Consolidated Edison Company
of New York, Inc.
31-01 20th Avenue
Long Island City, NY 11105-2048
www.conEd.com

July 16, 2020

Mr. Matthew S. Hubicki
Project Manager
New York State Department of Environmental Conservation
Section B - Remedial Bureau C
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7017

Re: Consolidated Edison Company of New York, Inc.
Former Ossining Works Site – Site # 360172

Dear Mr. Hubicki:

This letter summarizes the work performed and findings of the June 2019 per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane groundwater sampling conducted for the former Ossining Works Manufactured Gas Plant (MGP) site located in the Village of Ossining, Westchester County, New York. The groundwater sampling activities were conducted in response to the New York State Department of Environmental Conservation's (NYSDEC's) request in a May 30, 2018 letter to Consolidated Edison Company of New York, Inc. (Con Edison). The PFAS and 1,4-dioxane sampling was implemented by Arcadis of New York, Inc. (Arcadis) in accordance with the following:

- The July 26, 2018 *Emerging Contaminant Groundwater Sampling Work Plan Con Edison and O&R MGP Sites* prepared by GEI Consultants, Inc. (GEI), as modified by the comments provided to the NYSDEC on August 14, 2018.

- The NYSDEC's June 29, 2016 *Collection of Groundwater Samples for Perfluorooctanoic Acid and Perfluorinated Compounds from Monitoring Wells Sample Protocol.*

- The NYSDEC's February 2018 *Groundwater Sampling for Emerging Contaminants*.

As summarized herein, low-level concentrations of PFAS compounds were detected in each of the three wells that were sampled. 1,4-dioxane was not detected above the reporting limit in any of the wells that were sampled. Based on the low-level concentrations of emerging contaminants detected in the monitoring wells, no further action for evaluating or addressing emerging contaminants is proposed.

Relevant background information is presented below, followed by a summary of the groundwater sampling activities and the analytical results.

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Site Background

OU-1 of the Ossining Works Former MGP site is located in the Village of Ossining, Westchester County, New York (Figure 1). As shown on Figure 2, the site consists of three adjacent operable units (OU-1 through OU-3).

OU-1 consists of two parcels. The largest parcel consists of an irregularly-shaped, approximately 3.45-acre area bordered by Central Avenue to the north, Main Street to the south, and North Water Street to the west. The second parcel consists of a 0.5-acre Con Edison-owned electrical substation located north of Central Avenue near the intersection with North Water Street. The total combined area of OU-1 is approximately 3.95 acres. OU-1 includes the former MGP operations area as shown by the historical MGP-related structures depicted on Figure 3. The larger OU-1 parcel (south of Central Avenue) is currently occupied by the Ossining Department of Public Works (ODPW). Buildings and structures south of Kill Brook have been or will be demolished to grade. Two adjacent ODPW storage buildings are located within an asphalt-paved and fenced area north of Kill Brook and south of Central Avenue. OU-1 is mostly surrounded by fence and paved, except the area east of the former MGP operation which is wooded. This area is mostly enclosed by steep-nearly vertical bedrock walls.

OU-2 is located hydraulically downgradient to the west of OU-1 and consists of an approximately 6-acre area. OU-2 is bordered by Quimby Street to the north, Secor Road and South Water Street to the south, North Water Street to the east, and Westerly Road to the west, as shown on Figure 2. The western portion of OU-2 is currently used as an asphalt-paved commuter parking lot for the Metropolitan Transit Authority (MTA). The western portion of OU-2 also includes several commercial and residential properties. The tracks and right-of-way for the Metro-North Railroad extend along the western portion of OU-2. The Ossining Metro-North Rail Station and passenger platforms are located along Secor Road in the southwest portion of OU-2. No historical MGP operations were conducted at OU-2 and identified MGP-related impacts are associated with off-site migration from OU-1.

OU-3 consists of an approximately 4.5-acre parcel located west and downgradient of OU-2 that is bordered by Kill Brook to the north, a wood pier/walkway to the south, Westerly Road to the east and the Hudson River to the west. The Harbor Square Condominium, a restaurant, and an associated parking lot have been recently constructed in OU-3. Investigation and remediation activities associated with OU-3 are covered under a separate voluntary agreement with NYSDEC (BCP Site No. C360091) and have mostly been performed by the current owner. The Harbor Square Property owner has constructed a slurry wall to contain and manage MGP impacts in OU-3.

Adjacent properties to the site are primarily utilized for commercial, manufacturing, and residential purposes. Properties to the north of OU-1, across Central Avenue include commercial and manufacturing buildings. Properties to the south of OU-1 and OU-2 include commercial businesses and residential parcels.

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Groundwater Sampling and Analysis

Groundwater samples for analysis of PFAS and 1,4 dioxane were collected on June 17, 2019 from monitoring wells MW-06, MW-9, and MW-13 (shown on Figure 2). Groundwater sampling was performed by Arcadis personnel using the appropriate sampling protocols for emerging contaminants as outlined in the NYSDEC-approved Work Plan.

Groundwater purging and sampling was performed using the low-flow techniques presented in the Work Plan. Purging and sampling was performed at a rate of approximately 100 to 200 milliliters per minute using a peristaltic pump and high-density polyethylene (HDPE) tubing (separate tubing for each well). Field parameters measured during purging and immediately prior to sampling are presented on the groundwater sampling logs included in Attachment A.

Groundwater samples were analyzed from each well in accordance with the analytical protocols from the *Groundwater Sampling for Emerging Contaminants* guidance (NYSDEC 2018) included with the NYSDEC's May 30, 2018 letter. Groundwater samples were submitted to Eurofins/ TestAmerica Laboratories of Buffalo and analyzed for the 21 PFASs listed in the Work Plan using United States Environmental Protection Agency (EPA) Method 537, modified for groundwater. Groundwater samples were also analyzed for 1,4-dioxane by EPA Method 8270 using simulated ion monitoring (SIM) mode low level detection methods to achieve a reporting limit of approximately 200 ng/L. One set of quality assurance/quality control samples, consisting of a field duplicate, field blank, matrix spike, and matrix spike duplicate sample, was also collected and analyzed for PFAS and 1,4-dioxane.

Monitoring well purge water, personal protective equipment, and sampling supplies (tubing, gloves, etc.) generated by groundwater sampling activities were consolidated in 55-gallon closed-top drums with investigation derived waste (IDW) generated by recent Supplemental Remedial Investigation activities for the former Ossining Works site. On June 26, 2019, the solid and liquid IDW materials were transported by licensed waste haulers for offsite disposal as non-hazardous waste at permitted disposal facility (Clean Earth of New Jersey).

Groundwater Sampling Results

Arcadis validated the PFAS and 1,4-dioxane groundwater analytical results. The Data Usability Summary Report (DUSR) and full NYSDEC Category B analytical deliverables are provided in Attachments B and C, respectively. Based on the data validation, all results were found the results to be useable in accordance with USEPA National Functional Guidelines for Data Review, with minor qualifications associated with detections of PFAS in the laboratory blank (For PFAS) and continuing calibration (for 1,4-dioxane). The lab blank for the PFAS analysis contained Perfluorooctanoic Acid (PFOA) at a concentration that was less than half of the reporting limit and concentrations of Perfluorooctane Sulfonamide (PFOSA) and Perfluorooctane Sulfonic Acid (PFOS) that were above the reporting limit for the samples. No data qualifiers were added due to

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the detection of PFOA in the lab blank. As discussed in the sample narrative included with the analytical laboratory deliverables, the presence of PFOS in the laboratory blank was associated with a known laboratory issue that Eurofins/TestAmerica was addressing at the time of the analysis. Reported results for PFOS and PFOSA in MW-06 and MW-09 were modified from "non-detect" (U) to "non-detect/method blank contamination" (UB) based on the data validation review as discussed in Section 2 of the DUSR.

The validated PFAS and 1,4-dioxane groundwater analytical results, which reflect data qualifications based on the validation results, are presented in Table 1. As indicated in Table 1, 1,4-dioxane was not detected in any of the samples. PFAS compounds were detected in each of the three wells and in the field blank. The PFAS analytical results are summarized by location below:

- ***MW-06*** – The second highest estimated total PFAS concentration of 85.5 nanograms per liter (ng/L) was detected in groundwater from this well. PFOS was not detected and PFOA was detected at concentrations of 23 ng/L in groundwater from this well.

- ***MW-9*** – An estimated total PFAS concentration of 16.3 ng/L was detected in groundwater from this well. PFOS was not detected and PFOA was detected at a concentration of 5.9 ng/L in groundwater from this well.

- ***MW-13*** – The highest estimated total PFAS concentration of 211 ng/L was detected in groundwater from this well. PFOS and PFOA were detected at concentrations of 34 ng/L and 66 ng/L in this well, respectively.

- ***Field Blank*** – PFOS and PFOSA were detected in the field blank (FB-061719) at estimated concentrations of 1.6 ng/L and 0.52 ng/L, respectively. The estimated concentrations of PFOS and PFOSA detected in the field blank are most likely associated with the lab blank issue noted above since the field blank concentrations are lower that the concentrations detected in the associated lab blank.

New York State does not currently have groundwater quality standards or guidance values for PFAS compounds. The United States Environmental Protection Agency (USEPA) has established a drinking water advisory level of 70 ng/l for combined PFOA and PFOS concentrations. The concentrations of PFOA and PFOS detected at monitoring well MW-13 exceed the USEPA drinking water advisory level; however, groundwater in the vicinity of MW-13 is not utilized as a source of drinking water.

The detected PFAS concentrations do not appear to be associated with the former MGP site:

- There are no known historic MGP site operations that have used or could have generated these contaminants.

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- The site is located within an area of light industrial/commercial businesses, with the presence of a wire manufacturing facility nearby that is a potential off-site source.
- There may be other off-site sources outside the immediate area of the site.
- Groundwater in the vicinity of the site flows toward the Hudson River. Shallow groundwater elevation contours (shown on Figure 2) indicate that groundwater along Kill Brook is influenced by surface water recharge. The Kill Brook flows from the east through the Village of Ossining through the site and to the Hudson River. Since both MW-6 and MW-13 are within close proximity to the Kill Brook, the brook may be carrying PFAS compounds into these wells from potential sources east of the site.
- Higher PFAS concentrations were detected hydraulically downgradient of the former MGP operations area (OU-1).
- PFAS compounds were initially invented in the 1930s and were not used in manufacturing until the 1940s. MGP operations at the former Ossining Works site ceased in 1930, prior to the invention and manufacturing use of PFAS compounds.

In accordance with the May 30, 2018 request, Con Edison has fulfilled its obligation to investigate emerging contaminants for the former Ossining Works site.

Please do not hesitate to contact me if you have any questions or require additional information.

Very truly yours

Yelena Skorobogatov
Technical Specialist
EH&S, MGP Remediation
Con Edison

cc: Kenneth Kaiser, Con Edison
Anthony Perretta, NYSDOH
Dolores Touhy, Esq., NYSDEC
Michael Jones, Arcadis

Enc. Tables

1 Emerging Contaminant Results (ng/L)

Figures

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1 Site Location Map
2 Monitoring Well Sampled for Emerging Contaminants

Attachments

A Groundwater Sampling Logs
B Data Validation Report
C Laboratory Analytical Reports (CD)

TABLES

Table 1
Emerging Contaminant Results (ng/L)

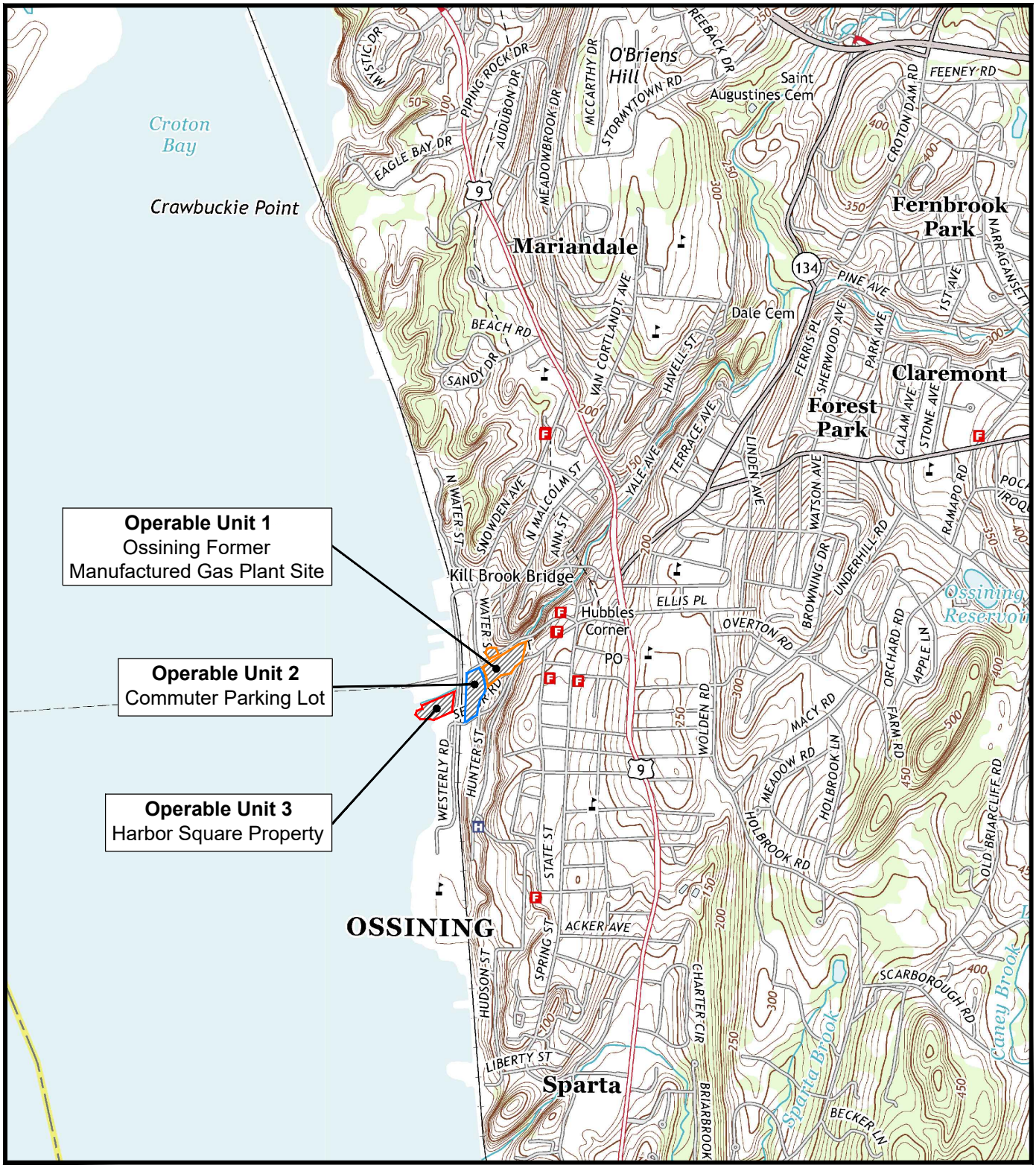
Consolidated Edison Company of New York, Inc
Former Ossining Works Site – Site # 360172
Emerging Contaminant Groundwater Sampling

Location ID: / Date Collected:	CAS Number	MW-9 06/17/19	MW-06 06/17/19	MW-13 06/17/19	FB-061719 6/17/2019
Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)					
1,4-Dioxane (p-Dioxane)	123-91-1	<400	<200	<200	<200
Perfluoroalkyl Substances					
1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2 FTS)	39108-34-4	<16	<79 [<79]	<78	<17
1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2 FTS)	27619-97-2	<16 UJ	<79 [<79]	<78	<17
2-(N-Methyl Perfluorooctanesulfonamido) Acetic Acid (NMeFOSAA)	2355-31-9	<16	<79 [<79]	<78	<17
N-ethyl Perfluorooctane Sulfonamidoacetic Acid (NEtFOSAA)	2991-50-6	<16	<79 [<79]	<78	<17
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	**1.1 J**	**4.0 J [3.7 J]**	**22**	<1.7
Perfluorobutanoic Acid (PFBA)	375-22-4	**2.0 J**	**8.7 J [8.1 J]**	**10 J**	<1.7 UJ
Perfluorodecanesulfonic Acid (PFDS)	335-77-3	<1.6	<7.9 [<7.9]	<7.8	<1.7
Perfluorodecanoic Acid (PFDA)	335-76-2	<1.6	<7.9 [<7.9]	<7.8	<1.7
Perfluorododecanoic Acid (PFDoA)	307-55-1	<1.6	<7.9 [<7.9]	<7.8	<1.7
Perfluoroheptane Sulfonate (PFHpS)	375-92-8	<1.6	<7.9 [<7.9]	<7.8	<1.7
Perfluoroheptanoic Acid (PFHpA)	375-85-9	**1.2 J**	**8.4 [6.1 J]**	**16**	<1.7
Perfluorohexanesulfonic Acid (PFHxS)	355-46-4	**1.2 J**	**6.7 J [3.5 J]**	**13**	<1.7
Perfluorohexanoic Acid (PFHxA)	307-24-4	**2.1**	**12 [12]**	**25**	<1.7
Perfluorononanoic Acid (PFNA)	375-95-1	**0.61 J**	**1.7 J [1.2 J]**	<7.8	<1.7
Perfluorooctane Sulfonamide (PFOSA)	754-91-6	<1.6 UB	<7.9 UB [<7.9]	<7.8	**1.6 JB**
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	<3.2 UB	<9.2 UB [<12 UB]	**34**	**0.52 JB**
Perfluorooctanoic Acid (PFOA)	335-67-1	**5.9**	**23 [21]**	**66**	<1.7
Perfluoropentanoic Acid (PFPeA)	2706-90-3	**2.2**	**21 [29]**	**25**	<1.7
Perfluorotetradecanoic Acid (PFTeA)	376-06-7	<1.6	<7.9 [<7.9}	<7.8	<1.7
Perfluorotridecanoic Acid (PFTriA)	72629-94-8	<1.6	<7.9 [<7.9]	<7.8	<1.7
Perfluoroundecanoic Acid (PFUnA)	2058-94-8	<1.6	<7.9 [<7.9]	<7.8	<1.7
Sum of PFOA and PFOS	TPFOA/PFOS	**5.9**	**23 [21]**	**100**	**0.52 JB**
Total PFAS	TPFAs	**16.3 J**	**85.5 J [84.6 J]**	**211.0 J**	**2.12 JB**

Notes:

1. Samples were collected by Arcadis on the dates indicated.
2. Groundwater samples were analyzed by Eurofins TestAmerica, Buffalo for 1,4-dioxane in accordance with USEPA SW-846 Method 8270D simulated ion monitoring (SIM) mode.
3. Groundwater samples were analyzed by Eurofins TestAmerica, Buffalo for perfluoroalkyl substances (PFAS) in accordance with USEPA Method 537.
4. < = Constituent not detected at a concentration above the reported detection limit.
5. J = Indicates an estimated value.
6. B = Compounds found in laboratory blank and sample.
7. UJ = Constituent not detected at a concentration above the estimated detection limit.
8. UB = Compound is considered to be non-detect at the listed value due to associated blank contamination
9. Brackets indicate the reported concentration of a duplicate sample.
10. Concentrations reported in nanograms per liter (ng/L) or parts per trillion (ppt).

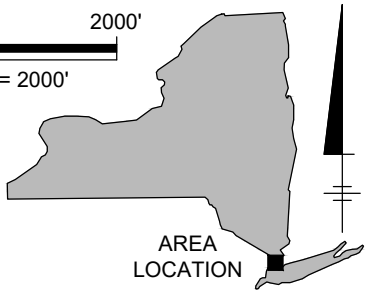
FIGURES



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., OSSINING, NY & HAVERSTRAW, NY, 2013.

2000' 0 2000'

Approximate Scale: 1" = 2000'



CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
FORMER OSSINING WORKS MANUFACTURED GAS PLANT SITE
OSSINING, NEW YORK
HARBOR SQUARE DNAPL RECOVERY

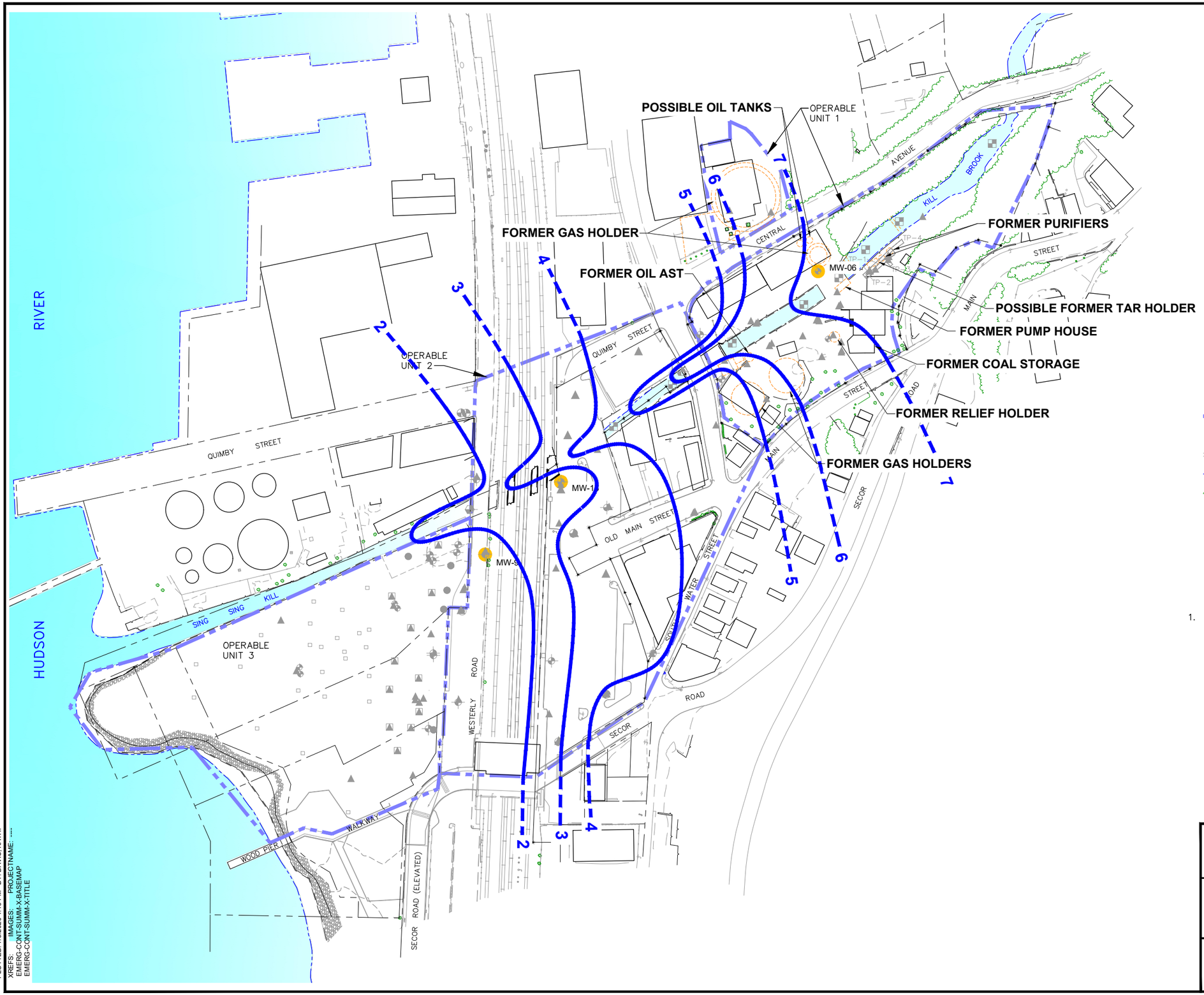
EMERGING CONTAMINANT SUMMARY LETTER

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

CITY: SYRACUSE, NY DIV/GROUP: EBC-IM/DV DB: L.POSENAUER LYR:(Opt)ON=*;OFF=*REF*
C:\Users\gsteinberg\BIM 360\Arcadis\ANA - CON EDISON\Project Files\Ossining DNAPL Recovery\2019\B0043024.0060.00020001-DWG\EMERG-CONT-SUMM-FIG01-SITE LOC MAP.dwg LAYOUT: 1 SAVED: 8/19/2019 2:44 PM ACADVER: 23.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE:
PLTFULL.CTB PLOTTED: 8/19/2019 2:50 PM BY: STEINBERGER, GEORGE
IMAGES:
NY_Haverstraw_20130315_TM_geo.tiff
NY_Ossining_20130319_TM_geo.tiff



LEGEND:

- MONITORING WELL
- SOIL BORING
- SOIL CORE
- VARIOUS BORINGS
- RECOVERY WELL
- SEDIMENT SAMPLE
- TP-3 TEST PIT
- STAFF GAUGE
- ABANDONED MONITORING WELL
- BORING BY OTHERS
- OPERABLE UNIT OUTLINE
- HISTORICAL MGP STRUCTURE
- RAILROAD
- WATER
- TREE
- SAMPLED WELLS (MW-06, MW-9, MW-13)
- 4 GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

NOTES:

1. BASE MAP IS A COMPOSITE OF DIGITAL MAPS RECEIVED FROM THE CLIENT AND CREATED BY CMX, MANALPAN, NJ. DATED 2009.

0 80' 160'
GRAPHIC SCALE

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
FORMER OSSINING WORKS MANUFACTURED GAS PLANT SITE
OSSINING, NEW YORK
EMERGING CONTAMINANT SUMMARY LETTER

EMERGING CONTAMINANT SAMPLING LOCATIONS AND SHALLOW GROUNDWATER CONTOURS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

ATTACHMENT A

Groundwater Sampling Logs

Con Ed Ossining

Site *Event*

GROUNDWATER SAMPLING LOG

Sampling Personnel: Josh Sinay + Rob Noonan **Well ID:** MW-13
Client / Job Number: **Date:** 6/17/19
Weather: **Time In:** 1415 **Time Out:** 1615

Well Information

Depth to Water:	5.30 (from MP)
Total Depth:	11.62 (from MP)
Length of Water Column:	6.32
Volume of Water in Well:	1.03
Three Well Volumes:	3.10

Well Type:		(Flushmount)	Stick-Up
Well Material:	Stainless Steel		(PVC)
Well Locked:		(Yes)	No
Measuring Point Marked:		(Yes)	No
Well Diameter:	1"	(2")	Other:

Purging Information

Purging Method:	Bailer	(Peristaltic)	Grundfos	Other:
Tubing/Bailer Material:	St. Steel	Polyethylene	Teflon	Other: HOPE
Sampling Method:	Bailer (VOCs)	(Peristaltic)	Grundfos	Other:
Duration of Pumping:	(min)			
Average Pumping Rate:	(ml/min)	Water-Quality Meter Type:	YSI	
Total Volume Removed:	(gal)	Did well go dry:	Yes	No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3875 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO	Cond.	ORP
± 0.1	± 10%	± 3.0%	± 10 mV

Time: / Parameter:	1 1500	2 1505	3 1520	4 1525	5 1530	6 1535	7 1540	8 1545	9 1550
Volume Purged (mL)	0.05	0.45	0.80	1.15	1.55	1.95	2.40	2.85	3.15
Rate (mL/min)									
Depth to Water (ft.)	5.41	5.49	5.55	5.61	5.60	5.63	5.63	5.65	5.64
pH	7.03	6.92	6.94	6.99	7.01	7.03	7.06	7.07	7.09
Temp. (C)	17.5	18.1	18.7	18.9	19.0	19.0	19.0	18.9	19.0
Conductivity (mS/cm)	2.46	2.48	2.50	2.49	2.45	2.28	2.02	1.92	1.81
Dissolved Oxygen	0.32	0.14	0.12	0.11	0.10	0.10	0.09	0.08	0.08
ORP (mV)	-140.0	-143.7	-133.5	-121.9	-113.5	-104.8	-97.7	-93.1	-89.4
Turbidity (NTU)	71.2	187	220	21.7	11.4	12.1	8.12	5.57	4.24
Notes:									

Sampling Information

Analyses	#	Laboratory
1,4 Dioxane		
PFAs		
Sample ID: MW-13	Sample Time: 1551	
MS/MSD: Yes	(No)	
Duplicate: Yes	(No)	
Duplicate ID	Dup. Time:	

Problems / Observations

PID = 0.0ppm

Needs new well lid + screws
"very bad shape"

Con Ed Ossining

Site *Event*

GROUNDWATER SAMPLING LOG

Sampling Personnel: Josh Sinay + Rob Noonan
Well ID: MW-06
Client / Job Number: Con Ed / Ossining
Date: 6/17/19
Weather: 60°F overcast
Time In: 1215 Time Out: 1402

Well Information

Depth to Water:	4.88 (from MP)
Total Depth:	14.73 (from MP)
Length of Water Column:	9.85
Volume of Water in Well:	1.61
Three Well Volumes:	4.82

Well Type:		Flushmount	Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:		Yes	No
Measuring Point Marked:		Yes	No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Grundfos	Other:
Tubing/Bailer Material:	St. Steel	Polyethylene	Teflon	Other: HDPE
Sampling Method:	Bailer (VOCs)	Peristaltic	Grundfos	Other:

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3875 ml = 0.1337 cubic feet				

Duration of Pumping: 45 (min)
Average Pumping Rate: (ml/min) Water-Quality Meter Type: YSI
Total Volume Removed: 3.10 (gal) Did well go dry: Yes No

Unit Stability			
pH	DO	Cond.	ORP
± 0.1	± 10%	± 3.0%	± 10 mV

Time: / Parameter:	1	2	3	4	5	6	7	8	9	
	1245	1250	1255	1300	1305	1310	1315	1320	1325	1330
Volume Purged (mL)	0.05	0.40	0.70	1.00	1.35	1.70	2.00	2.35	2.70	3.10
Rate (mL/min)	250	250								
Depth to Water (ft.)	5.00	5.01	5.02	5.01	5.01	5.01	5.01	5.01	5.01	5.01
pH	7.26	6.95	6.91	6.88	6.89	6.93	6.94	6.97	6.97	6.99
Temp. (C)	17.4	17.3	17.3	17.2	17.2	17.1	17.0	16.9	16.8	16.8
Conductivity (mS/cm)	0.58	0.58	0.58	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Dissolved Oxygen	0.57	0.30	0.18	0.15	0.14	0.11	0.10	0.11	0.10	0.10
ORP (mV)	62.3	49.3	46.3	49.9	51.2	55.2	58.3	58.8	61.4	57.3
Turbidity (NTU)	741	214	166	127	84.5	75.2	38.7	30.5	16.7	8.84
Notes:										

Sampling Information

Analyses	#	Laboratory
PFAS		
1,4 Dioxane		

Sample ID: MW-06 Sample Time: 1331
MS/MSD: Yes (No)
Duplicate: (Yes) No
Duplicate ID DUP-061719 Dup. Time:

Problems / Observations

PID = 0.0 ppm

Con Ed Ossining

Site *Event*

GROUNDWATER SAMPLING LOG

Sampling Personnel:	Josh Sinay + Rob Noonan	**Well ID:**	MW-9
Client / Job Number:	Con Ed Ossining	**Date:**	6/17/19
Weather:	60°F overcast	**Time In:**	0830 **Time Out:** 1130

Well Information

Depth to Water:	1.95 (from MP)
Total Depth:	11.80 (from MP)
Length of Water Column:	9.85
Volume of Water in Well:	1.61
Three Well Volumes:	4.82

Well Type:		(Flushmount)	Stick-Up
Well Material:		Stainless Steel	(PVC)
Well Locked:		(Yes)	No
Measuring Point Marked:		Yes	(No)
Well Diameter:	1"	(2")	Other:

Purging Information

Purging Method:	Bailer	(Peristaltic)	Grundfos	Other:
Tubing/Bailer Material:	St. Steel	Polyethylene	Teflon	Other: HDPE
Sampling Method:	Bailer (VOCs)	(Peristaltic)	Grundfos	Other:

Duration of Pumping: 50 (min)

Average Pumping Rate: 200 (ml/min) Water-Quality Meter Type: YSI

Total Volume Removed: 2.5 (gal) Did well go dry: Yes (No)

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3875 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO	Cond.	ORP
± 0.1	± 10%	± 3.0%	± 10 mV

Time: / Parameter:	1	2	3	4	5	6	7	8	9
	0930	0935	0940	0945	0950	0955	1000	1005	1010
Volume Purged (mL)	0.05	0.40	0.65	0.85	1.10	1.30	1.68	2.10	2.55
Rate (mL/min)	200	200	200	200	200	200	200	200	200
Depth to Water (ft.)	1.98	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.98
pH	8.65	7.31	7.52	7.40	7.41	7.42	7.47	7.47	7.38
Temp. (C)	14.9	15.2	15.4	15.3	15.3	15.2	15.1	15.3	14.8
Conductivity (mS/cm)	0.380	0.334	0.332	0.331	0.331	0.331	0.329	0.331	0.327
Dissolved Oxygen	6.83	6.80	6.61	6.65	6.76	6.53	6.84	6.71	6.73
ORP (mV)	74.0	174.6	238.8	270.3	335.0	383.0	422.2	437.7	478.3
Turbidity (NTU)	228	47.6	30.4	24.7	12.5	4.97	4.42	5.04	11.7
Notes:									

Sampling Information

Analyses	#	Laboratory
PFAS		
1,4 Dioxane		
Sample ID: MW-9	Sample Time: 1020	
MS/MSD: (Yes)	No	
Duplicate: Yes	(No)	
Duplicate ID: —	Dup. Time: —	

Problems / Observations

PID = 0.0 ppm

Well lid missing 2 bolts

Con Ed Ossining

Site

GROUNDWATER SAMPLING LOG

MW-9 *Event*

Parameter: \ Time:	10	11	12	13	14	15	16	17	18
Volume Purged (mL)	10/5	1020							
Rate (mL/min)	2.52	SA							
Depth to Water (ft.)	200	M							
pH	1.48	D							
Temp. (C)	7.42	LE							
Conductivity (mS/cm)	14.9								
Dissolved Oxygen	0.328								
ORP (mV)	6.70								
Turbidity (NTU)	477.7								
Notes:	8.76								

Parameter: \ Time:	19	20	21	22	23	24	25	26	27
Volume Purged (mL)									
Rate (mL/min)									
Depth to Water (ft.)									
pH									
Temp. (C)									
Conductivity (mS/cm)									
Dissolved Oxygen									
ORP (mV)									
Turbidity (NTU)									
Notes:									

Sampling Information

Analyses	#	Laboratory
Sample ID:		Sample Time:
MS/MSD:	Yes	No
Duplicate:	Yes	No
Duplicate ID		Dup. Time:

Problems / Observations

PID =

ATTACHMENT B

Data Usability Summary Report

ARCADIS Design & Consultancy for natural and built assets

Consolidated Edison-Ossining

DATA USABILITY SUMMARY REPORT (DUSR)

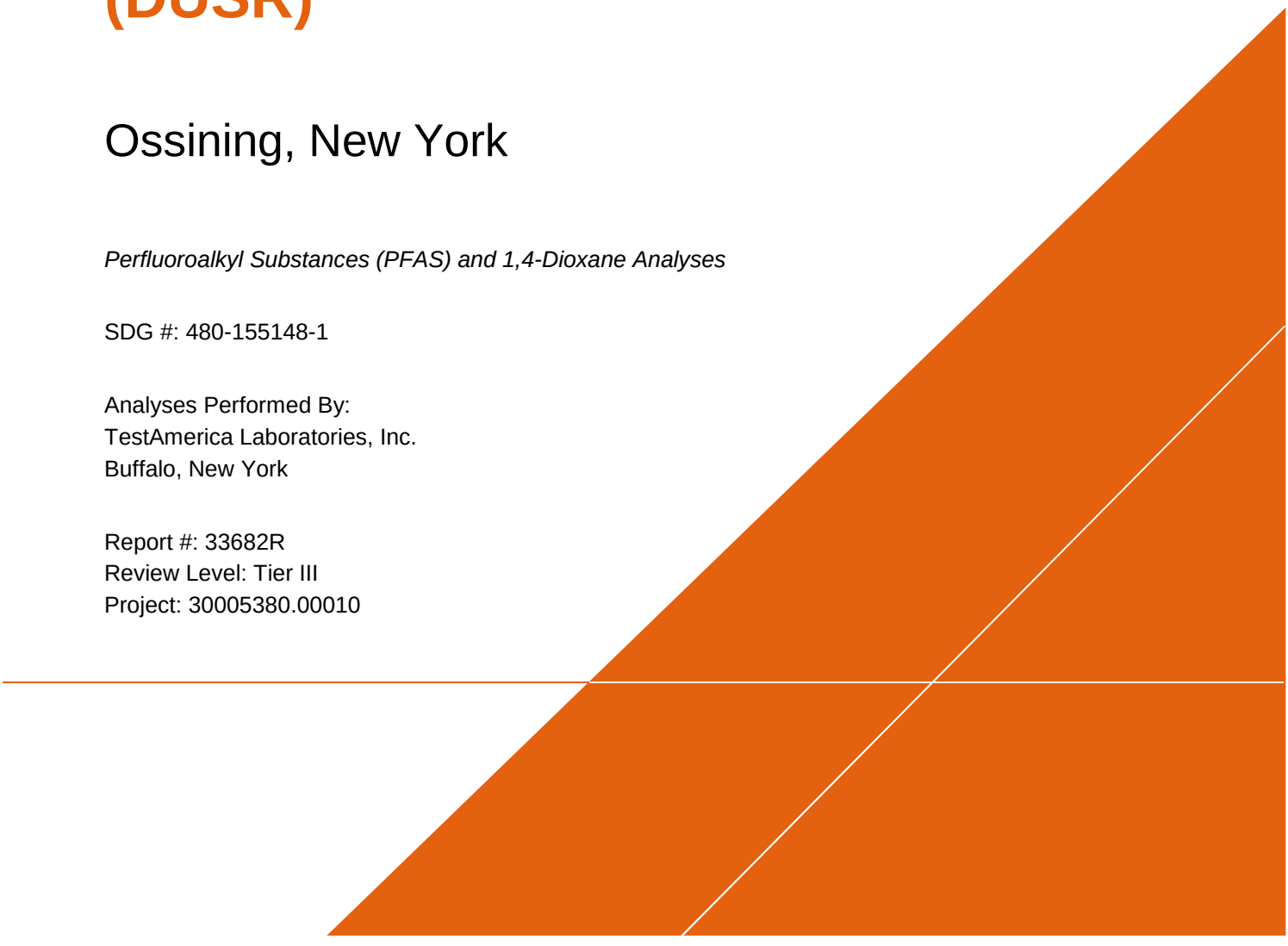
Ossining, New York

Perfluoroalkyl Substances (PFAS) and 1,4-Dioxane Analyses

SDG #: 480-155148-1

Analyses Performed By:
TestAmerica Laboratories, Inc.
Buffalo, New York

Report #: 33682R
Review Level: Tier III
Project: 30005380.00010



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 480-155148-1 for samples collected in association with the Consolidated Edison site in Ossining, New York. The review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain-of-custody (COC) records. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis			
					PFAS	1,4-Dioxane	Metals	Misc.
MW-9	480-155148-1	Water	6/17/2019		X	X		
MW-06	480-155148-2	Water	6/17/2019		X	X		
MW-13	480-155148-3	Water	6/17/2019		X	X		
FB-061719	480-155148-4	Water	6/17/2019		X	X		
DUP-061719	480-155148-5	Water	6/17/2019	MW-06	X	X		

Note: As specified on the COC, sample MW-9 was used in the matrix spike/matrix spike duplicate analyses.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of quality assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method 537 (modified) SW-846 Method 8270D with selected ion monitoring (SIM). Data were reviewed in accordance with USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-2017-002, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - J The reported value was obtained from a reading less than the reporting limit but greater than or equal to the method detection limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected as unusable. The compound may or may not be present in the sample.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

PERFLUOROALKYL SUBSTANCES (PFAS) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
USEPA modified 537	Water	14 days from collection to extraction and 28 days from extraction to analysis	Cool to < 6 °C
	Soil	14 days from collection to extraction and 28 days from extraction to analysis	Cool to < 6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

If a compound is detected in a blank at a concentration greater than the detection limit (DL), a blank action level (BAL) is calculated at five times the concentration detected in the blank. Detected compounds in the associated samples are compared to the BAL. If the result is greater than the BAL, no qualification is required, and any laboratory-assigned flags are removed, otherwise the result is qualified as not detected (UB) at either the sample reporting limit or the concentration detected in the sample, whichever is greater.

All compounds associated with the QA blanks exhibited concentrations less than the MDL, except for the compound(s) listed in the following table. Sample results associated with QA blank contamination that were greater than the BAL resulted in the removal of the laboratory qualifier (B) of data. Sample results less than the BAL associated with the following samples were qualified as listed in the following table.

Sample	Analyte	Sample Result	Qualification
MW-9 MW-06	Perfluorooctanesulfonamide (PFOSA)	Detected sample results < reporting limit (RL) and < BAL	"UB" at the RL
MW-9 MW-06 DUP-061719	Perfluorooctanesulfonic acid (PFOS)	Detected sample results > RL and < BAL	"UB" at detected sample concentration

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable (linear or quadratic) performance at the beginning of the analytical sequence. The continuing calibration verifies that the day-to-day instrument performance is satisfactory.

3.1 Initial Calibration Verification (ICV)

Each target compound in the initial calibration must exhibit a percent relative standard deviation (%RSD) of the relative response factors (RRFs) within the control limit of 20% or a correlation coefficient greater than 0.99. Each analyte must calculate to be within 70-130% of the true value for each calibration

standard except for the lowest concentration calibration standard which must calculate to be within 50-150% of the true value. Additionally, the relative percent difference (RPD) between the high and low areas for each isotopically labelled internal standard must be less than 20% for each IS during calibration.

3.2 Continuing Calibration Verification (CCV)

Each target compound associated with the continuing calibration standards must exhibit a percent difference (%D) from the average RRFs established in the ICV within the control limit of 30%. Sample analyses must be bracketed by CCVs and CCVs must be performed after every ten sample analyses.

All compounds associated with the calibrations were within the specified control limits, except for those presented in the following table.

Sample	Initial / Continuing	Compound	Criteria
MW-9 MW-06 MW-13 FB-061719 DUP-061719	Ending CCV %D	Perfluorobutanoic acid (PFBA)	-39.3 %

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial Calibration	%RSD > 20% or a correlation coefficient < 0.99	Non-detect	UJ
		Detect	J
	Calibration Standard %R > 130%	Non-detect	No Action
		Detect	J
	Calibration Standard %R < 70% but > 30%	Non-detect	UJ
		Detect	J
	Calibration Standard %R < 30%	Non-detect	R
		Detect	J
Continuing Calibration	%D > 30% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D > 30% (decrease in sensitivity)	Non-detect	UJ
		Detect	J
	%D > 90% (increase/decrease in sensitivity)	Non-detect	R
		Detect	J

4. Isotopically labeled Standards

4.1 Extracted Internal Standards (EIS)

Labeled standards must be added to all field samples and QC samples prior to extraction. For aqueous samples prepared by serial dilution instead of SPE, they must be added to samples prior to analysis. EIS recoveries must be within the control limits of 50% to 150%.

All samples exhibited extracted internal standard responses within the control limits.

4.2 Injection Internal Standards

Injection internal standards must be added to the aliquot of sample dilutions, QC samples, and standards prior to analysis. Peak areas must be within 50% to 150% of the area measured in the daily CCV.

All injection internal standard responses were within the control limits.

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Laboratory Duplicate Sample Analysis

MS/MSD and laboratory duplicate sample data are used to assess the precision and accuracy of the analytical method.

5.1 MS/MSD Analysis

The compounds used to perform the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. When an MSD analysis is performed, the relative percent difference (RPD) between the MS/MSD recoveries must be no greater than 30%.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

Sample MW-9 was used in the MS/MSD analysis. All compounds associated with the MS/MSD analysis exhibited acceptable recoveries. All RPDs were within the control limits except for as presented in the following table.

Sample	Compound
MW-9	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)

Sample results associated with RPD exceedances are qualified in accordance with the criteria in the following table.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5.2 Laboratory Duplicate Sample Analysis

Laboratory duplicate sample results are used to assess precision and may be used in addition to or in lieu of the MSD analysis. The laboratory duplicate sample maximum RPD of 30% criterion is applied when the primary and duplicate sample concentrations are at least five times the RL. In the case where the parent and duplicate sample concentrations are less than five times the RL, a control limit of one times the RL for water matrices and two times the RL for soil matrices is applied to the difference between the results.

MS/MSD analysis was performed instead of the laboratory duplicate sample analysis.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS analysis must exhibit recoveries within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

7. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the overall precision of the field sampling procedures and analytical method. The control limits of 35% for water matrices and 50% for soil and sediment matrices are applied to the RPDs between the primary and field duplicate sample results. In the instance when the parent and duplicate sample concentrations are less than five times the reporting limit (RL), a control limit of two times the RL for water matrices or three times to RL for soil matrices is applied to the difference between the results.

Results for the field duplicate sample results are summarized in the following table.

Sample / Duplicate	Analyte	Sample Result	Duplicate Result	RPD
MW-06 / DUP-061719	Perfluorobutanesulfonic acid (PFBS)	4.0 J	3.7 J	Acceptable
	Perfluorobutanoic acid (PFBA)	8.7	8.1	Acceptable
	Perfluoroheptanoic acid (PFHpA)	8.4	6.1 J	Acceptable
	Perfluorohexanesulfonic acid (PFHxS)	6.7 J	3.5 J	Acceptable
	Perfluorohexanoic acid (PFHxA)	12	12	Acceptable
	Perfluorononanoic acid (PFNA)	1.7 J	1.2 J	Acceptable
	Perfluorooctanesulfonamide (PFOSA)	2.9 J	7.9 U	Acceptable
	Perfluorooctanesulfonic acid (PFOS)	9.2	12	Acceptable
	Perfluorooctanoic acid (PFOA)	23	21	Acceptable
	Perfluoropentanoic acid (PFPeA)	21	29	Acceptable

Notes: J = Estimated (result is < RL)
U = Not detected

The field duplicate samples exhibited acceptable results.

8. Compound Identification

PFAS compounds are identified using the compound's ion abundance ratios, signal-to-noise values, and relative retention times.

All identified compounds met method criteria.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PERFLUOROALKYL SUBSTANCES

PFAS: USEPA 537 (modified)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Liquid Chromatography/Mass Spectrometry (LC/MS/MS)					
Tier II Validation					
Holding Times		X		X	
Reporting Limits (Units)		X		X	
Blanks					
A. Method Blanks		X	X		
B. Equipment and/or Field Blanks		X	X		
Extracted Internal Standards Accuracy (%R)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X	X		
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD RPD	X				X
Laboratory Duplicate Sample RPD	X				X
Field Duplicate Sample RPD		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	
Tier III Validation					
Initial calibration		X		X	
Continuing calibration		X	X		
Injection Internal Standards		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculations acceptable		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:
%R = Percent recovery
RPD = Relative percent difference
%RSD = Relative standard deviation
%D = Percent difference

1,4-DIOXANE ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D-SIM	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to < 6 °C

All samples were extracted and analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

1,4-Dioxane was not detected above the MDL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Gas Chromatograph/Mass Spectrometer (GC/MS) Instrument Performance (Tuning) Check

GC/MS tuning is performed to ensure mass resolution, identification, and to some degree, sensitivity. The tuning compound (4-bromofluorobenzene) analysis must be performed at the beginning of each 12-hour period during which calibration standards and samples are analyzed and must meet the ion-abundance criteria specified in the analytical method.

GC/MS performance was acceptable, and all analyses were initiated within 12 hours of each instrument tune check.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument can produce acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable (linear or quadratic) performance at the beginning of the analytical sequence. The continuing calibration verifies that the day-to-day instrument performance is satisfactory.

4.1 Initial Calibration Verification (ICV)

Each target compound in the initial calibration must exhibit a relative response factor (RRF) greater than the control limit of 0.05and either a percent relative standard deviation (%RSD) within the control limit of 20% or a correlation coefficient greater than 0.99.

4.2 Continuing Calibration Verification (CCV)

Each target compound associated with the continuing calibration standard must exhibit a percent

difference (%D) within the control limit of 20%, and an RRF value greater than control limit (0.05).

All compounds associated with the initial and continuing calibrations were within the control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. 1,4-Dioxane analysis requires that the surrogate compound exhibit recoveries within the laboratory-established acceptance limits, and that all surrogate recoveries be greater than ten percent.

All sample analyses exhibited surrogate recoveries within the control limits.

6. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC analysis exhibit area counts that are within a factor of two (i.e. 50% - 200%) of the area counts of the associated continuing calibration standard.

All internal standard area counts were within the control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified, and the laboratory qualifier will be removed. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

Sample MW-9 was used in the MS/MSD analysis. The MS/MSD analysis exhibited acceptable recoveries and RPD.

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS analysis must exhibit recoveries within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

9. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 25% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of two times the RL is applied to the difference between the results for water matrices.

Results for the field duplicate sample results are summarized in the following table.

Sample / Duplicate	Analyte	Sample Result	Duplicate Result	RPD
MW-06 / DUP-061719	1,4-Dioxane	0.2 U	0.2 U	Acceptable

Note: U = Not detected

The field duplicate samples exhibited acceptable results.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR 1,4-DIOXANE

1,4-Dioxane: SW-846 8270D-SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Gas Chromatography/Mass Spectrometry (GC/MS)					
Tier II Validation					
Holding Times		X		X	
Reporting Limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks		X		X	
Surrogates Accuracy (%R)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD RPD	X				X
Field Duplicate Sample RPD		X		X	
Dilution Factor		X		X	
Moisture Content	X				X
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Quantitation transcriptions/calculations		X		X	
E. Reporting limits adjusted for sample dilutions		X		X	

%R = Percent Recovery
RPD = Relative Percent Difference
%RSD = Relative standard deviation
%D = Percent difference

SAMPLE COMPLIANCE REPORT

SAMPLE COMPLIANCE REPORT

SDG	Sampling Date	Protocol	Sample ID	Matrix	Compliancy[1]		Noncompliance
					PFAS	1,4-Dioxane	
480-155148-1	6/17/2019	USEPA 537 (modified)	MW-9	Water	No	--	CCV %D < LCL; MS/MSD RPD > CL; Blank contamination
	6/17/2019		MW-06	Water	No	--	CCV %D < LCL; Blank contamination
	6/17/2019		MW-13	Water	No	--	CCV %D < LCL;
	6/17/2019		FB-061719	Water	No	--	CCV %D < LCL;
	6/17/2019		DUP-061719	Water	No	--	CCV %D < LCL; Blank contamination
	6/17/2019	SW-846 8270D-SIM	MW-9	Water	--	Yes	
	6/17/2019		MW-06	Water	--	Yes	
	6/17/2019		MW-13	Water	--	Yes	
	6/17/2019		FB-061719	Water	--	Yes	
	6/17/2019		DUP-061719	Water	--	Yes	

Note:

1 Samples which are compliant with no added validation qualifiers are listed as "yes". Samples which are non-compliant or have added qualifiers are listed as "no". A "no" designation does not necessarily indicate that the data have been rejected or are otherwise unusable.

Validation Performed By:	Dennis Dyke
Signature:	
Date:	August 21, 2019
Peer Review:	Dennis Capria
Date:	August 29, 2019

CHAIN OF CUSTODY AND CORRECTED AND SAMPLE ANALYSIS DATA SHEETS

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

FROM SYR! PFAS → BUF; DIOX → BUF, - RE

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Syracuse #225

Client Information	Sampler: Josh Sinay + Rob Noonan	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-130742-29497.1
Client Contact: Mr. Joshua Sinay	Phone: 315-877-6720	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: ARCADIS U.S. Inc				Job #:
Address: One Lincoln Center 110 West Fayette St, Suite 300	Due Date Requested:			
City: Syracuse	TAT Requested (days): Standard			
State, Zip: NY, 13202				
Phone: 315-671-9171	PO #: B0043024.0050.00010			
Email: josh.sinay@arcadis.com	WO #:			
Project Name: Con Ed Ossining	Project #: 48019049			
Site: Ossining, NY	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	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 - 1,4 Dioxane	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
MW-9	6/17/19	1020	G	Water			2	2		
MW-9-MS/MSD	6/17/19	1020	G	Water			4	1		
MW-06	6/17/19	1331	G	Water			2	2		
MW-13	6/17/19	1551	G	Water						
FB-061719	6/17/19	1530	G	Water			2	2		
DUP-061719	6/17/19	—		Water			2	2		
				Water						
RE 6-17-19										

480-155148 Chain of Custody

2 Coolers

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
Josh Sinay	6/17/19 2200	Arcadis	RE Fuglitt	6-17-19, 22:00	Syr
RE Fuglitt	6-18-19, 19:00	Syr	Courier	6/19/19 0900	TAB
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: #	3.4, 2.8, 3.5

Ver: 01/16/2019

Client Sample ID: MW-9

Date Collected: 06/17/19 10:20
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-1

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		0.40	0.20	ug/L		06/21/19 16:05	06/30/19 18:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*50*		*15 - 110*	*06/21/19 16:05*	*06/30/19 18:03*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.0**	J	1.6	0.80	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluoropentanoic acid (PFPeA)	**2.2**		1.6	0.50	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorohexanoic acid (PFHxA)	**2.1**		1.6	0.61	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluoroheptanoic acid (PFHpA)	**1.2**	**J**	1.6	0.73	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorooctanoic acid (PFOA)	**5.9**	~~B~~	1.6	0.50	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorononanoic acid (PFNA)	**0.61**	**J**	1.6	0.22	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.61	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.42	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.47	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	0.48	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.73	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.6	0.39	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorohexanesulfonic acid (PFHxS)	**1.2**	**J**	1.6	0.64	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.6	0.76	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorooctanesulfonic acid (PFOS)	ND ~~3.2 B~~	UB	3.2 ~~1.6~~	0.49	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.72	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorooctanesulfonamide (PFOSA)	ND ~~1.5 J B~~	UB	1.6	0.51	ng/L		06/26/19 11:18	07/05/19 05:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		16	1.4	ng/L		06/26/19 11:18	07/05/19 05:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		16	1.2	ng/L		06/26/19 11:18	07/05/19 05:43	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND ~~F2~~	UJ	16	3.7	ng/L		06/26/19 11:18	07/05/19 05:43	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		16	2.3	ng/L		06/26/19 11:18	07/05/19 05:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*141*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C4 PFHpA	*83*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C4 PFOA	*85*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C4 PFOS	*93*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C5 PFNA	*82*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C4 PFBA	*63*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C2 PFHxA	*72*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C2 PFDA	*87*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C2 PFUnA	*85*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C2 PFDoA	*83*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C8 FOSA	*86*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C5 PFPeA	*65*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C2 PFTeDA	*66*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
d3-NMeFOSAA	*76*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*

Client Sample ID: MW-9

Date Collected: 06/17/19 10:20
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	93		50 - 150	06/26/19 11:18	07/05/19 05:43	1
M2-6:2 FTS	114		25 - 150	06/26/19 11:18	07/05/19 05:43	1
M2-8:2 FTS	114		25 - 150	06/26/19 11:18	07/05/19 05:43	1
13C3 PFBS	135		50 - 150	06/26/19 11:18	07/05/19 05:43	1

Client Sample ID: MW-06

Date Collected: 06/17/19 13:31
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-2
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		06/21/19 16:05	06/30/19 18:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	31		15 - 110	06/21/19 16:05	06/30/19 18:27	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.7**	J	7.9	3.9	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluoropentanoic acid (PFPeA)	**21**		7.9	2.5	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorohexanoic acid (PFHxA)	**12**		7.9	3.0	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluoroheptanoic acid (PFHpA)	**8.4**		7.9	3.6	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorooctanoic acid (PFOA)	**23**	~~B~~	7.9	2.5	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorononanoic acid (PFNA)	**1.7**	J	7.9	1.1	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorodecanoic acid (PFDA)	ND		7.9	3.0	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluoroundecanoic acid (PFUnA)	ND		7.9	2.1	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorododecanoic acid (PFDoA)	ND		7.9	2.3	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorotridecanoic acid (PFTriA)	ND		7.9	2.4	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorotetradecanoic acid (PFTeA)	ND		7.9	3.6	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorobutanesulfonic acid (PFBS)	**4.0**	J	7.9	1.9	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorohexanesulfonic acid (PFHxS)	**6.7**	J	7.9	3.2	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		7.9	3.7	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorooctanesulfonic acid (PFOS)	ND ~~9.2 B~~	UB	9.2 ~~7.9~~	2.4	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorodecanesulfonic acid (PFDS)	ND		7.9	3.5	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorooctanesulfonamide (PFOSA)	ND ~~2.9 J B~~	UB	7.9	2.5	ng/L		06/26/19 11:18	07/05/19 06:31	5
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		79	6.7	ng/L		06/26/19 11:18	07/05/19 06:31	5
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		79	5.9	ng/L		06/26/19 11:18	07/05/19 06:31	5
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		79	18	ng/L		06/26/19 11:18	07/05/19 06:31	5
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		79	11	ng/L		06/26/19 11:18	07/05/19 06:31	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	86		50 - 150	06/26/19 11:18	07/05/19 06:31	5
13C4 PFHpA	92		50 - 150	06/26/19 11:18	07/05/19 06:31	5
13C4 PFOA	83		50 - 150	06/26/19 11:18	07/05/19 06:31	5
13C4 PFOS	79		50 - 150	06/26/19 11:18	07/05/19 06:31	5

Client Sample ID: MW-06

Date Collected: 06/17/19 13:31
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-2

Matrix: Water

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFNA	*82*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C4 PFBA	*76*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C2 PFHxA	*87*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C2 PFDA	*78*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C2 PFUnA	*82*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C2 PFDoA	*77*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C8 FOSA	*63*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C5 PFPeA	*78*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C2 PFTeDA	*67*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
d3-NMeFOSAA	*64*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
d5-NEtFOSAA	*98*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
M2-6:2 FTS	*80*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
M2-8:2 FTS	*103*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C3 PFBS	*103*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*

Client Sample ID: MW-13

Date Collected: 06/17/19 15:51
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-3

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		06/21/19 16:05	06/30/19 18:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*31*		*15 - 110*	*06/21/19 16:05*	*06/30/19 18:50*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**10**	J	7.8	3.9	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluoropentanoic acid (PFPeA)	**25**		7.8	2.4	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorohexanoic acid (PFHxA)	**25**		7.8	2.9	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluoroheptanoic acid (PFHpA)	**16**		7.8	3.5	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorooctanoic acid (PFOA)	**66**	B	7.8	2.4	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorononanoic acid (PFNA)	ND		7.8	1.0	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorodecanoic acid (PFDA)	ND		7.8	3.0	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluoroundecanoic acid (PFUnA)	ND		7.8	2.1	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorododecanoic acid (PFDoA)	ND		7.8	2.3	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorotridecanoic acid (PFTriA)	ND		7.8	2.3	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorotetradecanoic acid (PFTeA)	ND		7.8	3.6	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorobutanesulfonic acid (PFBS)	**22**		7.8	1.9	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorohexanesulfonic acid (PFHxS)	**13**		7.8	3.1	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		7.8	3.7	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorooctanesulfonic acid (PFOS)	**34**	B	7.8	2.4	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorodecanesulfonic acid (PFDS)	ND		7.8	3.5	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorooctanesulfonamide (PFOSA)	ND		7.8	2.5	ng/L		06/26/19 11:18	07/05/19 06:47	5
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		78	6.6	ng/L		06/26/19 11:18	07/05/19 06:47	5

Client Sample ID: MW-13

Date Collected: 06/17/19 15:51
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-3

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		78	5.8	ng/L		06/26/19 11:18	07/05/19 06:47	5
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		78	18	ng/L		06/26/19 11:18	07/05/19 06:47	5
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		78	11	ng/L		06/26/19 11:18	07/05/19 06:47	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*112*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C4 PFHpA	*88*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C4 PFOA	*99*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C4 PFOS	*81*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C5 PFNA	*81*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C4 PFBA	*103*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C2 PFHxA	*80*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C2 PFDA	*79*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C2 PFUnA	*75*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C2 PFDoA	*78*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C8 FOSA	*72*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C5 PFPeA	*75*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C2 PFTeDA	*79*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
d3-NMeFOSAA	*78*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
d5-NEtFOSAA	*87*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
M2-6:2 FTS	*93*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
M2-8:2 FTS	*77*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C3 PFBS	*75*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*

Client Sample ID: FB-061719

Date Collected: 06/17/19 15:30
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-4

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		06/21/19 16:05	06/30/19 19:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*30*		*15 - 110*	*06/21/19 16:05*	*06/30/19 19:14*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	UJ	1.7	0.83	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.52	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.63	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.75	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.52	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.22	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.64	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.44	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.49	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.50	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.76	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.41	ng/L		06/26/19 11:18	07/05/19 07:03	1

Client Sample ID: FB-061719

Lab Sample ID: 480-155148-4

Date Collected: 06/17/19 15:30

Matrix: Water

Date Received: 06/19/19 09:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.66	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.79	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorooctanesulfonic acid (PFOS)	**0.52**	**J B**	1.7	0.51	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.75	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorooctanesulfonamide (PFOSA)	**1.6**	**J B**	1.7	0.53	ng/L		06/26/19 11:18	07/05/19 07:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.4	ng/L		06/26/19 11:18	07/05/19 07:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.2	ng/L		06/26/19 11:18	07/05/19 07:03	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	3.8	ng/L		06/26/19 11:18	07/05/19 07:03	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.4	ng/L		06/26/19 11:18	07/05/19 07:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*121*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C4 PFHpA	*91*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C4 PFOA	*95*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C4 PFOS	*86*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C5 PFNA	*86*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C4 PFBA	*83*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C2 PFHxA	*89*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C2 PFDA	*97*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C2 PFUnA	*88*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C2 PFDoA	*83*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C8 FOSA	*66*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C5 PFPeA	*91*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C2 PFTeDA	*80*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
d3-NMeFOSAA	*84*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
d5-NEtFOSAA	*95*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
M2-6:2 FTS	*98*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
M2-8:2 FTS	*94*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C3 PFBS	*119*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*

Client Sample ID: DUP-061719

Lab Sample ID: 480-155148-5

Date Collected: 06/17/19 00:00

Matrix: Water

Date Received: 06/19/19 09:00

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		06/21/19 16:05	06/30/19 19:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*31*		*15 - 110*	*06/21/19 16:05*	*06/30/19 19:37*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.1**	J	7.9	3.9	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluoropentanoic acid (PFPeA)	**29**		7.9	2.5	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorohexanoic acid (PFHxA)	**12**		7.9	3.0	ng/L		06/26/19 11:18	07/05/19 07:19	5

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

Client Sample ID: DUP-061719
Date Collected: 06/17/19 00:00
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**6.1**	**J**	7.9	3.6	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorooctanoic acid (PFOA)	**21**	**B**	7.9	2.5	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorononanoic acid (PFNA)	**1.2**	**J**	7.9	1.1	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorodecanoic acid (PFDA)	ND		7.9	3.0	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluoroundecanoic acid (PFUnA)	ND		7.9	2.1	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorododecanoic acid (PFDoA)	ND		7.9	2.3	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorotridecanoic acid (PFTriA)	ND		7.9	2.4	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorotetradecanoic acid (PFTeA)	ND		7.9	3.6	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorobutanesulfonic acid (PFBS)	**3.7**	**J**	7.9	1.9	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorohexanesulfonic acid (PFHxS)	**3.5**	**J**	7.9	3.2	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		7.9	3.7	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorooctanesulfonic acid (PFOS)	ND	~~12 B~~ UB	12 ~~7.9~~	2.4	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorodecanesulfonic acid (PFDS)	ND		7.9	3.5	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorooctanesulfonamide (PFOSA)	ND		7.9	2.5	ng/L		06/26/19 11:18	07/05/19 07:19	5
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		79	6.7	ng/L		06/26/19 11:18	07/05/19 07:19	5
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		79	5.9	ng/L		06/26/19 11:18	07/05/19 07:19	5
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		79	18	ng/L		06/26/19 11:18	07/05/19 07:19	5
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		79	11	ng/L		06/26/19 11:18	07/05/19 07:19	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*105*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C4 PFHpA	*98*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C4 PFOA	*92*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C4 PFOS	*70*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C5 PFNA	*85*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C4 PFBA	*72*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C2 PFHxA	*85*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C2 PFDA	*71*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C2 PFUnA	*81*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C2 PFDoA	*86*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C8 FOSA	*67*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C5 PFPeA	*74*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C2 PFTeDA	*76*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
d3-NMeFOSAA	*89*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
d5-NEtFOSAA	*94*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
M2-6:2 FTS	*103*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
M2-8:2 FTS	*68*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C3 PFBS	*104*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*

ATTACHMENT C

Laboratory Analytical Report

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

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

Laboratory Job ID: 480-155148-1
Client Project/Site: Con Ed Ossining

For:
ARCADIS U.S. Inc
One Lincoln Center
110 West Fayette St, Suite 300
Syracuse, New York 13202

Attn: Mr. Joshua Sinay

Authorized for release by:
7/30/2019 4:31:39 PM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

John Schove, Project Manager II
(716)504-9838
john.schove@testamericainc.com

Table of Contents

Definitions/Glossary

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
F2	MS/MSD RPD exceeds control limits
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: 480-155148-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-155148-1

Receipt
The samples were received on 6/19/2019 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.8º C, 3.4º C and 3.5º C.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

LCMS
Method(s) 537 (modified): The method blank for preparation batch 200-144504 and analytical batch 200-144742 contained Perfluorooctanoic acid (PFOA) above the method detection limit. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Method(s) 537 (modified): The following method blank (MB) contained Perfluorooctanesulfonic acid (PFOS) above the reporting limit (RL). The peak pattern observed in the method blank is unique in that it is only a single-peak (i.e. only straight-chain PFOS) at the same retention time as the 13C4 PFOS IDA. Our standards and the native PFOS that we normally see in samples is a mix of straight-chain PFOS and its isomers, which exhibits a 2- or 3-peak pattern. This single-peak PFOS is a known contaminant in the lab with an unknown source and the samples associated with this MB that have detects for PFOS show no evidence of a contribution from this single-peak contaminant; therefore, the data is being reported: (MB 200-144504/1-A).

Method(s) 537 (modified): The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 200-144504 and analytical batch 200-144742 was outside control limits for 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2). Sample matrix interference and/or non-homogeneity are suspected.

Method(s) 537 (modified): 13C3 PFBS Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: (CCVIS 200-144742/2). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method(s) 537 (modified): 18O2 PFHxS and 13C3 PFBS Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for the following sample: (CCV 200-144742/48). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method(s) 537 (modified): Results for samples MW-06 (480-155148-2), MW-13 (480-155148-3) and DUP-061719 (480-155148-5) were reported from the analysis of a diluted extract due to high concentration of target and/or non-target analytes in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

Method(s) 537 (modified): The following samples were diluted due to the abundance of non-target analytes: MW-06 (480-155148-2), MW-13 (480-155148-3) and DUP-061719 (480-155148-5). A more concentrated analysis was not possible.

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

Organic Prep
Method(s) 3510C: MS/MSD were split volume: MW-9 (480-155148-1), MW-9 (480-155148-1[MS]) and MW-9 (480-155148-1[MSD]).

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

Detection Summary

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

Client Sample ID: MW-9 — Lab Sample ID: 480-155148-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.0		1.6	0.80	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.2		1.6	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.1		1.6	0.61	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.2	J	1.6	0.73	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	5.9	B	1.6	0.50	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.61	J	1.6	0.22	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.1	J	1.6	0.39	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	1.6	0.64	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.2	B	1.6	0.49	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (PFOSA)	1.5	J B	1.6	0.51	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-06 — Lab Sample ID: 480-155148-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.7		7.9	3.9	ng/L	5		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	21		7.9	2.5	ng/L	5		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	12		7.9	3.0	ng/L	5		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	8.4		7.9	3.6	ng/L	5		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	23	B	7.9	2.5	ng/L	5		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.7	J	7.9	1.1	ng/L	5		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.0	J	7.9	1.9	ng/L	5		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.7	J	7.9	3.2	ng/L	5		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	9.2	B	7.9	2.4	ng/L	5		537 (modified)	Total/NA
Perfluorooctanesulfonamide (PFOSA)	2.9	J B	7.9	2.5	ng/L	5		537 (modified)	Total/NA

Client Sample ID: MW-13 — Lab Sample ID: 480-155148-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	10		7.8	3.9	ng/L	5		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	25		7.8	2.4	ng/L	5		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	25		7.8	2.9	ng/L	5		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	16		7.8	3.5	ng/L	5		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	66	B	7.8	2.4	ng/L	5		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	22		7.8	1.9	ng/L	5		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	13		7.8	3.1	ng/L	5		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	34	B	7.8	2.4	ng/L	5		537 (modified)	Total/NA

Client Sample ID: FB-061719 — Lab Sample ID: 480-155148-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.52	J B	1.7	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonamide (PFOSA)	1.6	J B	1.7	0.53	ng/L	1		537 (modified)	Total/NA

Client Sample ID: DUP-061719 — Lab Sample ID: 480-155148-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.1		7.9	3.9	ng/L	5		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	29		7.9	2.5	ng/L	5		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	12		7.9	3.0	ng/L	5		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.1	J	7.9	3.6	ng/L	5		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	21	B	7.9	2.5	ng/L	5		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	1.2	J	7.9	1.1	ng/L	5		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.7	J	7.9	1.9	ng/L	5		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Buffalo

Client Sample ID: DUP-061719 (Continued)

Lab Sample ID: 480-155148-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	3.5	J	7.9	3.2	ng/L	5		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	12	B	7.9	2.4	ng/L	5		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-9
Date Collected: 06/17/19 10:20
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-1
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		0.40	0.20	ug/L		06/21/19 16:05	06/30/19 18:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*50*		*15 - 110*	*06/21/19 16:05*	*06/30/19 18:03*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.0**		1.6	0.80	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluoropentanoic acid (PFPeA)	**2.2**		1.6	0.50	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorohexanoic acid (PFHxA)	**2.1**		1.6	0.61	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluoroheptanoic acid (PFHpA)	**1.2**	**J**	1.6	0.73	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorooctanoic acid (PFOA)	**5.9**	**B**	1.6	0.50	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorononanoic acid (PFNA)	**0.61**	**J**	1.6	0.22	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.61	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.42	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.47	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorotridecanoic acid (PFTriA)	ND		1.6	0.48	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.6	0.73	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorobutanesulfonic acid (PFBS)	**1.1**	**J**	1.6	0.39	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorohexanesulfonic acid (PFHxS)	**1.2**	**J**	1.6	0.64	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.6	0.76	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorooctanesulfonic acid (PFOS)	**3.2**	**B**	1.6	0.49	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.72	ng/L		06/26/19 11:18	07/05/19 05:43	1
Perfluorooctanesulfonamide (PFOSA)	**1.5**	**J B**	1.6	0.51	ng/L		06/26/19 11:18	07/05/19 05:43	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		16	1.4	ng/L		06/26/19 11:18	07/05/19 05:43	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		16	1.2	ng/L		06/26/19 11:18	07/05/19 05:43	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND	F2	16	3.7	ng/L		06/26/19 11:18	07/05/19 05:43	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		16	2.3	ng/L		06/26/19 11:18	07/05/19 05:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*141*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C4 PFHpA	*83*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C4 PFOA	*85*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C4 PFOS	*93*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C5 PFNA	*82*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C4 PFBA	*63*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C2 PFHxA	*72*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C2 PFDA	*87*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C2 PFUnA	*85*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C2 PFDoA	*83*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C8 FOSA	*86*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C5 PFPeA	*65*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
13C2 PFTeDA	*66*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*
d3-NMeFOSAA	*76*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:43*	*1*

Client Sample ID: MW-9

Date Collected: 06/17/19 10:20
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-1
Matrix: Water

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	93		50 - 150	06/26/19 11:18	07/05/19 05:43	1
M2-6:2 FTS	114		25 - 150	06/26/19 11:18	07/05/19 05:43	1
M2-8:2 FTS	114		25 - 150	06/26/19 11:18	07/05/19 05:43	1
13C3 PFBS	135		50 - 150	06/26/19 11:18	07/05/19 05:43	1

Client Sample ID: MW-06

Date Collected: 06/17/19 13:31
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-2
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		06/21/19 16:05	06/30/19 18:27	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,4-Dioxane-d8	31		15 - 110	06/21/19 16:05	06/30/19 18:27	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.7**		7.9	3.9	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluoropentanoic acid (PFPeA)	**21**		7.9	2.5	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorohexanoic acid (PFHxA)	**12**		7.9	3.0	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluoroheptanoic acid (PFHpA)	**8.4**		7.9	3.6	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorooctanoic acid (PFOA)	**23**	**B**	7.9	2.5	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorononanoic acid (PFNA)	**1.7**	**J**	7.9	1.1	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorodecanoic acid (PFDA)	ND		7.9	3.0	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluoroundecanoic acid (PFUnA)	ND		7.9	2.1	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorododecanoic acid (PFDoA)	ND		7.9	2.3	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorotridecanoic acid (PFTriA)	ND		7.9	2.4	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorotetradecanoic acid (PFTeA)	ND		7.9	3.6	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorobutanesulfonic acid (PFBS)	**4.0**	**J**	7.9	1.9	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorohexanesulfonic acid (PFHxS)	**6.7**	**J**	7.9	3.2	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		7.9	3.7	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorooctanesulfonic acid (PFOS)	**9.2**	**B**	7.9	2.4	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorodecanesulfonic acid (PFDS)	ND		7.9	3.5	ng/L		06/26/19 11:18	07/05/19 06:31	5
Perfluorooctanesulfonamide (PFOSA)	**2.9**	**J B**	7.9	2.5	ng/L		06/26/19 11:18	07/05/19 06:31	5
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		79	6.7	ng/L		06/26/19 11:18	07/05/19 06:31	5
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		79	5.9	ng/L		06/26/19 11:18	07/05/19 06:31	5
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		79	18	ng/L		06/26/19 11:18	07/05/19 06:31	5
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		79	11	ng/L		06/26/19 11:18	07/05/19 06:31	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	86		50 - 150	06/26/19 11:18	07/05/19 06:31	5
13C4 PFHpA	92		50 - 150	06/26/19 11:18	07/05/19 06:31	5
13C4 PFOA	83		50 - 150	06/26/19 11:18	07/05/19 06:31	5
13C4 PFOS	79		50 - 150	06/26/19 11:18	07/05/19 06:31	5

Client Sample ID: MW-06

Date Collected: 06/17/19 13:31
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-2

Matrix: Water

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C5 PFNA	*82*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C4 PFBA	*76*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C2 PFHxA	*87*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C2 PFDA	*78*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C2 PFUnA	*82*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C2 PFDoA	*77*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C8 FOSA	*63*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C5 PFPeA	*78*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C2 PFTeDA	*67*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
d3-NMeFOSAA	*64*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
d5-NEtFOSAA	*98*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
M2-6:2 FTS	*80*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
M2-8:2 FTS	*103*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*
13C3 PFBS	*103*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:31*	*5*

Client Sample ID: MW-13

Date Collected: 06/17/19 15:51
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-3

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		06/21/19 16:05	06/30/19 18:50	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*31*		*15 - 110*	*06/21/19 16:05*	*06/30/19 18:50*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**10**		7.8	3.9	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluoropentanoic acid (PFPeA)	**25**		7.8	2.4	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorohexanoic acid (PFHxA)	**25**		7.8	2.9	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluoroheptanoic acid (PFHpA)	**16**		7.8	3.5	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorooctanoic acid (PFOA)	**66**	**B**	7.8	2.4	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorononanoic acid (PFNA)	ND		7.8	1.0	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorodecanoic acid (PFDA)	ND		7.8	3.0	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluoroundecanoic acid (PFUnA)	ND		7.8	2.1	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorododecanoic acid (PFDoA)	ND		7.8	2.3	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorotridecanoic acid (PFTriA)	ND		7.8	2.3	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorotetradecanoic acid (PFTeA)	ND		7.8	3.6	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorobutanesulfonic acid (PFBS)	**22**		7.8	1.9	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorohexanesulfonic acid (PFHxS)	**13**		7.8	3.1	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		7.8	3.7	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorooctanesulfonic acid (PFOS)	**34**	**B**	7.8	2.4	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorodecanesulfonic acid (PFDS)	ND		7.8	3.5	ng/L		06/26/19 11:18	07/05/19 06:47	5
Perfluorooctanesulfonamide (PFOSA)	ND		7.8	2.5	ng/L		06/26/19 11:18	07/05/19 06:47	5
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		78	6.6	ng/L		06/26/19 11:18	07/05/19 06:47	5

Client Sample ID: MW-13

Date Collected: 06/17/19 15:51
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		78	5.8	ng/L		06/26/19 11:18	07/05/19 06:47	5
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		78	18	ng/L		06/26/19 11:18	07/05/19 06:47	5
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		78	11	ng/L		06/26/19 11:18	07/05/19 06:47	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*112*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C4 PFHpA	*88*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C4 PFOA	*99*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C4 PFOS	*81*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C5 PFNA	*81*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C4 PFBA	*103*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C2 PFHxA	*80*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C2 PFDA	*79*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C2 PFUnA	*75*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C2 PFDoA	*78*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C8 FOSA	*72*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C5 PFPeA	*75*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C2 PFTeDA	*79*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
d3-NMeFOSAA	*78*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
d5-NEtFOSAA	*87*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
M2-6:2 FTS	*93*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
M2-8:2 FTS	*77*		*25 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*
13C3 PFBS	*75*		*50 - 150*	*06/26/19 11:18*	*07/05/19 06:47*	*5*

Client Sample ID: FB-061719

Date Collected: 06/17/19 15:30
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-4
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		06/21/19 16:05	06/30/19 19:14	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*30*		*15 - 110*	*06/21/19 16:05*	*06/30/19 19:14*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.7	0.83	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.52	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.63	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.75	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.52	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.22	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.64	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.44	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.49	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorotridecanoic acid (PFTriA)	ND		1.7	0.50	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.76	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.41	ng/L		06/26/19 11:18	07/05/19 07:03	1

Client Sample ID: FB-061719

Date Collected: 06/17/19 15:30
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.66	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.79	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorooctanesulfonic acid (PFOS)	**0.52**	**J B**	1.7	0.51	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.75	ng/L		06/26/19 11:18	07/05/19 07:03	1
Perfluorooctanesulfonamide (PFOSA)	**1.6**	**J B**	1.7	0.53	ng/L		06/26/19 11:18	07/05/19 07:03	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		17	1.4	ng/L		06/26/19 11:18	07/05/19 07:03	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		17	1.2	ng/L		06/26/19 11:18	07/05/19 07:03	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		17	3.8	ng/L		06/26/19 11:18	07/05/19 07:03	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		17	2.4	ng/L		06/26/19 11:18	07/05/19 07:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*121*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C4 PFHpA	*91*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C4 PFOA	*95*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C4 PFOS	*86*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C5 PFNA	*86*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C4 PFBA	*83*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C2 PFHxA	*89*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C2 PFDA	*97*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C2 PFUnA	*88*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C2 PFDoA	*83*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C8 FOSA	*66*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C5 PFPeA	*91*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C2 PFTeDA	*80*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
d3-NMeFOSAA	*84*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
d5-NEtFOSAA	*95*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
M2-6:2 FTS	*98*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
M2-8:2 FTS	*94*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*
13C3 PFBS	*119*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:03*	*1*

Client Sample ID: DUP-061719

Date Collected: 06/17/19 00:00
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-5
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		06/21/19 16:05	06/30/19 19:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*31*		*15 - 110*	*06/21/19 16:05*	*06/30/19 19:37*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.1**		7.9	3.9	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluoropentanoic acid (PFPeA)	**29**		7.9	2.5	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorohexanoic acid (PFHxA)	**12**		7.9	3.0	ng/L		06/26/19 11:18	07/05/19 07:19	5

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

Client Sample ID: DUP-061719
Date Collected: 06/17/19 00:00
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	**6.1**	**J**	7.9	3.6	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorooctanoic acid (PFOA)	**21**	**B**	7.9	2.5	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorononanoic acid (PFNA)	**1.2**	**J**	7.9	1.1	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorodecanoic acid (PFDA)	ND		7.9	3.0	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluoroundecanoic acid (PFUnA)	ND		7.9	2.1	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorododecanoic acid (PFDoA)	ND		7.9	2.3	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorotridecanoic acid (PFTriA)	ND		7.9	2.4	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorotetradecanoic acid (PFTeA)	ND		7.9	3.6	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorobutanesulfonic acid (PFBS)	**3.7**	**J**	7.9	1.9	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorohexanesulfonic acid (PFHxS)	**3.5**	**J**	7.9	3.2	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		7.9	3.7	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorooctanesulfonic acid (PFOS)	**12**	**B**	7.9	2.4	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorodecanesulfonic acid (PFDS)	ND		7.9	3.5	ng/L		06/26/19 11:18	07/05/19 07:19	5
Perfluorooctanesulfonamide (PFOSA)	ND		7.9	2.5	ng/L		06/26/19 11:18	07/05/19 07:19	5
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		79	6.7	ng/L		06/26/19 11:18	07/05/19 07:19	5
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		79	5.9	ng/L		06/26/19 11:18	07/05/19 07:19	5
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		79	18	ng/L		06/26/19 11:18	07/05/19 07:19	5
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		79	11	ng/L		06/26/19 11:18	07/05/19 07:19	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*105*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C4 PFHpA	*98*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C4 PFOA	*92*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C4 PFOS	*70*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C5 PFNA	*85*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C4 PFBA	*72*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C2 PFHxA	*85*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C2 PFDA	*71*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C2 PFUnA	*81*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C2 PFDoA	*86*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C8 FOSA	*67*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C5 PFPeA	*74*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C2 PFTeDA	*76*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
d3-NMeFOSAA	*89*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
d5-NEtFOSAA	*94*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
M2-6:2 FTS	*103*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
M2-8:2 FTS	*68*		*25 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*
13C3 PFBS	*104*		*50 - 150*	*06/26/19 11:18*	*07/05/19 07:19*	*5*

Isotope Dilution Summary

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

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)
480-155148-1	MW-9	50
480-155148-1 MS	MW-9	49
480-155148-1 MSD	MW-9	49
480-155148-2	MW-06	31
480-155148-3	MW-13	31
480-155148-4	FB-061719	30
480-155148-5	DUP-061719	31
LCS 480-479086/2-A	Lab Control Sample	34
MB 480-479086/1-A	Method Blank	34

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	PFHxS (50-150)	PFHpA (50-150)	PFOA (50-150)	PFOS (50-150)	PFNA (50-150)	PFBA (25-150)	PFHxA (50-150)	PFDA (50-150)
480-155148-1	MW-9	141	83	85	93	82	63	72	87
480-155148-1 MS	MW-9	147	93	94	97	85	65	68	92
480-155148-1 MSD	MW-9	137	81	85	97	82	62	69	92
480-155148-2	MW-06	86	92	83	79	82	76	87	78
480-155148-3	MW-13	112	88	99	81	81	103	80	79
480-155148-4	FB-061719	121	91	95	86	86	83	89	97
480-155148-5	DUP-061719	105	98	92	70	85	72	85	71
LCS 200-144504/2-A	Lab Control Sample	120	84	99	94	89	91	86	97
MB 200-144504/1-A	Method Blank	111	87	101	87	91	76	88	99

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFUnA (50-150)	PFDoA (50-150)	PFOSA (25-150)	PFPeA (25-150)	PFTDA (50-150)	-NMeFOS/ (50-150)	-NEtFOS/ (50-150)	M262FTS (25-150)
480-155148-1	MW-9	85	83	86	65	66	76	93	114
480-155148-1 MS	MW-9	88	96	81	56	83	84	98	117
480-155148-1 MSD	MW-9	88	96	82	57	81	85	103	132
480-155148-2	MW-06	82	77	63	78	67	64	98	80
480-155148-3	MW-13	75	78	72	75	79	78	87	93
480-155148-4	FB-061719	88	83	66	91	80	84	95	98
480-155148-5	DUP-061719	81	86	67	74	76	89	94	103
LCS 200-144504/2-A	Lab Control Sample	94	86	71	93	85	77	85	99
MB 200-144504/1-A	Method Blank	97	92	77	96	86	81	102	113

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M282FTS (25-150)	3C3-PFBS (50-150)
480-155148-1	MW-9	114	135
480-155148-1 MS	MW-9	118	139
480-155148-1 MSD	MW-9	120	111
480-155148-2	MW-06	103	103
480-155148-3	MW-13	77	75
480-155148-4	FB-061719	94	119
480-155148-5	DUP-061719	68	104

Isotope Dilution Summary

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)									
Lab Sample ID	**Client Sample ID**	**M282FTS (25-150)**	**3C3-PFBS (50-150)**								
LCS 200-144504/2-A	Lab Control Sample	104	129								
MB 200-144504/1-A	Method Blank	99	112								

Surrogate Legend

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

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

Lab Sample ID: MB 480-479086/1-A
Matrix: Water
Analysis Batch: 480293

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 479086

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.20	0.10	ug/L		06/21/19 16:05	06/30/19 16:29	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*34*		*15 - 110*	*06/21/19 16:05*	*06/30/19 16:29*	*1*

Lab Sample ID: LCS 480-479086/2-A
Matrix: Water
Analysis Batch: 480293

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 479086

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			1.00	1.17		ug/L		117	40 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*34*		*15 - 110*

Lab Sample ID: 480-155148-1 MS
Matrix: Water
Analysis Batch: 480293

Client Sample ID: MW-9
Prep Type: Total/NA
Prep Batch: 479086

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	ND		2.00	2.38		ug/L		119	40 - 140		

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
1,4-Dioxane-d8	*49*		*15 - 110*

Lab Sample ID: 480-155148-1 MSD
Matrix: Water
Analysis Batch: 480293

Client Sample ID: MW-9
Prep Type: Total/NA
Prep Batch: 479086

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	ND		2.00	2.29		ug/L		115	40 - 140	4	20

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,4-Dioxane-d8	*49*		*15 - 110*

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 200-144504/1-A
Matrix: Water
Analysis Batch: 144742

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 144504

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	1.0	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.63	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.76	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.91	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorooctanoic acid (PFOA)	0.658	J	2.0	0.63	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.27	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.77	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.53	ng/L		06/26/19 11:18	07/05/19 05:11	1

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

Lab Sample ID: MB 200-144504/1-A
Matrix: Water
Analysis Batch: 144742

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 144504

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.59	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorotridecanoic acid (PFTriA)	ND		2.0	0.60	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.92	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.49	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.80	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.95	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorooctanesulfonic acid (PFOS)	2.64		2.0	0.61	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.90	ng/L		06/26/19 11:18	07/05/19 05:11	1
Perfluorooctanesulfonamide (PFOSA)	4.64		2.0	0.64	ng/L		06/26/19 11:18	07/05/19 05:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		20	1.7	ng/L		06/26/19 11:18	07/05/19 05:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		20	1.5	ng/L		06/26/19 11:18	07/05/19 05:11	1
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND		20	4.6	ng/L		06/26/19 11:18	07/05/19 05:11	1
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		20	2.9	ng/L		06/26/19 11:18	07/05/19 05:11	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
18O2 PFHxS	*111*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C4 PFHpA	*87*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C4 PFOA	*101*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C4 PFOS	*87*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C5 PFNA	*91*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C4 PFBA	*76*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C2 PFHxA	*88*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C2 PFDA	*99*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C2 PFUnA	*97*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C2 PFDoA	*92*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C8 FOSA	*77*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C5 PFPeA	*96*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C2 PFTeDA	*86*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
d3-NMeFOSAA	*81*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
d5-NEtFOSAA	*102*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
M2-6:2 FTS	*113*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
M2-8:2 FTS	*99*		*25 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*
13C3 PFBS	*112*		*50 - 150*	*06/26/19 11:18*	*07/05/19 05:11*	*1*

Lab Sample ID: LCS 200-144504/2-A
Matrix: Water
Analysis Batch: 144742

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 144504

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	31.4		ng/L		78	50 - 150
Perfluoropentanoic acid (PFPeA)	40.0	42.1		ng/L		105	50 - 150
Perfluorohexanoic acid (PFHxA)	40.0	44.1		ng/L		110	70 - 130
Perfluoroheptanoic acid (PFHpA)	40.0	46.7		ng/L		117	70 - 130
Perfluorooctanoic acid (PFOA)	40.0	45.0		ng/L		113	70 - 130
Perfluorononanoic acid (PFNA)	40.0	43.7		ng/L		109	70 - 130

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

Lab Sample ID: LCS 200-144504/2-A
Matrix: Water
Analysis Batch: 144742

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 144504

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorodecanoic acid (PFDA)	40.0	41.2		ng/L		103	70 - 130
Perfluoroundecanoic acid (PFUnA)	40.0	43.5		ng/L		109	70 - 130
Perfluorododecanoic acid (PFDoA)	40.0	42.5		ng/L		106	70 - 130
Perfluorotridecanoic acid (PFTriA)	40.0	44.0		ng/L		110	70 - 130
Perfluorotetradecanoic acid (PFTeA)	40.0	41.9		ng/L		105	70 - 130
Perfluorobutanesulfonic acid (PFBS)	35.4	33.8		ng/L		96	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.7		ng/L		93	70 - 130
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.2		ng/L		111	50 - 150
Perfluorooctanesulfonic acid (PFOS)	37.1	46.7		ng/L		126	70 - 130
Perfluorodecanesulfonic acid (PFDS)	38.6	36.5		ng/L		95	50 - 150
Perfluorooctanesulfonamide (PFOSA)	40.0	53.1		ng/L		133	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	39.8		ng/L		99	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	41.4		ng/L		104	70 - 130
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	37.9	46.9		ng/L		124	50 - 150
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	38.3	42.7		ng/L		112	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
18O2 PFHxS	*120*		*50 - 150*
13C4 PFHpA	*84*		*50 - 150*
13C4 PFOA	*99*		*50 - 150*
13C4 PFOS	*94*		*50 - 150*
13C5 PFNA	*89*		*50 - 150*
13C4 PFBA	*91*		*25 - 150*
13C2 PFHxA	*86*		*50 - 150*
13C2 PFDA	*97*		*50 - 150*
13C2 PFUnA	*94*		*50 - 150*
13C2 PFDoA	*86*		*50 - 150*
13C8 FOSA	*71*		*25 - 150*
13C5 PFPeA	*93*		*25 - 150*
13C2 PFTeDA	*85*		*50 - 150*
d3-NMeFOSAA	*77*		*50 - 150*
d5-NEtFOSAA	*85*		*50 - 150*
M2-6:2 FTS	*99*		*25 - 150*
M2-8:2 FTS	*104*		*25 - 150*
13C3 PFBS	*129*		*50 - 150*

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

Lab Sample ID: 480-155148-1 MS
Matrix: Water
Analysis Batch: 144742

Client Sample ID: MW-9
Prep Type: Total/NA
Prep Batch: 144504

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	2.0		31.8	26.9		ng/L		78	40 - 160
Perfluoropentanoic acid (PFPeA)	2.2		31.8	47.0		ng/L		141	40 - 160
Perfluorohexanoic acid (PFHxA)	2.1		31.8	39.7		ng/L		118	40 - 160
Perfluoroheptanoic acid (PFHpA)	1.2	J	31.8	34.4		ng/L		105	40 - 160
Perfluorooctanoic acid (PFOA)	5.9	B	31.8	38.7		ng/L		103	40 - 160
Perfluorononanoic acid (PFNA)	0.61	J	31.8	36.2		ng/L		112	40 - 160
Perfluorodecanoic acid (PFDA)	ND		31.8	35.4		ng/L		111	40 - 160
Perfluoroundecanoic acid (PFUnA)	ND		31.8	38.4		ng/L		121	40 - 160
Perfluorododecanoic acid (PFDoA)	ND		31.8	34.2		ng/L		107	40 - 160
Perfluorotridecanoic acid (PFTriA)	ND		31.8	32.9		ng/L		103	40 - 160
Perfluorotetradecanoic acid (PFTeA)	ND		31.8	35.9		ng/L		113	40 - 160
Perfluorobutanesulfonic acid (PFBS)	1.1	J	28.1	27.8		ng/L		95	40 - 160
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	29.0	26.6		ng/L		88	40 - 160
Perfluoroheptanesulfonic Acid (PFHpS)	ND		30.3	37.7		ng/L		124	40 - 160
Perfluorooctanesulfonic acid (PFOS)	3.2	B	29.5	35.7		ng/L		110	40 - 160
Perfluorodecanesulfonic acid (PFDS)	ND		30.7	30.9		ng/L		101	40 - 160
Perfluorooctanesulfonamide (PFOSA)	1.5	J B	31.8	42.1		ng/L		128	40 - 160
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		31.8	37.0		ng/L		116	40 - 160
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		31.8	35.3		ng/L		111	40 - 160
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND	F2	30.2	33.6		ng/L		111	40 - 160
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		30.5	33.0		ng/L		108	40 - 160

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
18O2 PFHxS	*147*		*50 - 150*
13C4 PFHpA	*93*		*50 - 150*
13C4 PFOA	*94*		*50 - 150*
13C4 PFOS	*97*		*50 - 150*
13C5 PFNA	*85*		*50 - 150*
13C4 PFBA	*65*		*25 - 150*
13C2 PFHxA	*68*		*50 - 150*
13C2 PFDA	*92*		*50 - 150*
13C2 PFUnA	*88*		*50 - 150*
13C2 PFDoA	*96*		*50 - 150*
13C8 FOSA	*81*		*25 - 150*
13C5 PFPeA	*56*		*25 - 150*
13C2 PFTeDA	*83*		*50 - 150*
d3-NMeFOSAA	*84*		*50 - 150*
d5-NEtFOSAA	*98*		*50 - 150*

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

Lab Sample ID: 480-155148-1 MS
Matrix: Water
Analysis Batch: 144742

Client Sample ID: MW-9
Prep Type: Total/NA
Prep Batch: 144504

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
M2-6:2 FTS	*117*		*25 - 150*
M2-8:2 FTS	*118*		*25 - 150*
13C3 PFBS	*139*		*50 - 150*

Lab Sample ID: 480-155148-1 MSD
Matrix: Water
Analysis Batch: 144742

Client Sample ID: MW-9
Prep Type: Total/NA
Prep Batch: 144504

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	2.0		32.0	26.9		ng/L		78	40 - 160	0	30
Perfluoropentanoic acid (PFPeA)	2.2		32.0	43.2		ng/L		128	40 - 160	8	30
Perfluorohexanoic acid (PFHxA)	2.1		32.0	36.4		ng/L		107	40 - 160	9	20
Perfluoroheptanoic acid (PFHpA)	1.2	J	32.0	37.7		ng/L		114	40 - 160	9	20
Perfluorooctanoic acid (PFOA)	5.9	B	32.0	44.8		ng/L		122	40 - 160	15	20
Perfluorononanoic acid (PFNA)	0.61	J	32.0	35.8		ng/L		110	40 - 160	1	20
Perfluorodecanoic acid (PFDA)	ND		32.0	34.7		ng/L		108	40 - 160	2	20
Perfluoroundecanoic acid (PFUnA)	ND		32.0	36.4		ng/L		114	40 - 160	5	20
Perfluorododecanoic acid (PFDoA)	ND		32.0	34.0		ng/L		106	40 - 160	1	20
Perfluorotridecanoic acid (PFTriA)	ND		32.0	33.1		ng/L		104	40 - 160	1	20
Perfluorotetradecanoic acid (PFTeA)	ND		32.0	35.5		ng/L		111	40 - 160	1	20
Perfluorobutanesulfonic acid (PFBS)	1.1	J	28.3	32.9		ng/L		112	40 - 160	17	20
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	29.1	28.3		ng/L		93	40 - 160	6	20
Perfluoroheptanesulfonic Acid (PFHpS)	ND		30.5	36.7		ng/L		120	40 - 160	3	30
Perfluorooctanesulfonic acid (PFOS)	3.2	B	29.7	37.4		ng/L		115	40 - 160	5	20
Perfluorodecanesulfonic acid (PFDS)	ND		30.8	32.0		ng/L		104	40 - 160	4	30
Perfluorooctanesulfonamide (PFOSA)	1.5	J B	32.0	37.8		ng/L		114	40 - 160	11	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		32.0	35.3		ng/L		110	40 - 160	5	20
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		32.0	31.5		ng/L		99	40 - 160	11	20
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	ND	F2	30.3	24.3	F2	ng/L		80	40 - 160	32	30
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	ND		30.6	38.8		ng/L		127	40 - 160	16	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
18O2 PFHxS	*137*		*50 - 150*
13C4 PFHpA	*81*		*50 - 150*
13C4 PFOA	*85*		*50 - 150*
13C4 PFOS	*97*		*50 - 150*
13C5 PFNA	*82*		*50 - 150*
13C4 PFBA	*62*		*25 - 150*

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

Lab Sample ID: 480-155148-1 MSD
Matrix: Water
Analysis Batch: 144742

Client Sample ID: MW-9
Prep Type: Total/NA
Prep Batch: 144504

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C2 PFHxA	69		50 - 150
13C2 PFDA	92		50 - 150
13C2 PFUnA	88		50 - 150
13C2 PFDoA	96		50 - 150
13C8 FOSA	82		25 - 150
13C5 PFPeA	57		25 - 150
13C2 PFTeDA	81		50 - 150
d3-NMeFOSAA	85		50 - 150
d5-NEtFOSAA	103		50 - 150
M2-6:2 FTS	132		25 - 150
M2-8:2 FTS	120		25 - 150
13C3 PFBS	111		50 - 150

QC Association Summary

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

GC/MS Semi VOA

Prep Batch: 479086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-155148-1	MW-9	Total/NA	Water	3510C	
480-155148-2	MW-06	Total/NA	Water	3510C	
480-155148-3	MW-13	Total/NA	Water	3510C	
480-155148-4	FB-061719	Total/NA	Water	3510C	
480-155148-5	DUP-061719	Total/NA	Water	3510C	
MB 480-479086/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-479086/2-A	Lab Control Sample	Total/NA	Water	3510C	
480-155148-1 MS	MW-9	Total/NA	Water	3510C	
480-155148-1 MSD	MW-9	Total/NA	Water	3510C	

Analysis Batch: 480293

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-155148-1	MW-9	Total/NA	Water	8270D SIM ID	479086
480-155148-2	MW-06	Total/NA	Water	8270D SIM ID	479086
480-155148-3	MW-13	Total/NA	Water	8270D SIM ID	479086
480-155148-4	FB-061719	Total/NA	Water	8270D SIM ID	479086
480-155148-5	DUP-061719	Total/NA	Water	8270D SIM ID	479086
MB 480-479086/1-A	Method Blank	Total/NA	Water	8270D SIM ID	479086
LCS 480-479086/2-A	Lab Control Sample	Total/NA	Water	8270D SIM ID	479086
480-155148-1 MS	MW-9	Total/NA	Water	8270D SIM ID	479086
480-155148-1 MSD	MW-9	Total/NA	Water	8270D SIM ID	479086

LCMS

Prep Batch: 144504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-155148-1	MW-9	Total/NA	Water	3535	
480-155148-2	MW-06	Total/NA	Water	3535	
480-155148-3	MW-13	Total/NA	Water	3535	
480-155148-4	FB-061719	Total/NA	Water	3535	
480-155148-5	DUP-061719	Total/NA	Water	3535	
MB 200-144504/1-A	Method Blank	Total/NA	Water	3535	
LCS 200-144504/2-A	Lab Control Sample	Total/NA	Water	3535	
480-155148-1 MS	MW-9	Total/NA	Water	3535	
480-155148-1 MSD	MW-9	Total/NA	Water	3535	

Analysis Batch: 144742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-155148-1	MW-9	Total/NA	Water	537 (modified)	144504
480-155148-2	MW-06	Total/NA	Water	537 (modified)	144504
480-155148-3	MW-13	Total/NA	Water	537 (modified)	144504
480-155148-4	FB-061719	Total/NA	Water	537 (modified)	144504
480-155148-5	DUP-061719	Total/NA	Water	537 (modified)	144504
MB 200-144504/1-A	Method Blank	Total/NA	Water	537 (modified)	144504
LCS 200-144504/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	144504
480-155148-1 MS	MW-9	Total/NA	Water	537 (modified)	144504
480-155148-1 MSD	MW-9	Total/NA	Water	537 (modified)	144504

Lab Chronicle

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

Client Sample ID: MW-9
Date Collected: 06/17/19 10:20
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			479086	06/21/19 16:05	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	480293	06/30/19 18:03	RJS	TAL BUF
Total/NA	Prep	3535			144504	06/26/19 11:18	TPB	TAL BUR
Total/NA	Analysis	537 (modified)		1	144742	07/05/19 05:43	JM1	TAL BUR

Client Sample ID: MW-06
Date Collected: 06/17/19 13:31
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			479086	06/21/19 16:05	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	480293	06/30/19 18:27	RJS	TAL BUF
Total/NA	Prep	3535			144504	06/26/19 11:18	TPB	TAL BUR
Total/NA	Analysis	537 (modified)		5	144742	07/05/19 06:31	JM1	TAL BUR

Client Sample ID: MW-13
Date Collected: 06/17/19 15:51
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			479086	06/21/19 16:05	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	480293	06/30/19 18:50	RJS	TAL BUF
Total/NA	Prep	3535			144504	06/26/19 11:18	TPB	TAL BUR
Total/NA	Analysis	537 (modified)		5	144742	07/05/19 06:47	JM1	TAL BUR

Client Sample ID: FB-061719
Date Collected: 06/17/19 15:30
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			479086	06/21/19 16:05	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	480293	06/30/19 19:14	RJS	TAL BUF
Total/NA	Prep	3535			144504	06/26/19 11:18	TPB	TAL BUR
Total/NA	Analysis	537 (modified)		1	144742	07/05/19 07:03	JM1	TAL BUR

Client Sample ID: DUP-061719
Date Collected: 06/17/19 00:00
Date Received: 06/19/19 09:00

Lab Sample ID: 480-155148-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			479086	06/21/19 16:05	ATG	TAL BUF
Total/NA	Analysis	8270D SIM ID		1	480293	06/30/19 19:37	RJS	TAL BUF
Total/NA	Prep	3535			144504	06/26/19 11:18	TPB	TAL BUR
Total/NA	Analysis	537 (modified)		5	144742	07/05/19 07:19	JM1	TAL BUR

Lab Chronicle

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

Laboratory References:

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

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

Accreditation/Certification Summary

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

Laboratory: Eurofins TestAmerica, Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-20

Laboratory: Eurofins TestAmerica, Burlington

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

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

Method Summary

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

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 BUR
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
3535	Solid-Phase Extraction (SPE)	SW846	TAL BUR

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

Sample Summary

Client: ARCADIS U.S. Inc
Project/Site: Con Ed Ossining

Job ID: 480-155148-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-155148-1	MW-9	Water	06/17/19 10:20	06/19/19 09:00	
480-155148-2	MW-06	Water	06/17/19 13:31	06/19/19 09:00	
480-155148-3	MW-13	Water	06/17/19 15:51	06/19/19 09:00	
480-155148-4	FB-061719	Water	06/17/19 15:30	06/19/19 09:00	
480-155148-5	DUP-061719	Water	06/17/19 00:00	06/19/19 09:00	

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

FROM SYR; PFAS → BUF; DIOX → BUF, - RE

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Syracuse #225

Client Information	Sampler: Josh Sinay + Rob Noonan	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-130742-29497.1
Client Contact: Mr. Joshua Sinay	Phone: 315-877-6720	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: ARCADIS U.S. Inc				Job #:
Address: One Lincoln Center 110 West Fayette St, Suite 300	Due Date Requested:			
City: Syracuse	TAT Requested (days): Standard			
State, Zip: NY, 13202				
Phone: 315-671-9171	PO #: B0043024.0050.00010			
Email: josh.sinay@arcadis.com	WO #:			
Project Name: Con Ed Ossining	Project #: 48019049			
Site: Ossining, NY	SSOW#:			

Analysis Requested

Preservation Codes:

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

Other:

Sample Identification	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 - 1,4 Dioxane	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
MW-9	6/17/19	1020	G	Water			2	2		
MW-9-MS/MSD	6/17/19	1020	G	Water			4	1		
MW-06	6/17/19	1331	G	Water			2	2		
MW-13	6/17/19	1551	G	Water						
FB-061719	6/17/19	1530	G	Water			2	2		
DUP-061719	6/17/19	—		Water			2	2		
				Water						

480-155148 Chain of Custody

2 Coolers

RE 6-17-19

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ 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
Josh Sinay	6/17/19 2200	Arcadis	RE Tug/LLC	6-17-19, 22:00	Syr
RE Tug/LLC	6-18-19, 19:00	Syr	Courier	6/19/17 0900	TAB
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: #	3.4, 2.8, 3.5

Ver: 01/16/2019

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

From Syr; PFAS → BST; Diox → Buf; - RE

Chain of Custody Record

eurofins | TestAmerica

Syracuse #225

Client Information	Sampler: Josh Sinay + Rob Noonan	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-130742-29497.1
Client Contact: Mr. Joshua Sinay	Phone: 315-877-6720	E-Mail: melissa.deyo@testamericainc.com		Page: Page 1 of 1
Company: ARCADIS U.S. Inc				Job #:
Address: One Lincoln Center 110 West Fayette St, Suite 300	Due Date Requested:		Analysis Requested	
City: Syracuse	TAT Requested (days): Standard			
State, Zip: NY, 13202				
Phone: 315-671-9171	PO #: B0043024.0050.00010			
Email: josh.sinay@arcadis.com	WO #:			
Project Name: Con Ed Ossining	Project #: 48019049			
Site: Ossining, NY	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFC_IDA - PFAS, Standard List (21 analytes)	8270D_SIM_MS_ID - 1,4 Dioxane	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
MW-9	6/17/19	1020	G	Water			2	2		
MW-9-MS/MSD	6/17/19	1020	G	Water			4	1		
MW-06	6/17/19	1331	G	Water			2	2		
MW-13	6/17/19	1551	G	Water						
FB-061719	6/17/19	1530	G	Water			2	2		
DUP-061719	6/17/19	—		Water			2	2		
				Water						
RE 6-17-19										

480-155148 Chain of Custody

3 coolers

Preservation Codes:

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

Other:

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
1	Josh Sinay	6/17/19 2200	Arcadis	RE-Fedex	6-17-19, 22:00	Syr
2	RE-Fedex	6-18-19, 19:00	Syr		6/19/19 10:38	TA Buf
3						

Custody Seals Intact: ☒ Yes ☐ No | Custody Seal No.: N/A

Cooler Temperature(s) °C and Other Remarks: 2.0

Ver: 01/16/2019

ORIGIN ID:SYRA (315) 431-0171
SYR SERVICE CENTER
EUROFINS TESTAMERICA
118 BOSS RD

SYRACUSE, NY 13211
UNITED STATES US

SHIP DATE: 18JUN19
ACTWGT: 22.00 LB MAN
CAD: 251798/CAFE3211

BILL RECIPIENT

551C1/D210/104C

TO SAMPLE RECEIVING
TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE SUITE 11

SOUTH BURLINGTON VT 05403
(802) 660-1990
REF: ARCADIS OSSINING 1COOLER

FedEx
Express

E

J181118060501uv

WED - 19 JUN 10:30A
PRIORITY OVERNIGHT

TRK# 0201 4651 0843 8463

NC BTVA

05403
VT-US BTV

Deyo, Melissa

From: Sinay, Josh <Josh.Sinay@arcadis.com>
Sent: Thursday, June 20, 2019 1:50 PM
To: Deyo, Melissa; Healy, Lawrence
Subject: RE: Eurofins TestAmerica Sample Login Confirmation files from 480-155148 Con Ed Ossining

-External Email-

Yes please run MW-13 for PFCs and 1,4-Dioxane.

Thanks,

Josh

Joshua Sinay EIT | Environmental Engineer 2 | Josh.Sinay@arcadis.com

110 W. Fayette Street, Suite 300, Syracuse, NY | 13202 | USA
T. +1 315 671 9171 | M. + 1 315 877 6720

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ARCADIS Design & Consultancy for natural and built assets

Be green, leave it on the screen.

From: Melissa Deyo <melissa.deyo@testamericainc.com>
Sent: Thursday, June 20, 2019 1:45 PM
To: Sinay, Josh <Josh.Sinay@arcadis.com>; Healy, Lawrence <Lawrence.Healy@arcadis.com>
Subject: Eurofins TestAmerica Sample Login Confirmation files from 480-155148 Con Ed Ossining

Hello,

Attached, please find the Sample Confirmation files for job 480-155148; Con Ed Ossining

Sample MW-13 did not have any analyses checked on on the COC, Did you want this sample run for PFCs and 1,4-Dioxane.
Please feel free to contact me if you have any questions.

Thank you.

Melissa L Deyo
Project Manager

Eurofins TestAmerica, Buffalo
Phone: 716-504-9874

E-mail: melissa.deyo@testamericainc.com
www.eurofinsus.com | www.testamericainc.com

Reference: [480-437611]
Attachments: 2

Please let us know if we met your expectations by rating the service you received from Eurofins TestAmerica on this project by visiting our website at: Project Feedback

Login Sample Receipt Checklist

Client: ARCADIS U.S. Inc

Job Number: 480-155148-1

Login Number: 155148
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is 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 sample IDs on the containers 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	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: ARCADIS U.S. Inc

Job Number: 480-155148-1

Login Number: 155148
List Number: 2
Creator: McNabb, Robert W

List Source: Eurofins TestAmerica, Burlington
List Creation: 06/20/19 09:49 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
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	2.0ºC
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	JS, RN
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	