entire sample plus bottle rinsate must be extracted using SPE. If high PFAS concentrations are known, the samples may alternately be prepared using serial dilution performed in duplicate. If prepared by serial dilution, there must be documented project approval for this deviation.

The reviewer confirmed SPE was used for sample preparation. No data qualification required.

- Samples 240-118855-5, -6, -11 and -14 were observed to contain sediment prior to extraction. Sample 240-118855-14 contained enough non-settleable particulate matter the solid-phase extraction column was clogged.
- Samples 240-118855-4 and -10 were observed to be light yellow in color prior to extraction. 240-118855-5, -11, and -12 were light yellow after bringing to final volume.

1.5 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred with the following exceptions:

Blank Type	Batch ID	Analyte Detected in Blank	Concentration	Qualifier	Affected Samples
Method Blank	325657	PFHxS	0.313 J ng/L	**RL U**	**240-118855-6, 7, 8, 9, 13, 14, 15**

Field blanks are prepared to identify contamination that may have been introduced during field activity. Field blanks are highly recommended when sampling for PFAS due to the possibility of cross-contamination from common consumer products and sampling equipment. Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. Trip blanks are prepared when volatile analysis is requested to identify contamination that may have been introduced during transport. The analysis of the blank samples for field quality control were free of target compounds, with the following exceptions:

Blank Type	Date of Blank	Analyte Detected in Blank	Concentration	Qualifier	Affected Samples
Field Blank	9/12/2019	PFHxS	0.25 J ng/L	NA	None, qualified ND by MB.
Field Blank	9/13/2019	PFHxS	0.26 J ng/L	NA	None, qualified ND by MB.
		PFTeDA	0.28 J ng/L	**RL U**	**240-118855-10, -12**
Equipment Blank	9/12/2019	PFHxS	0.32 J ng/L	NA	None, qualified ND by MB.

1.6 PFAS IDENTIFICATION

Identification of Per- and Polyfluoroalkyl Substances (PFAS) requires dual confirmation. The chemical derivation of the ion transitions must be documented. A minimum of two ion transitions and the ion transitions ratio per analyte are required for confirmation (except for PFBA and PFPeA). The method calls for limits of 50-150% and the signal to noise ratios (S/N) of ≥ 10 for all ions used for quantitation and ≥ 3 for all ions used for confirmation. Ion ratios were not reviewed at this level of validation, but the laboratory flagged data "I" to indicate the transition mass ratio was outside the established ratio limits. Analyst judgement was used to positively identify the analyte, but the qualitative identification has some degree of uncertainty for the below data:

- **Qualify data estimated "J/UJ".**
  - 240-118855-1
    - Perfluorododecanoic acid (PFDoDA)
    - Perfluoroheptane sulfonic acid (PFHpS)
    - Perfluorohexanesulfonic acid (PFHxS)
    - Perfluorooctanesulfonic acid (PFOS)
    - Perfluoropentane sulfonic acid (PFPeS)
  - 240-118855-2
    - Perfluoroheptane sulfonic acid (PFHpS)
    - Perfluorohexanesulfonic acid (PFHxS)
    - Perfluorooctanesulfonic acid (PFOS)
    - Perfluoropentane sulfonic acid (PFPeS)
  - 240-118855-10
    - Perfluoroheptane sulfonic acid (PFHpS)
    - Perfluorohexanesulfonic acid (PFHxS)
  - 240-118855-11
    - Perfluorohexanesulfonic acid (PFHxS)
    - Perfluorooctanesulfonic acid (PFOS)
    - Perfluorooctanoic Acid (PFOA)
    - Perfluoropentane sulfonic acid (PFPeS)
  - 240-118855-12
    - Perfluoroheptanoic acid (PFHpA)
    - Perfluorohexanesulfonic acid (PFHxS)
    - Perfluorohexanoic acid (PFHxA)
    - Perfluorooctanesulfonic acid (PFOS)
    - Perfluorooctanoic Acid (PFOA)
    - Perfluoropentane sulfonic acid (PFPeS)
  - 240-118855-13
    - Perfluorohexanesulfonic acid (PFHxS)
    - Perfluorooctanesulfonic acid (PFOS)

1.7 LABORATORY CONTROL SAMPLES

The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the LCS analyses exhibited recoveries within the specified limits.

1.8 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies. The sample(s) below were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
240-118855-12	7082-091319-0001	PFAS by EPA 537 Modified

The MS/MSD recoveries and the RPD between the MS and MSD results were within the specified limits with the following exceptions:

Sample Type	Method	Parent Sample Number	Analyte	%R/RPD	Qualifier	Affected Samples
MS/MSD	EPA 537 Mod	7082-091319-0001	PFBA	153%/188%	**J**	**7082-091319-0001**

1.9 EXTRACTION INTERNAL STANDARDS

Analysis of Per- and Polyfluoroalkyl Substances (PFAS) includes the use of internal standards (IS), which are stable isotope analogs of the PFAS compounds of interest added to each sample prior to extraction of the sample matrix. Matrix interferences that affect the quantification of the IS will affect the calculated target compound concentrations. Recoveries were reviewed and found to be within the limits of 50-150% of the ICAL midpoint standard/ initial CCV, with the following exceptions:

Sample ID	Lab ID	Standard Name	%Recovery	Quality Assessment
MW26D-091219-1145	240-118855-3*	M2-4:2-FTS	151%	None, associated compound is ND.
MW23D-091219-1320	240-118855-5*	M2-6:2 FTS	155%	None, associated compound is ND.
		M2-4:2-FTS	167%	None, associated compound is ND.
P15T-091219-1400	240-118855-6	13C4 PFBA	45%	**"J" PFBA**
OF0001-091319-0915	240-118855-10	M2-6:2 FTS	168%	None, associated compound is ND.
		M2-4:2-FTS	153%	None, associated compound is ND.

**The samples were reanalyzed with concurring results. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.*

1.10 CASE NARRATIVE

The TestAmerica laboratory report case narrative lists various additional quality control issues, such as internal standard exceedances and initial (ICV) and/or continuing calibration (CCV) exceedances. Since a full Level IV validation was not requested, these quality control issues were not reviewed for qualification.

- Perfluoroheptanoic acid (PFHpA) for sample 240-118855-12 is flagged "CI" by the lab, indicating the peak identified by the data system exhibited chromatographic interference that could not be resolved. There is reason to suspect there may be a high bias. **Qualify result "J+".**
- Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) were quantified versus 18O2-PFHxS instead.

1.11 LABORATORY AND FIELD DUPLICATE SAMPLES

The laboratory duplicate sample analysis is used by the laboratory at the time of analysis to demonstrate acceptable method precision. The laboratory did not analyze any laboratory duplicates in this SDG.

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD comparison for any field duplicates in this SDG is shown below. RPDs were all below 35% for water (or the absolute difference rule was satisfied if detects were less than 5x the RL).

Field Duplicate RPD Calculations:

Method(s): EPA 537 Modified				
Analyte (ng/L)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	FD-04-091219-1055	**7082-04-091219-001**		
6:2 FTSA	**55**	**48**	NA	None, Abs. Diff. < RL
PFBS	**2.7**	**2.5**	NA	None, Abs. Diff. < RL
PFBA	**3.0**	**3.0**	NA	None, Abs. Diff. < RL
PFHpS	**1.8 J**	**1.7 J**	NA	None, Abs. Diff. < RL
PFHxS	**8.3**	**8.8**	NA	None, Abs. Diff. < RL
FOSA	**0.37 J**	2.0 U	NA	None, Abs. Diff. < RL
PFOS	**56**	**54**	4	None, RPD < 35%
PFOA	**1.3 J**	**1.2 J**	NA	None, Abs. Diff. < RL
PFPeS	**2.8**	**3.1**	NA	None, Abs. Diff. < RL
PFTeDA	**0.49 J**	2.0 U	NA	None, Abs. Diff. < RL
All Remaining PFAS	ND U	ND U	NA	None, Both ND
Analyte (ng/L)	**Primary Sample ID**	**Duplicate Sample ID**	**% RPD**	**Qualification**
	MW16R-091319-1050	**7082-091319-0001**		
PFBS	**11**	**12**	9	None, RPD < 35%
PFBA	**11**	**11**	0	None, RPD < 35%
PFHpA	**3.9**	**2.9**	NA	None, Abs. Diff. < RL
PFHxS	**11**	**10**	10	None, RPD < 35%
PFHxA	**13**	**13**	0	None, RPD < 35%
PFOA	**2.5**	**2.2**	NA	None, Abs. Diff. < RL
PFTeDA	2.0 U	0.46 J*	NA	None, Both ND
PFPeS	**14**	**15**	7	None, RPD < 35%
PFPeA	**2.6**	**2.4**	NA	None, Abs. Diff. < RL
All Remaining PFAS	ND U	ND U	NA	None, Both ND

* Qualified non-detect (ND) based on field blank contamination.

1.12 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the data quality objectives for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
P15T-091219-1400	Perfluorohexanesulfonic acid (PFHxS)	1.1 J	1.9 U	Method Blank Contamination
7082-091219-0002		0.25 J	1.9 U	
7082-091219-0003		0.32 J	1.9 U	
P16T-091319-0830		0.58 J	1.9 U	
MW15R-091319-1150		0.87 J	1.9 U	
MW17-091319-1215		0.31 J	2.0 U	
7082-091319-0002		0.26 J	1.8 U	
OF0001-091319-0915	Perfluorotetradecanoic acid (PFTeDA)	0.29 J	1.9 U	Field Blank Contamination
7082-091319-0001		0.46 J	1.9 U	
FD-04-091219-1055	Various PFAS (See Section 1.6)	Detect/ ND U	Detect J/ ND UJ	Transition Mass Ratio Exceedance
7082-04-091219-001				
OF0001-091319-0915				
MW16R-091319-1050				
7082-091319-0001				
MW15R-091319-1150				
7082-091319-0001	Perfluorobutanoic Acid (PFBA)	11	11 J	Matrix Spike Exceedance
P15T-091219-1400		3.1	3.1 J	Extracted Internal Standard Exceedance
7082-091319-0001	Perfluoroheptanoic acid (PFHpA)	2.9	2.9 J+	Chromatographic Interference

Glossary

- Sample Types:
  - N — Primary Sample
  - FD — Field Duplicate Sample
  - FB — Field Blank Sample
  - EB — Equipment Blank Sample
  - TB — Trip Blank Sample
- Units:
  - µg/L or ug/L — microgram per liter
  - mg/L — milligram per liter
  - ng/L — nanogram per liter
- Table Footnotes
  - NA — Not applicable
  - ND — Non-detect
  - NR — Not reported
- Abbreviations
  - DUSR — Data Usability Summary Report
  - SDG — Sample Delivery Group
  - EPA — Environmental Protection Agency
  - NFG — National Functional Guidelines
  - PFAS — Per- and Polyfluoroalkyl Substances
  - QA/QC — Quality Assurance/Quality Control
  - RL — Laboratory Reporting Limit
  - MDL — Laboratory Method Detection Limit
  - SOP — Laboratory Standard Operating Procedures
  - COC — Chain of Custody
  - SPE — Solid Phase Extraction
  - %R — Percent Recovery
  - RPD — Relative Percent Difference
  - LCS/LCSD — Laboratory Control Sample/Laboratory Control Sample Duplicate
  - MS/MSD — Matrix Spike/Matrix Spike Duplicate
  - IS — Internal Standards
  - ICAL — Initial Calibration

Qualifiers

Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

- Concentration (C) Qualifiers:
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".
  - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
  - E The compound was quantitated above the calibration range.
  - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.
  - NJ The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is therefore an estimated concentration only.
  - R The sample results were rejected as unusable; the compound may or may not be present in the sample.

References

1. United States Environmental Protection Agency, 2018. Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537. EPA 910-R-18-001. November.

2. Department of Defense (DoD)/Department of Energy (DoE), 2019. Quality Systems Manual (QSM) for Environmental Laboratories. Version 5.3. Table B-15. Per- and Polyfluoroalkyl Substances (PFAS) Using Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS) With Isotope Dilution or Internal Standard Quantification in Matrices Other Than Drinking Water.