October 3, 2019

Mr. Michael Belveg
New York State Department of Environmental Conservation
Division of Environmental Remediation
615 Erie Boulevard West
Syracuse, NY 13204-2400

Consulting Engineers and Scientists

Re: Summary of Emerging Contaminant Groundwater Sampling
Rosen Superfund Site, Cortland, NY (Site No. 712004)

Dear Mr. Belveg:

This letter summarizes the results of emerging contaminant (EC) groundwater sampling performed at the former Rosen Brothers Scrap Yard Superfund Site located adjacent to Pendleton Street in Cortland, NY (Site No. 712004). The work was performed in accordance with a GEI work plan dated March 6, 2019, with a subsequent directive from the New York State Department of Environmental Conservation (NYSDEC) on March 13, 2019 to add an additional well to the sampling plan. The work plan – with the addition of the additional sample location – was approved by NYSDEC via email on June 5, 2019. The scope and results are summarized below.

1.0 FIELD ACTIVITIES

The wells targeted for EC sampling, and associated rationale, were specified in the approved work plan as follows:

Target Well	Screened Interval (ft bgs)	Depth to Water (ft)	Rationale
W-04	~6-16	~12	Upgradient of site-related volatile organic compound (VOC) impacted areas
W-06	~10-20	~16	Required addition per NYSDEC based on review of draft work plan
W-10	~12-22	~11.5	On-property location within and downgradient of known site-related VOC impacts

Figure 1 indicates the locations of these wells, as well as representative groundwater elevation measurements and inferred groundwater flow directions presented in prior site documents.

Groundwater sampling was performed at each of the target locations on July 23, 2019. The methods used to perform the field activities and the field quality assurance/quality control (QA/QC) procedures were consistent with the specifications of the NYSDEC-approved Work Plan.

Field quality assurance samples were collected as follows:

- One equipment blank was collected by pouring laboratory-supplied PFAS-free water over cleaned sample equipment at the site.
- One blind duplicate sample was collected and assigned a sample ID that did not correlate to the parent sample. The blind duplicate sample was collected at W-06.

GEI Consultants, Inc., P.C.
1301 Trumansburg Road, Suite N, Ithaca, NY 14850
607.216.8955 fax: 607.274.7577

Samples were packed in a cooler on ice and transported to the selected analytical laboratory under chain of custody procedures.

2.0 LABORATORY ANALYSES

The groundwater samples were sent to Eurofins (formerly Test America) Laboratories in West Sacramento, CA (PFAS), and Buffalo, NY (1,4-dioxane) for analysis. Eurofins is a NYSDEC-approved laboratory for the emerging contaminant analyses.

The laboratory methods utilized were:

- **1,4 Dioxane** – 8270D SIM (selective ion monitoring); and
- **PFAS** – Fluorinated Alkyl Substances - EPA 537 (Modified).

Attachment A contains the laboratory analytical report, including the chain of custody record for the sampling.

The NYSDEC's October 9, 2018 letter requiring the EC sampling indicated target reporting limits (RLs) for PFAS analytes of 2 ng/L or lower, and the target method detection limit (MDL) for 1,4-dioxane to not exceed 0.35 ug/L. The RLs achieved by the laboratory for PFAS compounds were below 2.0 ppt, with the exception of four specific compounds that had reporting limits of 18 ppt based on method requirements; those compounds had MDLs below 3 ppt. For 1,4-dioxane, all samples reported an MDL of 0.1 ug/L, thus met the required specification.

3.0 DATA QUALITY

The results of the equipment blank and method blank analyses are provided in Attachment A and discussed in the Data Usability Summary Report (DUSR) in Attachment B. 1,4-Dioxane was not detected in the method blank or equipment blank samples. One PFAS compound (PFHxS) was reported at a very low concentration (<1 ppt) in the method blank sample, resulting in minor qualification of corresponding environmental samples. No other PFAS compounds were detected in the blank samples.

GEI performed a data review and prepared a DUSR for the laboratory packages. The DUSR is provided in Attachment B. The data was determined to be usable as reported by the laboratory, with minor qualifications. Additional detail is provided in the DUSR. The Form I report sheets reflecting qualifications from the DUSR are also included in Attachment B.

4.0 SUMMARY AND EVALUATION OF ANALYTICAL RESULTS

The laboratory analytical results for three sampled wells, a blind duplicate sample from W-06, and the equipment blank are summarized in Table 1. Included in the table are the Initial Screening Levels (ISLs) for both Drinking Water and Groundwater provided by the NYSDEC, as well as NYSDOH recommended MCLs where applicable.

On Table 1, the detected concentrations (including estimated "J" values) are shown with bold font. Key observations from the data are summarized as follows:

- **1,4-Dioxane** – 1,4-Dioxane was not detected in any of the samples.

- **PFOS** – PFOS was detected in all three wells at concentrations ranging from 0.62 (estimated) to 3.2 ng/L. All reported concentrations are below the most stringent ISL (the recommended MCL of 10 ng/L).
- **PFOA** – PFOA was detected in all three wells at concentrations ranging from 0.81 (estimated) to 2 ng/L. All reported concentrations are below the most stringent ISL (the recommended MCL of 10 ng/L).
- **Other PFAS Compounds** – No exceedances of the ISLs for Drinking Water or Groundwater were identified for other individual PFAS compounds.
- **Total PFOS and PFOA –** The combined total concentrations of PFOA and PFOS range from 1.72 to 4.01 ng/L. These concentrations are below the Drinking Water and Groundwater ISLs (20 and 70 ng/L, respectively). The recommended MCLs do not apply to the summed total concentrations of these compounds.
- **Total NYSDEC Target PFAS List Exceedances** – The total PFAS ISL for both Drinking Water and Groundwater is 500 ng/L. No exceedances of either screening level were identified for any of the samples.

As required by the NYSDEC, the data will be submitted to the NYSDEC EIMS website at https://www.dec.ny.gov/chemical/62440.html.

If you have any questions or comments, please contact Jeff Holden of GEI at 607-216-8956 or Elaine Enfonde of Nixon Peabody at 585-263-1596.

Sincerely,

GEI CONSULTANTS, INC., P.C.

Jeffrey S. Holden, P.E.
Senior Engineer

Daniel Kopcow, P.E., PMP
Vice President/Senior Engineer

JSH:mlr

Attachments: Table 1 – Summary of Emerging Contaminant Analytical Results
Figure 1 – Sample Locations
Attachment A – Laboratory Analytical Reports
Attachment B – DUSR and Corrected Form Is

c: Mark Granger – USEPA
Elaine Enfonde – Nixon Peabody

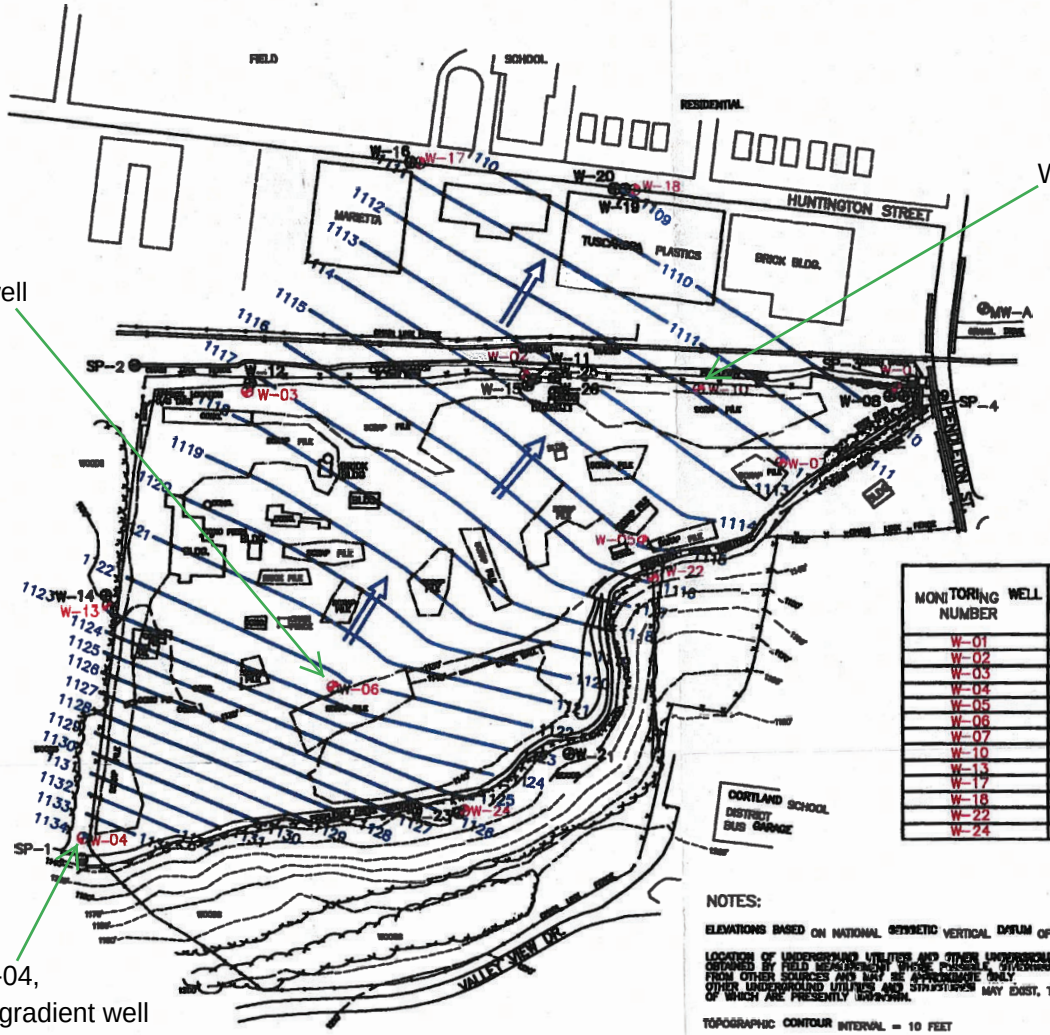
B:\Working\NIXON PEABODY\1900862 Rosen Site Cortland NY\02_PM\EC Summary Report\Rosen EC Summ Rpt 10.3.19.docx

Table

Table 1. Rosen
Summary of Emerging Contaminant Analytical Results
National Fuel Gas
Cortland, NY

Analyte	Units	CAS No.	NY DEC Initial DW Screening Level	NY DEC Initial GW Screening Level	NY DOH Recommended MCL	Sample Name Sample Date Parent Sample W04 7/23/2019	W06 7/23/2019	DUP 072319 7/23/2019 W06	W10 7/23/2019	EQUIPMENT BLANK 7/23/2019
SVOCs	ug/L									
1,4-Dioxane		123-91-1	0.35	0.35	1	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PFAS	ng/L									
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		2991-50-6	100	100	NE	18 U	18 U	18 U	18 U	18 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		2355-31-9	100	100	NE	18 U	18 U	18 U	18 U	18 U
Perfluorobutanesulfonic acid (PFBS)		375-73-5	100	100	NE	**0.42 J**	**0.38 J**	**0.32 J**	**0.19 J**	1.8 U
Perfluorobutanoic acid (PFBA)		375-22-4	100	100	NE	**0.54 J**	**1.5 J**	**1.4 J**	1.8 U	1.8 U
Perfluorodecanesulfonic acid (PFDS)		335-77-3	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorodecanoic acid (PFDA)		335-76-2	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorododecanoic acid (PFDoA)		307-55-1	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroheptanesulfonic acid (PFHpS)		375-92-8	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroheptanoic acid (PFHpA)		375-85-9	100	100	NE	**0.3 J**	**0.49 J**	**0.35 J**	1.8 U	1.8 U
Perfluorohexanoic acid (PFHxA)		307-24-4	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorooctanesulfonamide (FOSA)		754-91-6	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoropentanoic Acid (PFPeA)		2706-90-3	100	100	NE	1.8 U	1.8 U	**0.48 J**	1.8 U	1.8 U
Perfluorotetradecanoic acid (PFTA/PFTeDA)		376-06-7	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorotridecanoic acid (PFTriA/PFTrDA)		72629-94-8	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluoroundecanoic acid (PFUnA)		2058-94-8	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)		39108-34-4	100	100	NE	18 U	18 U	18 U	18 U	18 U
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)		27619-97-2	100	100	NE	18 U	**3.6 J**	**3.2 J**	**23**	18 U
Perfluorohexanesulfonic acid (PFHxS)		355-46-4	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorononanoic Acid (PFNA)		375-95-1	100	100	NE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Perfluorooctanesulfonic acid (PFOS)		1763-23-1	20	70	10	**0.62 J**	**0.86 J**	**0.77 J**	**3.2**	1.8 U
Perfluorooctanoic Acid (PFOA)		335-67-1	20	70	10	**1.1 J**	**2**	**1.7 J**	**0.81 J**	1.8 U
Total PFAS (ND=0)		N/A	500	500	NE	**2.98**	**8.83**	**8.22**	**27.2**	ND
Total PFOA + PFOS (ND=0)		N/A	20	70	NE	**1.72**	**2.86**	**2.47**	**4.01**	ND

Figure



W-10, downgradient well

W-06, on-site well

W-04, upgradient well

LEGEND

- MONITORING WELL
- 1113 — GROUND-WATER ELEVATION CONTOUR LINE (DASHED WHERE INFERRED)
- GROUND-WATER FLOW DIRECTION
- STREAM MONITORING POINT

MONITORING WELL NUMBER	GROUND-WATER ELEVATION 3/13/96
W-01	1109.35
W-02	1113.57
W-03	1117.42
W-04	1134.20
W-05	1114.83
W-06	1122.30
W-07	1112.14
W-10	1111.90
W-13	1122.69
W-17	1110.65
W-18	1108.86
W-22	1115.81
W-24	1125.48

SCALE
200' 0 200'

NOTES:

ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.

LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES OBTAINED BY FIELD MEASUREMENT WHERE POSSIBLE, OTHERWISE OBTAINED FROM OTHER SOURCES AND MAY BE APPROXIMATE ONLY. OTHER UNDERGROUND UTILITIES AND STRUCTURES MAY EXIST, THE LOCATIONS OF WHICH ARE PRESENTLY UNKNOWN.

TOPOGRAPHIC CONTOUR INTERVAL = 10 FEET

ROSEN SITE
CORTLAND, NEW YORK
GROUND-WATER MONITORING REPORT

GROUND-WATER TABLE CONTOUR MAP 3/13/96

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 1

Attachment A

Laboratory Analytical Reports

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-156767-1
Client Project/Site: PFAS NYSDEC-Rosen Cortland

For:
GEI Consultants, Inc.
1301 Trumansburg Road
Suite N
Ithaca, New York 14850

Attn: Jeffrey Holden

Authorized for release by:
9/9/2019 4:36:04 PM

Brian Fischer, Manager of Project Management
(716)504-9835
brian.fischer@testamericainc.com

Table of Contents

Definitions/Glossary

Client: GEI Consultants, Inc.
Job ID: 480-156767-1
Project/Site: PFAS NYSDEC-Rosen Cortland

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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: 480-156767-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-156767-1

Comments
No additional comments.

Receipt
The samples were received on 7/24/2019 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 3.3º C, 4.6º C and 5.0º C.

GC/MS Semi VOA
Method(s) 8270D SIM ID: The 1,4-Dioxane result reported for sample (LCS 480-483998/2-A) have an E flag qualifier indicating the results are over the calibration range on the raw data. The actual amounts are within the calibration range; however, the E flag is generated based upon the bias corrected concentration. The LIMS system calculates a bias correction based on the recovery of the 1,4-Dioxane-d8 isotope.

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

LCMS
Method(s) 537 (modified): The “I” qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s).
MW04 (480-156767-4) and (320-52680-A-1-A)

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

Organic Prep
Method(s) 3535: The following sample was observed to contain sediment prior to extraction: MW10 (480-156767-2).

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

Detection Summary

Client: GEI Consultants, Inc.
Project/Site: PFAS NYSDEC-Rosen Cortland

Job ID: 480-156767-1

Client Sample ID: DUP 072319 — Lab Sample ID: 480-156767-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.4	J	1.8	0.31	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.48	J	1.8	0.44	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.35	J	1.8	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.7	J	1.8	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.32	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.41	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.77	J	1.8	0.49	ng/L	1		537 (modified)	Total/NA
6:2 FTS	3.2	J	18	1.8	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW10 — Lab Sample ID: 480-156767-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.81	J	1.8	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.19	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.46	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.2		1.8	0.49	ng/L	1		537 (modified)	Total/NA
6:2 FTS	23		18	1.8	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW06 — Lab Sample ID: 480-156767-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.5	J	1.8	0.32	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.49	J	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.0		1.8	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.38	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.34	J B	1.8	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.86	J	1.8	0.50	ng/L	1		537 (modified)	Total/NA
6:2 FTS	3.6	J	18	1.8	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW04 — Lab Sample ID: 480-156767-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.54	J	1.8	0.32	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.30	J I	1.8	0.23	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.1	J	1.8	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.42	J	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.39	J B	1.8	0.16	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.62	J	1.8	0.49	ng/L	1		537 (modified)	Total/NA

Client Sample ID: EQUIPMENT BLANK — Lab Sample ID: 480-156767-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	0.27	J B	1.8	0.15	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DUP 072319

Date Collected: 07/23/19 08:00
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-1

Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 17:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*24*		*15 - 110*	*07/26/19 15:35*	*07/30/19 17:00*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.4**	**J**	1.8	0.31	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluoropentanoic acid (PFPeA)	**0.48**	**J**	1.8	0.44	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluoroheptanoic acid (PFHpA)	**0.35**	**J**	1.8	0.22	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorooctanoic acid (PFOA)	**1.7**	**J**	1.8	0.76	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorobutanesulfonic acid (PFBS)	**0.32**	**J**	1.8	0.18	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorohexanesulfonic acid (PFHxS)	**0.41**	**J B**	1.8	0.15	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorooctanesulfonic acid (PFOS)	**0.77**	**J**	1.8	0.49	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.31	ng/L		07/30/19 05:25	07/31/19 06:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/30/19 05:25	07/31/19 06:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/30/19 05:25	07/31/19 06:13	1
6:2 FTS	**3.2**	**J**	18	1.8	ng/L		07/30/19 05:25	07/31/19 06:13	1
8:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*83*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C5 PFPeA	*93*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C2 PFHxA	*97*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C4 PFHpA	*105*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C4 PFOA	*103*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C5 PFNA	*101*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C2 PFDA	*102*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C2 PFUnA	*100*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C2 PFDoA	*100*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C2 PFTeDA	*108*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C3 PFBS	*105*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
18O2 PFHxS	*102*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C4 PFOS	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C8 FOSA	*83*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
d3-NMeFOSAA	*110*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
d5-NEtFOSAA	*106*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
M2-6:2 FTS	*121*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*

Client Sample ID: DUP 072319

Lab Sample ID: 480-156767-1

Date Collected: 07/23/19 08:00

Matrix: Water

Date Received: 07/24/19 09:15

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2 FTS	*122*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*

Client Sample ID: MW10

Lab Sample ID: 480-156767-2

Date Collected: 07/23/19 10:20

Matrix: Water

Date Received: 07/24/19 09:15

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 17:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	*29*		*15 - 110*	*07/26/19 15:35*	*07/30/19 17:23*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.44	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorooctanoic acid (PFOA)	**0.81**	**J**	1.8	0.77	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorobutanesulfonic acid (PFBS)	**0.19**	**J**	1.8	0.18	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorohexanesulfonic acid (PFHxS)	**0.46**	**J B**	1.8	0.15	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorooctanesulfonic acid (PFOS)	**3.2**		1.8	0.49	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/30/19 05:25	07/31/19 06:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/30/19 05:25	07/31/19 06:21	1
6:2 FTS	**23**		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:21	1
8:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	*77*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:21*	*1*
13C5 PFPeA	*86*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:21*	*1*
13C2 PFHxA	*88*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:21*	*1*
13C4 PFHpA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:21*	*1*
13C4 PFOA	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:21*	*1*
13C5 PFNA	*106*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:21*	*1*
13C2 PFDA	*101*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:21*	*1*
13C2 PFUnA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:21*	*1*
13C2 PFDoA	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:21*	*1*

Client Sample ID: MW10

Date Collected: 07/23/19 10:20
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFTeDA	103		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C3 PFBS	99		25 - 150	07/30/19 05:25	07/31/19 06:21	1
18O2 PFHxS	98		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C4 PFOS	98		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C8 FOSA	81		25 - 150	07/30/19 05:25	07/31/19 06:21	1
d3-NMeFOSAA	114		25 - 150	07/30/19 05:25	07/31/19 06:21	1
d5-NEtFOSAA	118		25 - 150	07/30/19 05:25	07/31/19 06:21	1
M2-6:2 FTS	149		25 - 150	07/30/19 05:25	07/31/19 06:21	1
M2-8:2 FTS	146		25 - 150	07/30/19 05:25	07/31/19 06:21	1

Client Sample ID: MW06

Date Collected: 07/23/19 11:47
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-3
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 17:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	29		15 - 110	07/26/19 15:35	07/30/19 17:47	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.5**	**J**	1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.45	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluoroheptanoic acid (PFHpA)	**0.49**	**J**	1.8	0.23	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorooctanoic acid (PFOA)	**2.0**		1.8	0.78	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.27	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorobutanesulfonic acid (PFBS)	**0.38**	**J**	1.8	0.18	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorohexanesulfonic acid (PFHxS)	**0.34**	**J B**	1.8	0.16	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorooctanesulfonic acid (PFOS)	**0.86**	**J**	1.8	0.50	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/30/19 05:25	07/31/19 06:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/30/19 05:25	07/31/19 06:29	1
6:2 FTS	**3.6**	**J**	18	1.8	ng/L		07/30/19 05:25	07/31/19 06:29	1
8:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	82		25 - 150	07/30/19 05:25	07/31/19 06:29	1

Client Sample ID: MW06

Date Collected: 07/23/19 11:47
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-3

Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	93		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C2 PFHxA	92		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C4 PFHpA	99		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C4 PFOA	100		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C5 PFNA	99		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C2 PFDA	104		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C2 PFUnA	97		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C2 PFDoA	100		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C2 PFTeDA	102		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C3 PFBS	98		25 - 150	07/30/19 05:25	07/31/19 06:29	1
18O2 PFHxS	99		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C4 PFOS	96		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C8 FOSA	83		25 - 150	07/30/19 05:25	07/31/19 06:29	1
d3-NMeFOSAA	107		25 - 150	07/30/19 05:25	07/31/19 06:29	1
d5-NEtFOSAA	104		25 - 150	07/30/19 05:25	07/31/19 06:29	1
M2-6:2 FTS	118		25 - 150	07/30/19 05:25	07/31/19 06:29	1
M2-8:2 FTS	111		25 - 150	07/30/19 05:25	07/31/19 06:29	1

Client Sample ID: MW04

Date Collected: 07/23/19 15:10
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-4

Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 18:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	56		15 - 110	07/26/19 15:35	07/30/19 18:10	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.54**	**J**	1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.45	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluoroheptanoic acid (PFHpA)	**0.30**	**J I**	1.8	0.23	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorooctanoic acid (PFOA)	**1.1**	**J**	1.8	0.78	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.27	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorobutanesulfonic acid (PFBS)	**0.42**	**J**	1.8	0.18	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorohexanesulfonic acid (PFHxS)	**0.39**	**J B**	1.8	0.16	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorooctanesulfonic acid (PFOS)	**0.62**	**J**	1.8	0.49	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:54	1

Client Sample ID: MW04

Date Collected: 07/23/19 15:10
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-4

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/30/19 05:25	07/31/19 06:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/30/19 05:25	07/31/19 06:54	1
6:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:54	1
8:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C5 PFPeA	*94*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C2 PFHxA	*94*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C4 PFHpA	*95*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C4 PFOA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C5 PFNA	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C2 PFDA	*96*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C2 PFUnA	*97*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C2 PFDoA	*91*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C2 PFTeDA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C3 PFBS	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
18O2 PFHxS	*94*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C4 PFOS	*93*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C8 FOSA	*83*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
d3-NMeFOSAA	*96*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
d5-NEtFOSAA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
M2-6:2 FTS	*113*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
M2-8:2 FTS	*112*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*

Client Sample ID: EQUIPMENT BLANK

Date Collected: 07/23/19 12:55
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-5

Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 18:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*28*		*15 - 110*	*07/26/19 15:35*	*07/30/19 18:34*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.44	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		07/30/19 05:25	07/31/19 07:02	1

Client Sample ID: EQUIPMENT BLANK

Date Collected: 07/23/19 12:55
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-5

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	**0.27**	**J B**	1.8	0.15	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 07:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/30/19 05:25	07/31/19 07:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/30/19 05:25	07/31/19 07:02	1
6:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 07:02	1
8:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 07:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*90*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C5 PFPeA	*93*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C2 PFHxA	*94*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C4 PFHpA	*97*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C4 PFOA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C5 PFNA	*100*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C2 PFDA	*102*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C2 PFUnA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C2 PFDoA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C3 PFBS	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
18O2 PFHxS	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C4 PFOS	*91*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C8 FOSA	*84*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
d5-NEtFOSAA	*100*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
M2-6:2 FTS	*118*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
M2-8:2 FTS	*120*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*

Isotope Dilution Summary

Client: GEI Consultants, Inc.
Project/Site: PFAS NYSDEC-Rosen Cortland

Job ID: 480-156767-1

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

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

		Percent Isotope Dilution Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	DXE (15-110)
480-156767-1	DUP 072319	24
480-156767-2	MW10	29
480-156767-3	MW06	29
480-156767-4	MW04	56
480-156767-5	EQUIPMENT BLANK	28
LCS 480-483998/2-A	Lab Control Sample	29
MB 480-483998/1-A	Method Blank	28

Surrogate Legend

DXE = 1,4-Dioxane-d8

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)
480-156767-1	DUP 072319	83	93	97	105	103	101	102	100
480-156767-2	MW10	77	86	88	99	98	106	101	99
480-156767-3	MW06	82	93	92	99	100	99	104	97
480-156767-4	MW04	86	94	94	95	99	98	96	97
480-156767-5	EQUIPMENT BLANK	90	93	94	97	99	100	102	99
LCS 320-311129/2-A	Lab Control Sample	93	96	92	100	97	101	101	97
MB 320-311129/1-A	Method Blank	93	96	95	98	99	100	102	99

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOSA (25-150)	-NEtFOSA (25-150)
480-156767-1	DUP 072319	100	108	105	102	98	83	110	106
480-156767-2	MW10	98	103	99	98	98	81	114	118
480-156767-3	MW06	100	102	98	99	96	83	107	104
480-156767-4	MW04	91	99	98	94	93	83	96	99
480-156767-5	EQUIPMENT BLANK	99	98	99	98	91	84	98	100
LCS 320-311129/2-A	Lab Control Sample	96	103	104	97	100	79	102	100
MB 320-311129/1-A	Method Blank	100	102	101	97	96	77	105	102

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)
480-156767-1	DUP 072319	121	122
480-156767-2	MW10	149	146
480-156767-3	MW06	118	111
480-156767-4	MW04	113	112
480-156767-5	EQUIPMENT BLANK	118	120
LCS 320-311129/2-A	Lab Control Sample	119	109
MB 320-311129/1-A	Method Blank	149	122

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4 PFHpA

Isotope Dilution Summary

Client: GEI Consultants, Inc.
Job ID: 480-156767-1
Project/Site: PFAS NYSDEC-Rosen Cortland

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

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 480-483998/1-A
Matrix: Water
Analysis Batch: 484428

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 483998

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 13:06	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*28*		*15 - 110*	*07/26/19 15:35*	*07/30/19 13:06*	*1*

Lab Sample ID: LCS 480-483998/2-A
Matrix: Water
Analysis Batch: 484428

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 483998

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			1.00	1.22	E	ug/L		122	40 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*29*		*15 - 110*

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-311129/1-A
Matrix: Water
Analysis Batch: 311389

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 311129

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.35	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.49	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.85	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.31	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	1.3	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorohexanesulfonic acid (PFHxS)	0.283	J	2.0	0.17	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32	ng/L		07/30/19 05:25	07/31/19 05:25	1
Perfluorooctanesulfonamide (FOSA)	ND		2.0	0.35	ng/L		07/30/19 05:25	07/31/19 05:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1	ng/L		07/30/19 05:25	07/31/19 05:25	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9	ng/L		07/30/19 05:25	07/31/19 05:25	1
6:2 FTS	ND		20	2.0	ng/L		07/30/19 05:25	07/31/19 05:25	1
8:2 FTS	ND		20	2.0	ng/L		07/30/19 05:25	07/31/19 05:25	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*93*		*25 - 150*	*07/30/19 05:25*	*07/31/19 05:25*	*1*
13C5 PFPeA	*96*		*25 - 150*	*07/30/19 05:25*	*07/31/19 05:25*	*1*

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

Lab Sample ID: MB 320-311129/1-A
Matrix: Water
Analysis Batch: 311389

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 311129

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		25 - 150	07/30/19 05:25	07/31/19 05:25	1
13C4 PFHpA	98		25 - 150	07/30/19 05:25	07/31/19 05:25	1
13C4 PFOA	99		25 - 150	07/30/19 05:25	07/31/19 05:25	1
13C5 PFNA	100		25 - 150	07/30/19 05:25	07/31/19 05:25	1
13C2 PFDA	102		25 - 150	07/30/19 05:25	07/31/19 05:25	1
13C2 PFUnA	99		25 - 150	07/30/19 05:25	07/31/19 05:25	1
13C2 PFDoA	100		25 - 150	07/30/19 05:25	07/31/19 05:25	1
13C2 PFTeDA	102		25 - 150	07/30/19 05:25	07/31/19 05:25	1
13C3 PFBS	101		25 - 150	07/30/19 05:25	07/31/19 05:25	1
18O2 PFHxS	97		25 - 150	07/30/19 05:25	07/31/19 05:25	1
13C4 PFOS	96		25 - 150	07/30/19 05:25	07/31/19 05:25	1
13C8 FOSA	77		25 - 150	07/30/19 05:25	07/31/19 05:25	1
d3-NMeFOSAA	105		25 - 150	07/30/19 05:25	07/31/19 05:25	1
d5-NEtFOSAA	102		25 - 150	07/30/19 05:25	07/31/19 05:25	1
M2-6:2 FTS	149		25 - 150	07/30/19 05:25	07/31/19 05:25	1
M2-8:2 FTS	122		25 - 150	07/30/19 05:25	07/31/19 05:25	1

Lab Sample ID: LCS 320-311129/2-A
Matrix: Water
Analysis Batch: 311389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 311129

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	45.2		ng/L		113	70 - 130
Perfluoropentanoic acid (PFPeA)	40.0	41.0		ng/L		103	66 - 126
Perfluorohexanoic acid (PFHxA)	40.0	43.1		ng/L		108	66 - 126
Perfluoroheptanoic acid (PFHpA)	40.0	39.8		ng/L		100	66 - 126
Perfluorooctanoic acid (PFOA)	40.0	45.7		ng/L		114	64 - 124
Perfluorononanoic acid (PFNA)	40.0	40.9		ng/L		102	68 - 128
Perfluorodecanoic acid (PFDA)	40.0	41.6		ng/L		104	69 - 129
Perfluoroundecanoic acid (PFUnA)	40.0	40.7		ng/L		102	60 - 120
Perfluorododecanoic acid (PFDoA)	40.0	42.8		ng/L		107	71 - 131
Perfluorotridecanoic acid (PFTriA)	40.0	42.4		ng/L		106	72 - 132
Perfluorotetradecanoic acid (PFTeA)	40.0	40.1		ng/L		100	68 - 128
Perfluorobutanesulfonic acid (PFBS)	35.4	35.9		ng/L		101	73 - 133
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.0		ng/L		104	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.3		ng/L		106	68 - 128
Perfluorooctanesulfonic acid (PFOS)	37.1	36.7		ng/L		99	67 - 127
Perfluorodecanesulfonic acid (PFDS)	38.6	38.4		ng/L		100	68 - 128
Perfluorooctanesulfonamide (FOSA)	40.0	47.1		ng/L		118	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	40.5		ng/L		101	67 - 127

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

Lab Sample ID: LCS 320-311129/2-A
Matrix: Water
Analysis Batch: 311389

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 311129

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			40.0	40.6		ng/L		101	65 - 125		
6:2 FTS			37.9	37.3		ng/L		98	66 - 126		
8:2 FTS			38.3	43.0		ng/L		112	67 - 127		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*93*		*25 - 150*
13C5 PFPeA	*96*		*25 - 150*
13C2 PFHxA	*92*		*25 - 150*
13C4 PFHpA	*100*		*25 - 150*
13C4 PFOA	*97*		*25 - 150*
13C5 PFNA	*101*		*25 - 150*
13C2 PFDA	*101*		*25 - 150*
13C2 PFUnA	*97*		*25 - 150*
13C2 PFDoA	*96*		*25 - 150*
13C2 PFTeDA	*103*		*25 - 150*
13C3 PFBS	*104*		*25 - 150*
18O2 PFHxS	*97*		*25 - 150*
13C4 PFOS	*100*		*25 - 150*
13C8 FOSA	*79*		*25 - 150*
d3-NMeFOSAA	*102*		*25 - 150*
d5-NEtFOSAA	*100*		*25 - 150*
M2-6:2 FTS	*119*		*25 - 150*
M2-8:2 FTS	*109*		*25 - 150*

QC Association Summary

Client: GEI Consultants, Inc.
Project/Site: PFAS NYSDEC-Rosen Cortland

Job ID: 480-156767-1

GC/MS Semi VOA

Prep Batch: 483998

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-156767-1	DUP 072319	Total/NA	Water	3510C	
480-156767-2	MW10	Total/NA	Water	3510C	
480-156767-3	MW06	Total/NA	Water	3510C	
480-156767-4	MW04	Total/NA	Water	3510C	
480-156767-5	EQUIPMENT BLANK	Total/NA	Water	3510C	
MB 480-483998/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-483998/2-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 484428

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-156767-1	DUP 072319	Total/NA	Water	8270D SIM ID	483998
480-156767-2	MW10	Total/NA	Water	8270D SIM ID	483998
480-156767-3	MW06	Total/NA	Water	8270D SIM ID	483998
480-156767-4	MW04	Total/NA	Water	8270D SIM ID	483998
480-156767-5	EQUIPMENT BLANK	Total/NA	Water	8270D SIM ID	483998
MB 480-483998/1-A	Method Blank	Total/NA	Water	8270D SIM ID	483998
LCS 480-483998/2-A	Lab Control Sample	Total/NA	Water	8270D SIM ID	483998

LCMS

Prep Batch: 311129

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-156767-1	DUP 072319	Total/NA	Water	3535	
480-156767-2	MW10	Total/NA	Water	3535	
480-156767-3	MW06	Total/NA	Water	3535	
480-156767-4	MW04	Total/NA	Water	3535	
480-156767-5	EQUIPMENT BLANK	Total/NA	Water	3535	
MB 320-311129/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-311129/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 311389

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-156767-1	DUP 072319	Total/NA	Water	537 (modified)	311129
480-156767-2	MW10	Total/NA	Water	537 (modified)	311129
480-156767-3	MW06	Total/NA	Water	537 (modified)	311129
480-156767-4	MW04	Total/NA	Water	537 (modified)	311129
480-156767-5	EQUIPMENT BLANK	Total/NA	Water	537 (modified)	311129
MB 320-311129/1-A	Method Blank	Total/NA	Water	537 (modified)	311129
LCS 320-311129/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	311129

Lab Chronicle

Client: GEI Consultants, Inc.
Project/Site: PFAS NYSDEC-Rosen Cortland

Job ID: 480-156767-1

Client Sample ID: DUP 072319
Date Collected: 07/23/19 08:00
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			483998	07/26/19 15:35	AAP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	484428	07/30/19 17:00	RJS	TAL BUF
Total/NA	Prep	3535			311129	07/30/19 05:25	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311389	07/31/19 06:13	D1R	TAL SAC

Client Sample ID: MW10
Date Collected: 07/23/19 10:20
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			483998	07/26/19 15:35	AAP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	484428	07/30/19 17:23	RJS	TAL BUF
Total/NA	Prep	3535			311129	07/30/19 05:25	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311389	07/31/19 06:21	D1R	TAL SAC

Client Sample ID: MW06
Date Collected: 07/23/19 11:47
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			483998	07/26/19 15:35	AAP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	484428	07/30/19 17:47	RJS	TAL BUF
Total/NA	Prep	3535			311129	07/30/19 05:25	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311389	07/31/19 06:29	D1R	TAL SAC

Client Sample ID: MW04
Date Collected: 07/23/19 15:10
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			483998	07/26/19 15:35	AAP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	484428	07/30/19 18:10	RJS	TAL BUF
Total/NA	Prep	3535			311129	07/30/19 05:25	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311389	07/31/19 06:54	D1R	TAL SAC

Client Sample ID: EQUIPMENT BLANK
Date Collected: 07/23/19 12:55
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			483998	07/26/19 15:35	AAP	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	484428	07/30/19 18:34	RJS	TAL BUF
Total/NA	Prep	3535			311129	07/30/19 05:25	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1	311389	07/31/19 07:02	D1R	TAL SAC

Lab Chronicle

Client: GEI Consultants, Inc.
Project/Site: PFAS NYSDEC-Rosen Cortland

Job ID: 480-156767-1

Laboratory References:

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

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

Accreditation/Certification Summary

Client: GEI Consultants, Inc.
Job ID: 480-156767-1
Project/Site: PFAS NYSDEC-Rosen Cortland

Laboratory: Eurofins TestAmerica, Buffalo

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	03-31-20

Laboratory: Eurofins TestAmerica, Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	11666	04-01-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	3535	Water	6:2 FTS
537 (modified)	3535	Water	8:2 FTS
537 (modified)	3535	Water	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	3535	Water	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	3535	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	3535	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	3535	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	3535	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	3535	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	3535	Water	Perfluoroheptanesulfonic Acid (PFHpS)
537 (modified)	3535	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	3535	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	3535	Water	Perfluorononanoic acid (PFNA)
537 (modified)	3535	Water	Perfluorooctanesulfonamide (FOSA)
537 (modified)	3535	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	3535	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	3535	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	3535	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	3535	Water	Perfluorotridecanoic acid (PFTriA)
537 (modified)	3535	Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

Client: GEI Consultants, Inc.
Project/Site: PFAS NYSDEC-Rosen Cortland

Job ID: 480-156767-1

Method	Method Description	Protocol	Laboratory
8270D SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	TAL BUF
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
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 BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

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

Sample Summary

Client: GEI Consultants, Inc.
Project/Site: PFAS NYSDEC-Rosen Cortland

Job ID: 480-156767-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-156767-1	DUP 072319	Water	07/23/19 08:00	07/24/19 09:15	
480-156767-2	MW10	Water	07/23/19 10:20	07/24/19 09:15	
480-156767-3	MW06	Water	07/23/19 11:47	07/24/19 09:15	
480-156767-4	MW04	Water	07/23/19 15:10	07/24/19 09:15	
480-156767-5	EQUIPMENT BLANK	Water	07/23/19 12:55	07/24/19 09:15	

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: M Sharif	Lab PM: Fischer, Brian J	Carrier Tracking No(s):	COC No: 480-133235-30001.1
Client Contact: Jeffrey Holden	Phone: 607 2168955	E-Mail: brian.fischer@testamericainc.com		Page: Page 1 of 1
Company: GEI Consultants, Inc.				Job #:
Address: 1301 Trumansburg Road Suite N	Due Date Requested:			
City: Ithaca	TAT Requested (days): normal			
State, Zip: NY, 14850				
Phone:	PO #: Purchase Order not required			
Email: JHolden@geiconsultants.com	WO #:			
Project Name: PFAS NYSDEC-Rosen (Cortland)	Project #: 48020534			
Site: Rosen Site Cortland	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, M - Hexane, N - None, O - AsNaO2

480-156767 Chain of Custody

ihydrate

fy)

Other: ice

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 - PFAS, Standard List (21 Analytes)	8270D_SIM_MS_ID - (MOD) SIM List	Total Number of cont	Special Instructions/Note:
			Preservation Code:				N	N		
DUP022319	7/23/19	800	G	Water			✓	✓		
MW10	7/23/19	1020	G	Water			✓	✓		
MW06	7/23/19	1147	G	Water			✓	✓		
MW04	7/23/19	1510	G	Water			✓	✓		
Equipment Blank	7/23/19	1255	G	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:	Company	Received by:	Date/Time:	Company
May Sharif	7/23/19 1648		Courier/Client	07/24/19 0915	IT
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 4.6 5.0 3.3 # ICE

Ver: 01/16/2019

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Fischer, Brian J	Carrier Tracking No(s):	COC No: 480-50854.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: brian.fischer@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York		Job #: 480-156767-1
Address: 880 Riverside Parkway,	Due Date Requested: 8/15/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: PFAS NYSDEC-Rosen Cortland	Project #: 48020534			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA/3535_PFC PFAS, Standard List (21 Analytes)	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
DUP 072319 (480-156767-1)	7/23/19	08:00 Eastern		Water			X	2	
MW10 (480-156767-2)	7/23/19	10:20 Eastern		Water			X	2	
MW06 (480-156767-3)	7/23/19	11:47 Eastern		Water			X	2	
MW04 (480-156767-4)	7/23/19	15:10 Eastern		Water			X	2	
EQUIPMENT BLANK (480-156767-5)	7/23/19	12:55 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: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by	Date:	Time	Method of Shipment

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	7-24-19 1500			7/27/19 910	
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.: 8024488	Cooler Temperature(s) °C and Other Remarks: 1.3

Ver: 01/16/2019

9/9/2019

eurofins | Environment Testing TestAmerica

Sacramento
Sample Receiving Notes

480-156767 Field Sheet

Job: _____

Tracking # : 4276 0720 3323

SO / PO / FO / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes: _____

Therm. ID: ABLO Corr. Factor: —

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: 807488

Sample Custody Seal: —

Cooler ID: —

Temp Observed: 1.3 Corrected: 1.3

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: CT Date: 7/27/19

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

WMJ

Login Sample Receipt Checklist

Client: GEI Consultants, Inc.

Job Number: 480-156767-1

Login Number: 156767
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
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?	True	
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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: GEI Consultants, Inc.

Job Number: 480-156767-1

Login Number: 156767
List Number: 2
Creator: Thompson, Sarah W

List Source: Eurofins TestAmerica, Sacramento
List Creation: 07/27/19 01:48 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	807488
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
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	

Attachment B

DUSR and Corrected Form Is

Site: Rosen, Cortland
Laboratory: Test America, Amherst, NY and West Sacramento, CA
Report No.: 480-156767
Reviewer: Lorie MacKinnon/GEI Consultants
Date: September 6, 2019

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
DUP 072319	480-156767-01	PFAS, 1,4-Dioxane
MW10	480-156767-02	PFAS, 1,4-Dioxane
MW06	480-156767-03	PFAS, 1,4-Dioxane
MW04	480-156767-04	PFAS, 1,4-Dioxane
EQUIPMENT BLANK	480-156767-05	PFAS, 1,4-Dioxane

Associated QC Samples:
Equipment Blank: EQUIPMENT BLANK
Field Duplicate pair: MW06/DUP 072319

The above-listed aqueous samples and equipment blank sample were collected on July 23, 2019 and were analyzed for per- and polyfluoroalkyl substances (PFAS) by modified Method 537 and 1,4-dioxane by SW-846 method 8270D selective ion monitoring (SIM) Isotope dilution. The data validation was performed based on the USEPA Region 2 SOP HW-35 (Revision 2) *Semivolatile Data Validation* (March 2013) and USEPA Data Review and Validation Guidelines for Perfluoroalkyl Substances analyzed using EPA Method 537 (November 2018), modified for the methods referenced and professional and technical judgment.

The data were evaluated based on the following parameters:

- Data Completeness
- Holding Times and Sample Preservation
- Initial and Continuing Calibrations
- Blanks
- Isotope Dilution Analyte (IDA) Recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
- Laboratory Control Sample (LCS)/LCS Duplicate (LCSD) Results
- Internal Standards
- Field Duplicate Results
- Quantitation Limits
- Sample Quantitation and Compound Identification

In general, the data appear usable as reported or usable with minor qualification due to sample matrix or laboratory quality control outliers. All results were considered valid; even though some were qualified as discussed below.

The validation findings were based on the following information.

Data Completeness

The data package was found to be complete as received by the laboratory.

Holding Times and Sample Preservation

All criteria were met.

Initial and Continuing Calibrations

All initial and continuing calibration criteria were met.

Blanks

Analytes were not detected in the associated laboratory method blanks and equipment blank sample, except where noted below. The following table summarizes the contamination and required validation actions. Evaluation of the laboratory blank contamination was done prior to field blank review.

Analyte	Blank ID/ Associated Samples	Concentration	10X Action Level	Validation Actions
Perfluorohexanesulfonic acid (PFHxS)	MB 320-311129: DUP 072319, MW10, MW06, MW04, EQUIPMENT BLANK	0.283 ng/L	2.83 ng/L	Qualify the results for PFHxS in samples DUP 072319, MW10, MW06, MW04, and EQUIPMENT BLANK as nondetect (U) at the RL.

Blank Actions:
If the sample result is < RL (<2xRL for common contaminants); report the result as nondetect (U) at the reporting limit (RL) or reported value.
If the sample result is ≥ RL and <blank contamination detected; report the result as nondetect (U) at the reported value.
If the sample result is ≥ RL and < 10x Action Level; professional judgment was taken to report the sample result as estimated (J); biased high.
If the sample result is nondetect or ≥ 10x Action Level; validation action is not required.

Isotope Dilution Analyte (IDA) Recoveries

All criteria were met.

MS/MSD Results

Project MS/MSD analyses were not associated with this sample set. Validation action was not taken on this basis.

LCS/LCSD Results

All criteria were met.

Internal Standards

All criteria were met.

Field Duplicate Results

Samples MW06 and DUP 072319 were submitted as the field duplicate pair with this sample group. The following table summarizes the RPDs of the detected analytes, which were within the acceptance criteria.

Analyte	MW06 (ng/L)	DUP 072319 (ng/L)	RPD (%)
Perfluorobutanoic acid (PFBA)	1.5 J	1.4 J	6.9
Perfluoropentanoic acid (PFPeA)	1.8 U	0.48 J	NC, Within the RL
Perfluoroheptanoic acid (PFHpA)	0.49 J	0.35 J	33.3, Within the RL
Perfluorooctanoic acid (PFOA)	2.0	1.7 J	16.2
Perfluorobutanesulfonic acid (PFBS)	0.38 J	0.32 J	17.1
Perfluorooctanesulfonic acid (PFOS)	0.86 J	0.77 J	11.0
6:2 FTS	3.6 J	3.2 J	11.8
NC – Not calculable Criteria: When both results are ≥5x the RL, RPDs must be <30%. For results < 5x the QL, professional judgment was used to estimate results if the difference between the original and field duplicate > RL			

Quantitation Limits

Results were reported which were below the reporting limit (RL) and above the method detection limit (MDL). These results were qualified as estimated (J) by the laboratory.

Sample Quantitation and Compound Identification

Compound identification criteria were met. Calculations were spot-checked; no discrepancies were noted.

DATA VALIDATION QUALIFIERS

U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.

J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified "J" data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The 'J' data may be biased high or low or the direction of the bias may be indeterminable.

UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified "UJ" data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The 'UJ' data may be biased low.

JN - The analysis indicates the presence of a compound that has been "tentatively identified" (N) and the associated numerical value represents its approximate (J) concentration.

R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

Client Sample Results

Client: GEI Consultants, Inc.
Project/Site: PFAS NYSDEC-Rosen Cortland

Job ID: 480-156767-1

Client Sample ID: DUP 072319
Date Collected: 07/23/19 08:00
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-1
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 17:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*24*		*15 - 110*	*07/26/19 15:35*	*07/30/19 17:00*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.4**	J	1.8	0.31	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluoropentanoic acid (PFPeA)	**0.48**	J	1.8	0.44	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluoroheptanoic acid (PFHpA)	**0.35**	J	1.8	0.22	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorooctanoic acid (PFOA)	**1.7**	J	1.8	0.76	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.49	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorobutanesulfonic acid (PFBS)	**0.32**	J	1.8	0.18	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorohexanesulfonic acid (PFHxS)	~~0.41~~ ~~J B~~ 180		1.8	0.15	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorooctanesulfonic acid (PFOS)	**0.77**	J	1.8	0.49	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		07/30/19 05:25	07/31/19 06:13	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.31	ng/L		07/30/19 05:25	07/31/19 06:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/30/19 05:25	07/31/19 06:13	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/30/19 05:25	07/31/19 06:13	1
6:2 FTS	**3.2**	J	18	1.8	ng/L		07/30/19 05:25	07/31/19 06:13	1
8:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*83*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C5 PFPeA	*93*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C2 PFHxA	*97*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C4 PFHpA	*105*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C4 PFOA	*103*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C5 PFNA	*101*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C2 PFDA	*102*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C2 PFUnA	*100*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C2 PFDoA	*100*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C2 PFTeDA	*108*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C3 PFBS	*105*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
18O2 PFHxS	*102*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C4 PFOS	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
13C8 FOSA	*83*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
d3-NMeFOSAA	*110*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
d5-NEtFOSAA	*106*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*
M2-6:2 FTS	*121*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:13*	*1*

Client Sample ID: DUP 072319

Date Collected: 07/23/19 08:00
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2 FTS	122		25 - 150	07/30/19 05:25	07/31/19 06:13	1

Client Sample ID: MW10

Date Collected: 07/23/19 10:20
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-2
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 17:23	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	29		15 - 110	07/26/19 15:35	07/30/19 17:23	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.44	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorooctanoic acid (PFOA)	**0.81**	J	1.8	0.77	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorobutanesulfonic acid (PFBS)	**0.19**	J	1.8	0.18	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorohexanesulfonic acid (PFHxS)	~~0.46~~ ~~J B~~ 1.8U		1.8	0.15	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorooctanesulfonic acid (PFOS)	**3.2**		1.8	0.49	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		07/30/19 05:25	07/31/19 06:21	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/30/19 05:25	07/31/19 06:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/30/19 05:25	07/31/19 06:21	1
6:2 FTS	**23**		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:21	1
8:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	77		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C5 PFPeA	86		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C2 PFHxA	88		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C4 PFHpA	99		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C4 PFOA	98		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C5 PFNA	106		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C2 PFDA	101		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C2 PFUnA	99		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C2 PFDoA	98		25 - 150	07/30/19 05:25	07/31/19 06:21	1

Client Sample ID: MW10

Date Collected: 07/23/19 10:20
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-2
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFTeDA	103		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C3 PFBS	99		25 - 150	07/30/19 05:25	07/31/19 06:21	1
18O2 PFHxS	98		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C4 PFOS	98		25 - 150	07/30/19 05:25	07/31/19 06:21	1
13C8 FOSA	81		25 - 150	07/30/19 05:25	07/31/19 06:21	1
d3-NMeFOSAA	114		25 - 150	07/30/19 05:25	07/31/19 06:21	1
d5-NEtFOSAA	118		25 - 150	07/30/19 05:25	07/31/19 06:21	1
M2-6:2 FTS	149		25 - 150	07/30/19 05:25	07/31/19 06:21	1
M2-8:2 FTS	146		25 - 150	07/30/19 05:25	07/31/19 06:21	1

Client Sample ID: MW06

Date Collected: 07/23/19 11:47
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-3
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 17:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	29		15 - 110	07/26/19 15:35	07/30/19 17:47	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.5**	J	1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.45	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluoroheptanoic acid (PFHpA)	**0.49**	J	1.8	0.23	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorooctanoic acid (PFOA)	**2.0**		1.8	0.78	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.27	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorobutanesulfonic acid (PFBS)	**0.38**	J	1.8	0.18	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorohexanesulfonic acid (PFHxS)	~~0.34~~ ~~J B~~ 1.8U		1.8	0.16	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorooctanesulfonic acid (PFOS)	**0.86**	J	1.8	0.50	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		07/30/19 05:25	07/31/19 06:29	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/30/19 05:25	07/31/19 06:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/30/19 05:25	07/31/19 06:29	1
6:2 FTS	**3.6**	J	18	1.8	ng/L		07/30/19 05:25	07/31/19 06:29	1
8:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:29	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	82		25 - 150	07/30/19 05:25	07/31/19 06:29	1

Client Sample ID: MW06

Date Collected: 07/23/19 11:47
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-3
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	93		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C2 PFHxA	92		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C4 PFHpA	99		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C4 PFOA	100		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C5 PFNA	99		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C2 PFDA	104		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C2 PFUnA	97		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C2 PFDoA	100		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C2 PFTeDA	102		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C3 PFBS	98		25 - 150	07/30/19 05:25	07/31/19 06:29	1
18O2 PFHxS	99		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C4 PFOS	96		25 - 150	07/30/19 05:25	07/31/19 06:29	1
13C8 FOSA	83		25 - 150	07/30/19 05:25	07/31/19 06:29	1
d3-NMeFOSAA	107		25 - 150	07/30/19 05:25	07/31/19 06:29	1
d5-NEtFOSAA	104		25 - 150	07/30/19 05:25	07/31/19 06:29	1
M2-6:2 FTS	118		25 - 150	07/30/19 05:25	07/31/19 06:29	1
M2-8:2 FTS	111		25 - 150	07/30/19 05:25	07/31/19 06:29	1

Client Sample ID: MW04

Date Collected: 07/23/19 15:10
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-4
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 18:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	56		15 - 110	07/26/19 15:35	07/30/19 18:10	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.54**	J	1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.45	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.53	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluoroheptanoic acid (PFHpA)	**0.30**	J	1.8	0.23	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorooctanoic acid (PFOA)	**1.1**	J	1.8	0.78	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.25	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.27	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorobutanesulfonic acid (PFBS)	**0.42**	J	1.8	0.18	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorohexanesulfonic acid (PFHxS)	~~0.39~~ ~~J B~~	1.8U	1.8	0.16	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorooctanesulfonic acid (PFOS)	**0.62**	J	1.8	0.49	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		07/30/19 05:25	07/31/19 06:54	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 06:54	1

Client Sample ID: MW04

Date Collected: 07/23/19 15:10
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/30/19 05:25	07/31/19 06:54	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/30/19 05:25	07/31/19 06:54	1
6:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:54	1
8:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 06:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*86*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C5 PFPeA	*94*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C2 PFHxA	*94*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C4 PFHpA	*95*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C4 PFOA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C5 PFNA	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C2 PFDA	*96*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C2 PFUnA	*97*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C2 PFDoA	*91*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C2 PFTeDA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C3 PFBS	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
18O2 PFHxS	*94*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C4 PFOS	*93*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
13C8 FOSA	*83*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
d3-NMeFOSAA	*96*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
d5-NEtFOSAA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
M2-6:2 FTS	*113*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*
M2-8:2 FTS	*112*		*25 - 150*	*07/30/19 05:25*	*07/31/19 06:54*	*1*

Client Sample ID: EQUIPMENT BLANK

Date Collected: 07/23/19 12:55
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-5
Matrix: Water

Method: 8270D SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		07/26/19 15:35	07/30/19 18:34	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*28*		*15 - 110*	*07/26/19 15:35*	*07/30/19 18:34*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluoropentanoic acid (PFPeA)	ND		1.8	0.44	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorohexanoic acid (PFHxA)	ND		1.8	0.52	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.23	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorooctanoic acid (PFOA)	ND		1.8	0.77	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.24	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.28	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.99	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.50	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorotridecanoic acid (PFTriA)	ND		1.8	1.2	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.26	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18	ng/L		07/30/19 05:25	07/31/19 07:02	1

Client Sample ID: EQUIPMENT BLANK
Date Collected: 07/23/19 12:55
Date Received: 07/24/19 09:15

Lab Sample ID: 480-156767-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	~~0.27~~	JB 1.80	1.8	0.15	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.49	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29	ng/L		07/30/19 05:25	07/31/19 07:02	1
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.32	ng/L		07/30/19 05:25	07/31/19 07:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		18	2.8	ng/L		07/30/19 05:25	07/31/19 07:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7	ng/L		07/30/19 05:25	07/31/19 07:02	1
6:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 07:02	1
8:2 FTS	ND		18	1.8	ng/L		07/30/19 05:25	07/31/19 07:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*90*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C5 PFPeA	*93*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C2 PFHxA	*94*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C4 PFHpA	*97*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C4 PFOA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C5 PFNA	*100*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C2 PFDA	*102*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C2 PFUnA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C2 PFDoA	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C2 PFTeDA	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C3 PFBS	*99*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
18O2 PFHxS	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C4 PFOS	*91*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
13C8 FOSA	*84*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
d5-NEtFOSAA	*100*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
M2-6:2 FTS	*118*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*
M2-8:2 FTS	*120*		*25 - 150*	*07/30/19 05:25*	*07/31/19 07:02*	*1*

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: M Sharif	Lab PM: Fischer, Brian J	Carrier Tracking No(s):	COC No: 480-133235-30001.1
Client Contact: Jeffrey Holden	Phone: 607 2168955	E-Mail: brian.fischer@testamericainc.com		Page: Page 1 of 1
Company: GEI Consultants, Inc.				Job #:
Address: 1301 Trumansburg Road Suite N	Due Date Requested:	Analysis Requested		Preservation Codes: A - HCL, B - NaOH, M - Hexane, N - None, O - AsNaO2
City: Ithaca	TAT Requested (days): normal			
State, Zip: NY, 14850	PO #: Purchase Order not required			
Phone:	WO #:			
Email: JHolden@geiconsultants.com	Project #: 48020534			
Project Name: PFAS NYSDEC-Rosen (Cortland)	SSOW#:			
Site: Rosen Site Cortland				Other: ice

480-156767 Chain of Custody

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 - PFAS, Standard List (21 Analytes)	8270D_SIM_MS_ID - (MOD) SIM List	Total Number of cont	Special Instructions/Note:
			Preservation Code:				N	N		
DUP022319	7/23/19	800	G	Water			✓	✓		
MW10	7/23/19	1020	G	Water			✓	✓		
MW06	7/23/19	1147	G	Water			✓	✓		
MW04	7/23/19	1510	G	Water			✓	✓		
Equipment Blank	7/23/19	1255	G	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	Company	Received by	Date/Time	Company
May Sharif	7/23/19 1648		Courier	07/24/19 0815	TAL
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 4.6 5.0 3.3 # ICE

Ver: 01/16/2019

08/19/2019