Surface Water and Sediment Sampling Summary Report

Former NOW Corporation Facility (Site No. 314008)

New York State Department of Environmental Conservation

Project number: 60631041

December 2025

Quality Information

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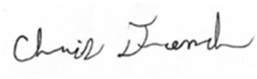	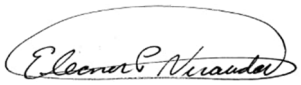		
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Revision History

Revision	Revision date	Details	Authorized	Name	Position

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Acronyms and Abbreviations

AECOM	AECOM USA, Inc.
AWQ GV	Ambient Water Quality Guidance Value
AWQS/GV	Ambient Water Quality Standards and Guidance Values
bgs	below ground surface
ºC	degrees Celsius
COC	contaminant of concern
1,1-DCA	1,1-dichloroethane
cis-1,2-DCE	cis-1,2-dichloroethylene
DUSR	data usability summary report
ES	Engineering-Science, Inc.
GAC	granular activated carbon
MCL	maximum contaminant level
mg/L	milligrams per liter
ng/L	nanograms per liter
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU	Operable Unit
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PFDA	perfluorodecanoic acid
PFDoA	perfluorododecanoic acid
PFHpA	perfluoroheptanoic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFTeDA	perfluorotetradecanoic acid
PFTrDA	perfluorotridecanoic acid
PFUnA	perfluoroundecanoic acid
POE	point-of-entry
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
TCE	trichloroethylene
TOC	total organic carbon
TSS	total suspended solids
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
US EPA	United States Environmental Protection Agency
VE	vapor extraction
VOCs	volatile organic compounds

1. Introduction

AECOM USA, Inc. (AECOM) has prepared this Surface Water and Sediment Sampling Summary Report for the New York State Department of Environmental Conservation (NYSDEC), associated with surface water and sediment sampling activities conducted on November 20, 2023 in the vicinity of the Former NOW Corporation Facility located at 2092 Route 9G in the Town of Clinton, Dutchess County, New York (Site). The Site location is provided on **Figure 1**. The sampling was conducted for Work Assignment No. D009803-19 of the State Superfund Standby Contract between the NYSDEC and AECOM.

1.1 Site Overview

The Former NOW Corporation Facility (Site No. 314008) is approximately 9 acres in size and is an active manufacturing facility. The Site layout and features are presented on **Figure 2**.

The Site is located in a broad northeast-trending valley, with bedrock outcrops exposed along the eastern portion of the valley. Depth to bedrock ranges from 0 to approximately 35 feet below ground surface (bgs). The bedrock consists of dark gray phyllite and metamorphosed dark gray sandstone of the Austin Glen Formation. Published geologic maps and reports indicate that the rocks in the area have undergone extensive folding and faulting. Where observed, the phyllite appeared highly fractured with generally closely spaced fractures along bedding and cleavage planes (Engineering-Science, Inc. [ES] Remedial Investigation/Feasibility Study [RI/FS] Report, 1995).

Locally, the unconsolidated materials are variable in thickness and composition. In the southern portion of the Site, a relatively thin brown silt and clay unit (5 to 10 feet thick) overlies approximately 20 feet of fine to coarse sand and gravel. Throughout the central and northern portions of the Site, a brown silt unit overlies a dense, gray till of variable thickness of 0 to 14 feet (ES, 1995). According to the RI, all unconsolidated materials were observed to be unsaturated.

Groundwater flow at the Site occurs under semi-confined conditions along zones of secondary porosity in the fractured bedrock aquifer. The natural direction of groundwater flow is generally from the relatively high elevations and hillsides in the eastern portion of the Site to the lower western portion. Pumping test data indicated that the groundwater flow direction is strongly influenced by the occurrence and orientation of the fractures in the bedrock, especially under pumping/drawdown conditions.

1.2 Site History

The Site was added to the NYSDEC Registry of Hazardous Waste Sites in December 1983 as a Class 2a site, due to allegations of on-site disposal of tank rinsing solutions. A Record of Decision (ROD) was issued in March 1995 for impacted groundwater, denoted as Operable Unit (OU) 1, and in March 1996 for impacted soil, denoted as OU 2.

Due to the contamination of the overburden and underlying bedrock aquifer with volatile organic compounds (VOCs), the selected remedy consisted of: removal and on-site treatment of soil; installation of three groundwater/vapor recovery wells and a groundwater treatment system consisting of an air stripper, clarifier, sand filter and granular activated carbon (GAC) vessels, with most treated groundwater being discharged to Crum Elbow Creek and the remaining groundwater being reinjected; two vapor extraction wells and a bedrock vapor extraction (VE) system consisting of a blower and GAC vessels; and implementation of site controls, including groundwater monitoring. The vapor recovery and groundwater re-infiltration systems were taken offline circa 2005, and a replacement air stripper was installed in June 2012.

Regular monitoring was conducted on the groundwater treatment system, including remote system monitoring, monthly compliance sampling, and annual groundwater sampling. Properties near the Site with groundwater wells with elevated VOC concentrations have been provided with bottled water or point-of-entry (POE) GAC treatment systems to eliminate the potential for the ingestion of contaminants of concern (COCs) from impacted groundwater. Based on AECOM's review of the existing historical data

and information, the groundwater treatment system at the Site partially functioned as designed. While the treatment system limited plume spread off-site and removed significant contaminant mass, after 22 years of operation contamination concentrations in the groundwater recovery wells (most significantly TW-2A) remained high. TW-2A concentrations fluctuated between approximately 1 and 2 milligrams per liter (mg/L) with no clear trend of decreasing further. Between 1998 and 2020, the treatment system removed approximately 1,257 pounds of total VOCs. Concentrations of total VOCs declined in recovery wells TW-1, TW-2A, and TW-3 during that time, with the greatest reduction occurring in TW-2A. On November 30, 2020, the groundwater treatment system was shut down per NYSDEC directive and has remained in that state.

At the Site, a groundwater well supplies untreated water to building tenants. The water is reportedly not consumed, but dermal contact can occur. A sample was collected in September 2016 and analyzed for VOCs. The water contained 1,1-dichloroethane (1,1-DCA) at 122 micrograms per liter (µg/L), cis-1,2-dichloroethylene (cis-1,2-DCE) at 77 µg/L, and trichloroethylene (TCE) at 32 µg/L, each of which exceeded the class GA groundwater standards or guidance values listed in NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1, as amended, for protection of a source of drinking water (NYSDEC, 1998). The NYSDEC Ambient Water Quality Standard or Guidance Value (AWQS/GV) for each of these compounds is 5 µg/L.

POE carbon filters are maintained on three impacted downgradient homeowner wells; additionally, long-term monitoring of the groundwater monitoring well network continues to be performed at the required intervals.

1.3 Previous Site-Related Emerging Contaminant Investigations

Periodic emerging contaminant sampling, including for per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane, has been performed at the Site since 2019. Initially, four wells were sampled in May 2019 as a subset of available monitoring wells in order to screen for emerging contaminants. Subsequently, many or all available monitoring wells on-site and off-site were sampled and analyzed for emerging contaminants in December 2020, March 2022, and July 2023. 1,4-dioxane and PFAS, specifically perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS), have been detected at concentrations exceeding the NYSDEC Ambient Water Quality Guidance Values (AWQ GVs) presented in NYSDEC PFAS guidance to be protective of human health (NYSDEC, 2023; **Appendix A**). In March 2022, 1,4-Dioxane was detected in ten monitoring wells at concentrations exceeding the AWQ GV of 0.35 µg/L, with a range of non-detect to 28 µg/L. Up to 410 D nanograms per liter (ng/L) of PFOA and up to 6.8 ng/L of PFOS were detected in on-site wells during the March 2022 groundwater monitoring event. Ten wells contained PFOA concentrations exceeding the AWQ GV of 6.7 ng/L, while two wells contained PFOS concentrations exceeding the AWQ GV of 2.7 ng/L during the event. In July 2023, 1,4-dioxane was detected at concentrations exceeding the AWQ GV in eleven monitoring wells, with a range of non-detect to 28 µg/L. Up to 270 ng/L of PFOA (which was reported in a duplicate sample) and up to 6.7 ng/L of PFOS were detected in on-site wells. Twelve wells contained PFOA concentrations exceeding the AWQ GV, while one well contained PFOS concentrations exceeding the AWQ GV.

Due to the elevated PFAS and 1,4-dioxane concentrations in on-site wells, the New York State Department of Health (NYSDOH) identified twenty residences and businesses surrounding the Site with private wells as a drinking water source. Between January 2022 and December 2022, AECOM sampled sixteen private drinking water wells for PFAS and 1,4-dioxane as allowed by the property owners. Potable water samples collected from two of the sixteen properties contained PFOA, PFOS and/or 1,4-dioxane concentrations exceeding the maximum contaminant levels (MCLs) for the compounds, warranting alternative water supply arrangements with the NYSDEC.

1.4 Sampling Objectives

Considering the close proximity of Crum Elbow Creek to the Site and its former use as an effluent discharge point for the groundwater treatment system, surface water and sediment sampling of Crum Elbow Creek upstream and downstream of the discharge location was performed.

The intent of the surface water and sediment sampling was to: 1) to assess whether there is any PFAS or 1,4-dioxane contamination in Crum Elbow Creek or its corresponding sediments; and 2) if there are impacts, to provide information regarding whether the PFAS or 1,4-dioxane can be linked to the Former NOW Corporation Facility.

PFAS and 1,4-dioxane were assessed at conditions resembling base flow as closely as possible, when the suspended sediment load is minimal and turbidity is low. The PFAS and 1,4-dioxane under these conditions would be overwhelmingly in the dissolved phase, and potential inputs to the stream are residual rainfall in the stream system and groundwater.

2. Crum Elbow Creek Surface Water and Sediment Sampling Activities

Surface water and sediment samples were collected from two locations in Crum Elbow Creek. Samples were collected following the guidance “Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC’s Part 375 Remedial Programs” (NYSDEC, 2023). The document can be viewed in **Appendix A**. The approximate sampling locations (Water-US/Soil-US and Water-DS/Soil-DS) are shown on **Figure 3**. In the vicinity of the Former NOW Corporation Facility, Crum Elbow Creek generally flows from north to south. Sample locations Water-US and Soil-US were located upstream/upgradient of both the Site and the groundwater treatment system discharge point. These locations were selected to represent background emerging contaminant levels without influence from the Former NOW Corporation Facility. Sample locations Water-DS and Soil-DS are considered to represent locations downstream/downgradient of the Site’s groundwater treatment system discharge and were anticipated to represent the greatest potential impacts from the Site.

Samples were collected from the downstream/downgradient locations first in order to avoid potential cross-contamination from sampling activities performed at the upstream/upgradient sampling locations. The surface water sample was collected from each location by dipping the sample container beneath the surface of the creek. Sediment samples were subsequently collected at each location with a clean (decontaminated), uncoated stainless steel hand trowel and bowl.

The surface water and sediment samples were placed in pre-preserved bottles provided by the NYSDEC call-out laboratory, Pace Analytical Services, LLC. The samples were cooled to 4 degrees Celsius (ºC) after collection and shipped to the laboratory for analysis under standard chain-of-custody procedures. All surface water samples were analyzed for total suspended solids (TSS), PFAS by United States Environmental Protection Agency (US EPA) Method 1633, and 1,4-dioxane by US EPA SW-846 Method 8270E. Sediment samples were analyzed for PFAS and 1,4-dioxane by the same methods and, additionally, for percent solids via Method SM 2540G and total organic carbon (TOC) via SW-846 Method 9060A. The PFAS samples were stored and shipped in a separate cooler than the 1,4-dioxane samples.

3. Results

3.1 Surface Water Results

The analytical results for the November 2023 surface water sampling event in Crum Elbow Creek are presented in **Table 1** and on **Figure 3**. While AWQ GVs have not been established specifically for emerging contaminants in surface water, concentrations of PFOA and PFOS did not exceed the AWQ GVs for groundwater in either the upstream/upgradient (Water-US) or downstream/downgradient (Water-DS) water samples.

Water sample Water-US did not contain detectable concentrations of PFOA or PFOS. Perfluorobutanesulfonic acid (PFBS) was the only PFAS detected in the sample, with a concentration of 0.60 J ng/L.

The duplicate of water sample Water-DS contained a PFOA concentration of 1.1 ng/L (the parent sample contained 0.98 ng/L), while PFOS was not detected in either sample. Additionally, perfluoroheptanoic acid (PFHpA) and PFBS were detected in the parent sample with concentrations of 0.48 J ng/L and 0.62 J ng/L, respectively. The duplicate downstream water sample results were similar to those of the parent sample.

1,4-Dioxane was not detected in either the upstream/upgradient water sample or the downstream/downgradient water sample.

The laboratory reports can be viewed in **Appendix B**, while the data usability summary reports (DUSRs) are provided in **Appendix C**.

3.2 Sediment Results

The analytical results for the November 2023 sediment sampling in Crum Elbow Creek are presented in **Table 1** and **Figure 3**.

Sample Soil-US had a PFOA concentration of 0.47 micrograms per kilogram (µg/kg) dry and a PFOS concentration of 0.96 µg/kg dry. Additionally, there were detections of PFHpA, perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), perfluoroundecanoic acid (PFUnA), perfluorododecanoic acid (PFDoA), perfluorotridecanoic acid (PFTrDA) and perfluorotetradecanoic acid (PFTeDA).

Sample Soil-DS contained PFOS at a concentration of 0.35 µg/kg dry, while PFOA was non-detect. Additionally, there were detections of PFNA, PFUnA, PFDoA, PFTrDA and PFTeDA. The duplicate sediment sample results were similar to those of the parent sample.

Sediment does not have any NYSDEC AWQ GVs; however, when compared to the NYSDEC unrestricted use soil GVs of 0.66 µg/kg for PFOA and 0.88 µg/kg for PFOS (**Appendix A**), the upstream sediment sample Soil-US contained a PFOS concentration slightly above the unrestricted use soil GV for the compound.

1,4-Dioxane was not detected in either sediment sample or in the field duplicate collected with the downstream sediment sample.

The equipment blank, which was collected from the stainless steel bowl, contained detections of five PFAS, including PFOA (0.63 J ng/L).

4. Conclusions

Concentrations of PFAS were low in sediment and surface water both upstream and downstream of the Site's groundwater treatment discharge point in Crum Elbow Creek. PFOA was detected in the downstream surface water duplicate sample with a concentration of 1.1 ng/L; however, the surface water samples contained no other detections of PFOA, PFOS or 1,4-dioxane. PFOS was detected in both sediment samples, with the higher concentration of 0.96 µg/kg in the upstream sediment sample. PFOA was also detected in the upstream sediment sample (0.47 µg/kg). 1,4-Dioxane was not detected in any of the surface water or sediment samples collected.

There was no distinguishable difference in PFAS concentrations between upstream and downstream samples in either surface water or sediment. Differences in PFAS concentrations between upstream and downstream locations were less than approximately 1 ng/L or 1 µg/kg for all analytes in both sampled media. In surface water, PFOA had a slightly higher concentration downstream than upstream (1.1 ng/L in the duplicate sample, compared to non-detect). In the sediment, the upstream sample consistently displayed slightly higher concentrations of PFAS than the downstream sample. Based on this analysis, the PFAS detected in Crum Elbow Creek is likely environmental background and the remedial activities performed at the Former NOW Corporation Facility do not appear to have had a substantive impact on Crum Elbow Creek.

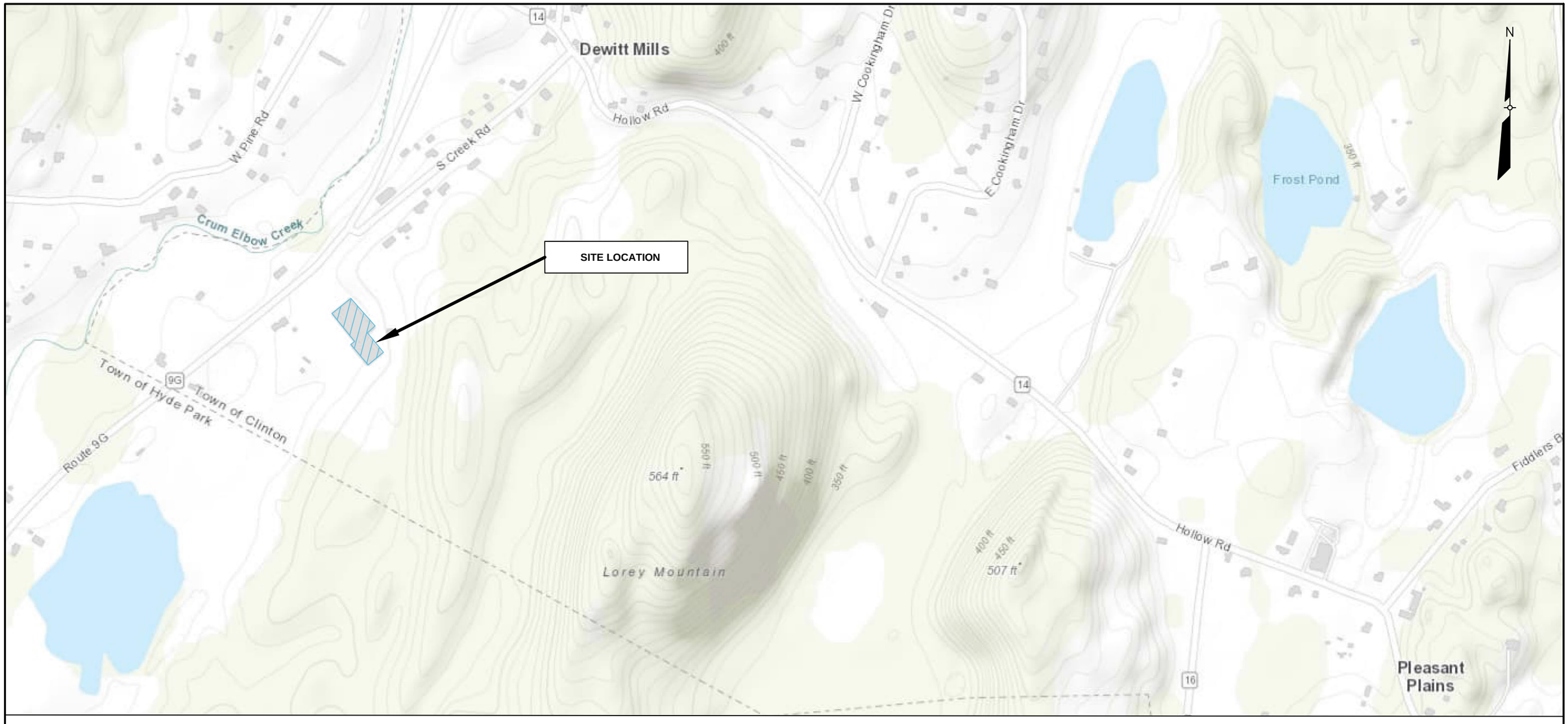
5. References

Engineering-Science, Inc., 1995. Remedial Investigation/Feasibility Study Report, NOW Corporation Site, Town of Clinton, Dutchess County. January 1995.

NYSDEC, 1998. Technical & Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. Errata, January 1999; Addenda, April 2000; Addenda, June 2004a; Addenda, February 2023.

NYSDEC, 2023. Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs. April 2023.

Figures



LEGEND:

NOW CORPORATION SITE - MAIN BUILDING LOCATION

NOTES:

MAP IS NOT TO SCALE

REFERENCED FROM NYSDEC ENVIRONMENTAL RESOURCE MAPPER 2024

AECOM
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FIGURE 1
SITE LOCATION WITH TOPOGRAPHY

NYSDEC
FORMER NOW CORPORATION FACILITY
TOWN OF CLINTON - DUTCHESS COUNTY, NEW YORK

JULY 2025 60631041

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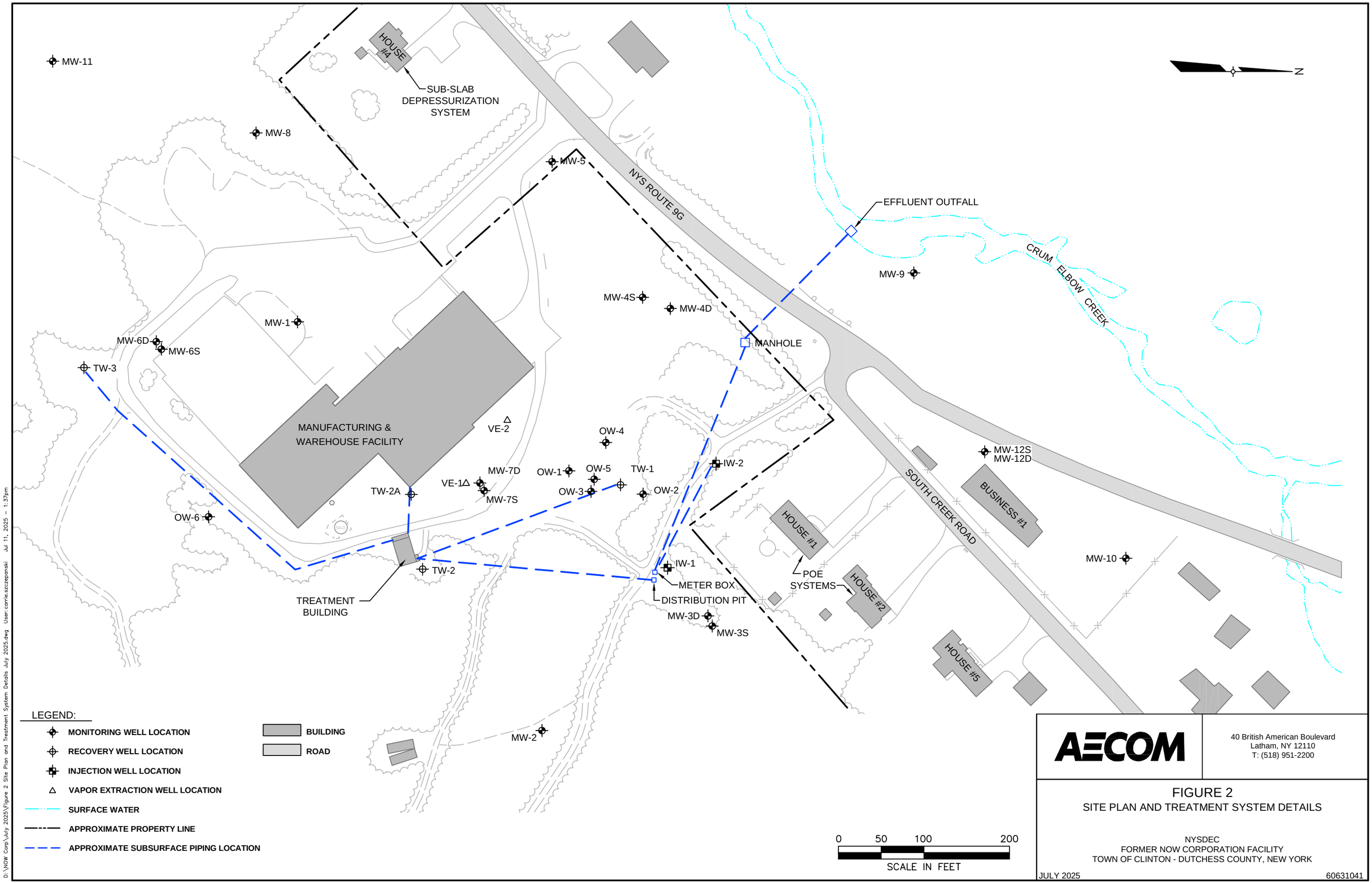

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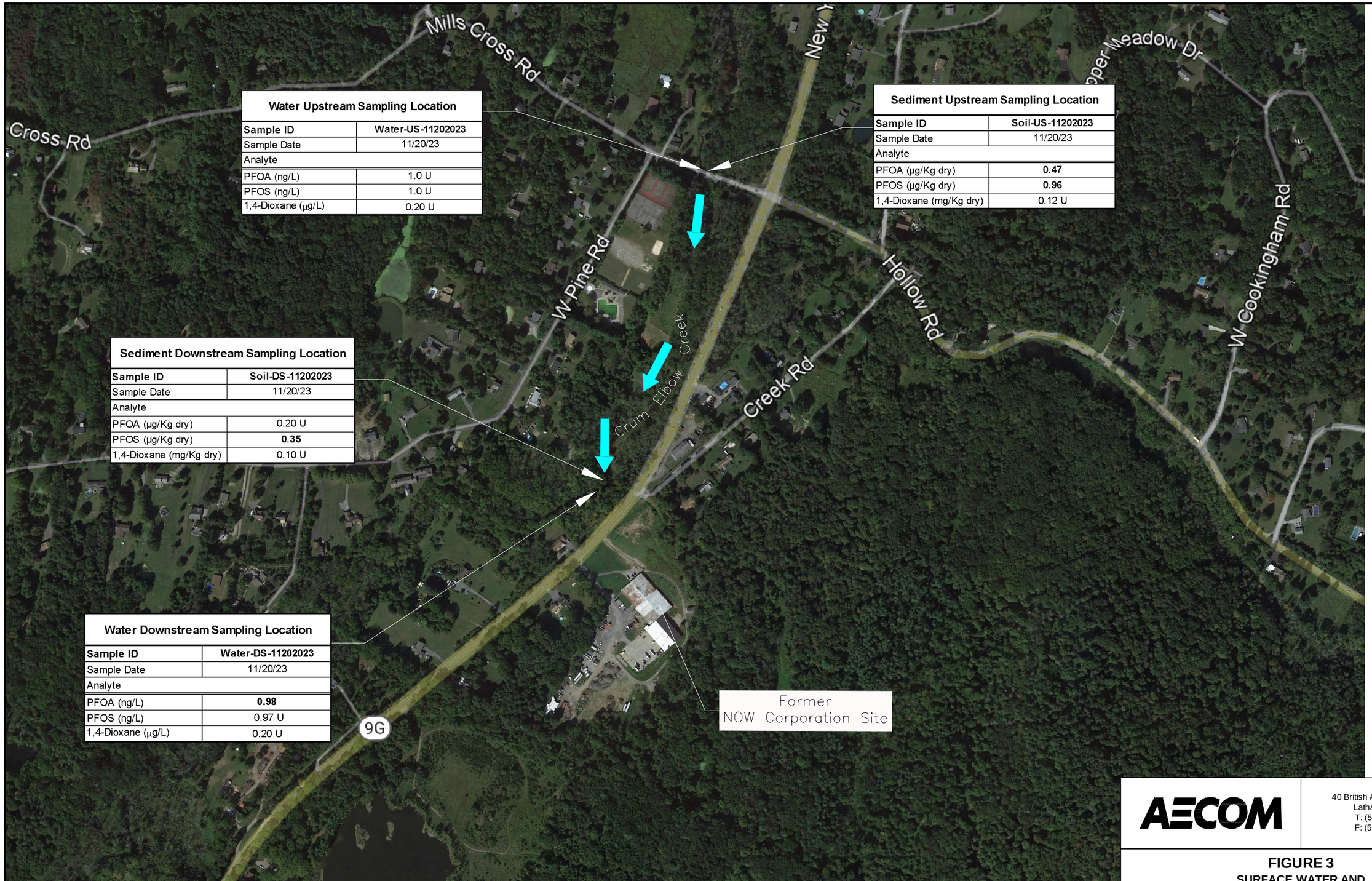
FIGURE 2
SITE PLAN AND TREATMENT SYSTEM DETAILS

NYSDEC
FORMER NOW CORPORATION FACILITY
TOWN OF CLINTON - DUTCHESS COUNTY, NEW YORK

JULY 2025 60631041

D:\NOW Corp\July 2025\Figure 2 Site Plan and Treatment System Details July 2025.dwg User:carrie.szczepanski Jul 11, 2025 - 1:37pm



Water Upstream Sampling Location

Sample ID	Water-US-11202023
Sample Date	11/20/23
Analyte	
PFOA (ng/L)	1.0 U
PFOS (ng/L)	1.0 U
1,4-Dioxane (µg/L)	0.20 U

Sediment Upstream Sampling Location

Sample ID	Soil-US-11202023
Sample Date	11/20/23
Analyte	
PFOA (µg/Kg dry)	**0.47**
PFOS (µg/Kg dry)	**0.96**
1,4-Dioxane (mg/Kg dry)	0.12 U

Sediment Downstream Sampling Location

Sample ID	Soil-DS-11202023
Sample Date	11/20/23
Analyte	
PFOA (µg/Kg dry)	0.20 U
PFOS (µg/Kg dry)	**0.35**
1,4-Dioxane (mg/Kg dry)	0.10 U

Water Downstream Sampling Location

Sample ID	Water-DS-11202023
Sample Date	11/20/23
Analyte	
PFOA (ng/L)	**0.98**
PFOS (ng/L)	0.97 U
1,4-Dioxane (µg/L)	0.20 U

LEGEND:

SURFACE WATER FLOW DIRECTION

Image referenced from Google Earth

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FIGURE 3
SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS

NYSDEC
FORMER NOW CORPORATION FACILITY
TOWN OF CLINTON - DUTCHESS COUNTY, NEW YORK

JUNE 2024 60631041

Tables

Table 1
Emerging Contaminant Sampling Results
Former NOW Corporation Facility
Clinton, New York
Site No. 314008

Analyte	NYSDEC AWQ GV[1]	Sample ID							
		Water-US-11202023	Water-DS-11202023		Soil-US-11202023	Soil-DS-11202023		EB-11202023	FB-11202023
		11/20/2023	11/20/2023	11/20/2023	11/20/2023	11/20/2023	11/20/2023	11/20/2023	11/20/2023
				DUP			DUP		
Miscellaneous Parameters									
% Solids (% Wt)	--	NA	NA	NA	**39.4/40.7**	**42.4/46.2**	**40.0/46.3**	NA	NA
Total Suspended Solids (mg/L)	--	10 U	10 U	10 U	NA	NA	NA	10 U	10 U
Total Organic Carbon (mg/kg dry)	--	NA	NA	NA	**170,000**	**110,000**	NA	NA	NA
Semivolatile Organic Compounds	µg/L	µg/L	µg/L	µg/L	mg/kg dry	mg/kg dry	mg/kg dry	µg/L	µg/L
1,4-Dioxane	0.35	0.20 U	0.20 U	0.19 U	0.12 U	0.10 U	0.11 U	NA	0.20 U
PFAS	ng/L	ng/L	ng/L	ng/L	µg/kg dry	µg/kg dry	µg/kg dry	ng/L	ng/L
Perfluorobutanoic acid (PFBA)	--	4.1 U	3.9 U	3.9 U	0.79 U	0.79 U	0.80 U	**1.4 J**	4.2 U
Perfluoropentanoic acid (PFPeA)	--	2.0 U	1.9 U	1.9 U	0.39 U	0.39 U	0.40 U	2.0 U	2.1 U
Perfluorohexanoic acid (PFHxA)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	**0.30 J**	1.1 U
Perfluoroheptanoic acid (PFHpA)	--	1.0 U	**0.48 J**	**0.42 J**	**0.10 J**	0.20 U	0.20 U	0.98 U	1.1 U
Perfluorooctanoic acid (PFOA)	6.7	1.0 U	**0.98**	**1.1**	**0.47**	0.20 U	0.20 U	**0.63 J**	1.1 U
Perfluorononanoic acid (PFNA)	--	1.0 U	0.97 U	0.97 U	**0.28**	**0.11 J**	**0.10 J**	0.98 U	1.1 U
Perfluorodecanoic acid (PFDA)	--	1.0 U	0.97 U	0.97 U	**0.29**	0.20 U	0.20 U	**1.2**	1.1 U
Perfluoroundecanoic acid (PFUnA)	--	1.0 U	0.97 U	0.97 U	**0.42**	**0.17 J**	**0.16 J**	0.98 U	1.1 U
Perfluorododecanoic acid (PFDoA)	--	1.0 U	0.97 U	0.97 U	**0.17 J**	**0.076 J**	**0.079 J**	**1.0**	1.1 U
Perfluorotridecanoic acid (PFTrDA)	--	1.0 U	0.97 U	0.97 U	**0.15 J**	**0.080 J**	**0.079 J**	0.98 U	1.1 U
Perfluorotetradecanoic acid (PFTeDA)	--	1.0 U	0.97 U	0.97 U	**0.088 J**	**0.052 J**	**0.052 J**	0.98 U	1.1 U
Perfluorobutanesulfonic acid (PFBS)	--	**0.60 J**	**0.62 J**	**0.66 J**	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
Perfluoropentanesulfonic acid (PFPeS)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
Perfluorohexanesulfonic acid (PFHxS)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
Perfluoroheptanesulfonic acid (PFHpS)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
Perfluorooctanesulfonic acid (PFOS)	2.7	1.0 U	0.97 U	0.97 U	**0.96**	**0.35**	**0.35**	0.98 U	1.1 U
Perfluorononanesulfonic acid (PFNS)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
Perfluorodecanesulfonic acid (PFDS)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
Perfluorododecanesulfonic acid (PFDoS)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
1H,1H, 2H, 2H-Perfluorohexane sulfonic acid (4:2FTS)	--	4.1 U	3.9 U	3.9 U	0.79 U	0.79 U	0.80 U	3.9 U	4.2 U
1H,1H, 2H, 2H-Perfluorooctane sulfonic acid (6:2FTS)	--	4.1 U	3.9 U	3.9 U	0.79 U	0.79 U	0.80 U	3.9 U	4.2 U
1H,1H, 2H, 2H-Perfluorodecane sulfonic acid (8:2FTS)	--	4.1 U	3.9 U	3.9 U	0.79 U	0.79 U	0.80 U	3.9 U	4.2 U
Perfluorooctanesulfonamide (PFOSA)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
N-methyl perfluorooctanesulfonamide (NMeFOSA)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	--	1.0 U	0.97 U	0.97 U	0.20 U	0.20 U	0.20 U	0.98 U	1.1 U
N-methyl perfluorooctanesulfonamidoethanol (NMeFOSE)	--	10 U	9.7 U	9.7 U	2.0 U	2.0 U	2.0 U	9.8 U	11 U
N-ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)	--	10 U	9.7 U	9.7 U	2.0 U	2.0 U	2.0 U	9.8 U	11 U
Hexafluoropropylene oxide dimer acid (HFPO-DA)	--	4.1 U	3.9 U	3.9 U	0.79 U	0.79 U	0.80 U	3.9 U	4.2 U
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	--	4.1 U	3.9 U	3.9 U	0.79 U	0.79 U	0.80 U	3.9 U	4.2 U
9Cl-PF3ONS (F53B Minor)	--	4.1 U	3.9 U	3.9 U	0.79 U	0.79 U	0.80 U	3.9 U	4.2 U
11Cl-PF3OUdS (F53B Major)	--	4.1 U	3.9 U	3.9 U	0.79 U	0.79 U	0.80 U	3.9 U	4.2 U
3-Perfluoropropyl propanoic acid (3:3FTCA)	--	10 U	9.7 U	9.7 U	2.0 UJ	2.0 UJ	2.0 UJ	9.8 U	11 U
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	--	51 U	48 U	49 U	9.8 U	9.8 UJ	10 UJ	49 U	53 U
3-Perfluoroheptyl propanoic acid (7:3FTCA)	--	51 U	48 U	49 U	9.8 U	9.8 U	10 U	49 U	53 U
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	--	2.0 U	1.9 U	1.9 U	0.39 U	0.39 U	0.40 U	2.0 U	2.1 U
Perfluoro-3-methoxypropanoic acid (PFMPA)	--	2.0 U	1.9 U	1.9 U	0.39 U	0.39 U	0.40 U	2.0 U	2.1 U
Perfluoro-4-methoxybutanoic acid (PFMBA)	--	2.0 U	1.9 U	1.9 U	0.39 U	0.39 U	0.40 U	2.0 U	2.1 U
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	--	2.0 U	1.9 U	1.9 U	0.39 U	0.39 U	0.40 U	2.0 U	2.1 U

Notes:

All 1,4-dioxane and Per- and polyfluoroalkyl substances (PFAS) results have been validated

[1] New York State Department of Environmental Conservation (NYSDEC) Ambient Water Quality (AWQ) Guidance Value (GV)

Detected concentrations are in bold font

Reporting limits are provided for non-detect results

J - The reported result was an estimated value with an unknown bias

µg/L - micrograms per liter

mg/L - milligrams per liter

mg/kg - milligrams per kilogram

µg/kg - micrograms per kilogram

ng/L - nanograms per liter

NA - Not applicable

% solids were analyzed by the laboratory twice and reported in each laboratory report (Appendix B) - both results are provided.

L-03 - Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.

Appendix A Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs (April 2023)

NEW YORK STATE OF OPPORTUNITY.

Department of Environmental Conservation

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Under NYSDEC's Part 375 Remedial Programs

April 2023

www.dec.ny.gov

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ERRATA SHEET for

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) Under NYSDEC's Part 375 Remedial Programs Issued January 17, 2020

Citation and Page Number	Current Text	Corrected Text	Date
Title of Appendix I, page 32	Appendix H	Appendix I	2/25/2020
Document Cover, page 1	Guidelines for Sampling and Analysis of PFAS	Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs	9/15/2020
Data Assessment and Application to Site Cleanup Page 3	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	3/28/2023
Water Sample Results Page 3	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water if PFOA or PFOS is detected in any water sample at or above 10 ng/L (ppt) and is determined to be attributable to the site, either by a comparison of upgradient and downgradient levels, or the presence of soil source areas, as defined below.	NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These guidance values also include criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt).Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.	3/28/2023
Soil Sample Results Page 3	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values:	NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:	3/28/2023
Protection of Groundwater Page 3	PFOA (ppb) 1.1 PFOS (ppb) 3.7	PFOA (ppb) 0.8 PFOS (ppb) 1.0	3/28/2023

Citation and Page Number	Current Text	Corrected Text	Date
Footnote 2 Page 3	The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	3/28/2023
Testing for Imported Soil Page 4	If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable.	If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.	3/28/2023
Routine Analysis, page 9	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1 or ISO 25101."	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1, ISO 25101, or Method 533."	9/15/2020
Additional Analysis, page 9, new paragraph regarding soil parameters	None	"In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (EPA Method 9060), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils."	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Data Assessment and Application to Site Cleanup Page 10	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFAS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Target levels for cleanup of PFAS in other media, including biota and sediment, have not yet been established by the DEC.	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.	9/15/2020
Water Sample Results Page 10	PFAS should be further assessed and considered as a potential contaminant of concern in groundwater or surface water (…) If PFAS are identified as a contaminant of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water (…) If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Soil Sample Results, page 10	"The extent of soil contamination for purposes of delineation and remedy selection should be determined by having certain soil samples tested by Synthetic Precipitation Leaching Procedure (SPLP) and the leachate analyzed for PFAS. Soil exhibiting SPLP results above 70 ppt for either PFOA or PFOS (individually or combined) are to be evaluated during the cleanup phase."	"Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values. " [Interim SCO Table] "PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP. As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf. "	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Testing for Imported Soil Page 11	Soil imported to a site for use in a soil cap, soil cover, or as backfill is to be tested for PFAS in general conformance with DER-10, Section 5.4(e) for the PFAS Analyte List (Appendix F) using the analytical procedures discussed below and the criteria in DER-10 associated with SVOCs. If PFOA or PFOS is detected in any sample at or above 1 µg/kg, then soil should be tested by SPLP and the leachate analyzed for PFAS. If the SPLP results exceed 10 ppt for either PFOA or PFOS (individually) then the source of backfill should be rejected, unless a site-specific exemption is provided by DER. SPLP leachate criteria is based on the Maximum Contaminant Levels proposed for drinking water by New York State's Department of Health, this value may be updated based on future Federal or State promulgated regulatory standards. Remedial parties have the option of analyzing samples concurrently for both PFAS in soil and in the SPLP leachate to minimize project delays. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable. PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Footnotes	None	[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances. [2] The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the soil cleanup objective for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	9/15/2020
Additional Analysis, page 9	In cases… soil parameters, such as Total Organic Carbon (EPA Method 9060), soil…	In cases… soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil…	1/8/2021
Appendix A, General Guidelines, fourth bullet	List the ELAP-approved lab(s) to be used for analysis of samples	List the ELAP- certified lab(s) to be used for analysis of samples	1/8/2021
Appendix E, Laboratory Analysis and Containers	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by ISO Method 25101.	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101	1/8/2021
Water Sample Results Page 9	"In addition, further assessment of water may be warranted if either of the following screening levels are met: a. any other individual PFAS (not PFOA or PFOS) is detected in water at or above 100 ng/L; or b. total concentration of PFAS (including PFOA and PFOS) is detected in water at or above 500 ng/L"	Deleted	6/15/2021

Citation and Page Number	Current Text	Corrected Text	Date
Routine Analysis, Page XX	Currently, New York State Department of Health's Environmental Laboratory Approval Program (ELAP)… criteria set forth in the DER's laboratory guidelines for PFAS in non-potable water and solids (Appendix H - Laboratory Guidelines for Analysis of PFAS in Non-Potable Water and Solids).	Deleted	5/31/2022
Analysis and Reporting, Page XX	As of October 2020, the United States Environmental Protection Agency (EPA) does not have a validated method for analysis of PFAS for media commonly analyzed under DER remedial programs (non-potable waters, solids). DER has developed the following guidelines to ensure consistency in analysis and reporting of PFAS.	Deleted	5/31/2022
Routine Analysis, Page XX	LC-MS/MS analysis for PFAS using methodologies based on EPA Method 537.1 is the procedure to use for environmental samples. Isotope dilution techniques should be utilized for the analysis of PFAS in all media.	EPA Method 1633 is the procedure to use for environmental samples.	
Soil Sample Results, Page XX	Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6	
Appendix A	"Include in the text… LC-MS/MS for PFAS using methodologies based on EPA Method 537.1"	"Include in the text ….EPA Method 1633"	
Appendix A	"Laboratory should have ELAP certification for PFOA and PFOS in drinking water by EPA Method 537, 537.1, EPA Method 533, or ISO 25101"	Deleted	
Appendix B	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	

Citation and Page Number	Current Text	Corrected Text	Date
Appendix C	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix D	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix G		Updated to include all forty PFAS analytes in EPA Method 533	
Appendix H		Deleted	
Appendix I	Appendix I	Appendix H	
Appendix H	"These guidelines are intended to be used for the validation of PFAS analytical results for projects within the Division of Environmental Remediation (DER) as well as aid in the preparation of a data usability summary report."	"These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER)."	
Appendix H	"The holding time is 14 days…"	"The holding time is 28 days…"	
Appendix H, Initial Calibration	"The initial calibration should contain a minimum of five standards for linear fit…"	"The initial calibration should contain a minimum of six standards for linear fit…"	
Appendix H, Initial Calibration	Linear fit calibration curves should have an R^2 value greater than 0.990.	Deleted	
Appendix H, Initial Calibration Verification	Initial Calibration Verification Section	Deleted	
Appendix H	secondary Ion Monitoring Section	Deleted	
Appendix H	Branched and Linear Isomers Section	Deleted	

Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs

Objective

New York State Department of Environmental Conservation's Division of Environmental Remediation (DER) performs or oversees sampling of environmental media and subsequent analysis of PFAS as part of remedial programs implemented under 6 NYCRR Part 375. To ensure consistency in sampling, analysis, reporting, and assessment of PFAS, DER has developed this document which summarizes currently accepted procedures and updates previous DER technical guidance pertaining to PFAS.

Applicability

All work plans submitted to DEC pursuant to one of the remedial programs under Part 375 shall include PFAS sampling and analysis procedures that conform to the guidelines provided herein.

As part of a site investigation or remedial action compliance program, whenever samples of potentially affected media are collected and analyzed for the standard Target Analyte List/Target Compound List (TAL/TCL), PFAS analysis should also be performed. Potentially affected media can include soil, groundwater, surface water, and sediment. Based upon the potential for biota to be affected, biota sampling and analysis for PFAS may also be warranted as determined pursuant to a Fish and Wildlife Impact Analysis. Soil vapor sampling for PFAS is not required.

Field Sampling Procedures

DER-10 specifies technical guidance applicable to DER's remedial programs. Given the prevalence and use of PFAS, DER has developed "best management practices" specific to sampling for PFAS. As specified in DER-10 Chapter 2, quality assurance procedures are to be submitted with investigation work plans. Typically, these procedures are incorporated into a work plan, or submitted as a stand-alone document (e.g., a Quality Assurance Project Plan). Quality assurance guidelines for PFAS are listed in Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS.

Field sampling for PFAS performed under DER remedial programs should follow the appropriate procedures outlined for soils, sediments, or other solids (Appendix B), non-potable groundwater (Appendix C), surface water (Appendix D), public or private water supply wells (Appendix E), and fish tissue (Appendix F).

QA/QC samples (e.g. duplicates, MS/MSD) should be collected as specified in DER-10, Section 2.3(c). For sampling equipment coming in contact with aqueous samples only, rinsate or equipment blanks should be collected. Equipment blanks should be collected at a minimum frequency of one per day per site or one per twenty samples, whichever is more frequent.

Analysis and Reporting

The investigation work plan should describe analysis and reporting procedures, including laboratory analytical procedures for the methods discussed below. As specified in DER-10 Section 2.2, laboratories should provide a full Category B deliverable. In addition, a Data Usability Summary Report (DUSR) should be prepared by an independent, third-party data validator. Electronic data submissions should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html.

DER has developed a *PFAS Analyte List* (Appendix G) for remedial programs to understand the nature of contamination at sites. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. If lab and/or matrix specific issues are encountered for any analytes, the DER project manager, in consultation with the DER chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each site. As with other contaminants that are analyzed for at a site, the *PFAS Analyte List* may be refined for future sampling events based on investigative findings.

Routine Analysis

EPA Method 1633 is the procedure to use for environmental samples. Reporting limits for PFOA and PFOS in aqueous samples should not exceed 2 ng/L. Reporting limits for PFOA and PFOS in solid samples should not exceed 0.5 µg/kg. Reporting limits for all other PFAS in aqueous and solid media should be as close to these limits as possible. If laboratories indicate that they are not able to achieve these reporting limits for the entire *PFAS Analyte List*, site-specific decisions regarding acceptance of elevated reporting limits for specific PFAS can be made by the DER project manager in consultation with the DER chemist. Data review guidelines were developed by DER to ensure data comparability and usability (Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids).

Additional Analysis

Additional laboratory methods for analysis of PFAS may be warranted at a site, such as the Synthetic Precipitation Leaching Procedure (SPLP) and Total Oxidizable Precursor Assay (TOP Assay).

In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils.

SPLP is a technique used to determine the mobility of chemicals in liquids, soils and wastes, and may be useful in determining the need for addressing PFAS-containing material as part of the remedy. SPLP by EPA Method 1312 should be used unless otherwise specified by the DER project manager in consultation with the DER chemist.

Impacted materials can be made up of PFAS that are not analyzable by routine analytical methodology. A TOP Assay can be utilized to conceptualize the amount and type of oxidizable PFAS which could be liberated in the environment, which approximates the maximum concentration of perfluoroalkyl substances that could be generated if all polyfluoroalkyl substances were oxidized. For example, some polyfluoroalkyl substances may degrade or transform to form perfluoroalkyl substances (such as PFOA or PFOS), resulting in an increase in perfluoroalkyl substance concentrations as contaminated groundwater moves away from a source. The TOP Assay converts, through oxidation, polyfluoroalkyl substances (precursors) into perfluoroalkyl substances that can be detected by routine analytical methodology.[1]

[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances.

Commercial laboratories have adopted methods which allow for the quantification of targeted PFAS in air and biota. The EPA's Office of Research and Development (ORD) is currently developing methods which allow for air emissions characterization of PFAS, including both targeted and non-targeted analysis of PFAS. Consult with the DER project manager and the DER chemist for assistance on analyzing biota/tissue and air samples.

Data Assessment and Application to Site Cleanup

Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.

Water Sample Results

NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These human health criteria should also be applied to surface water that is used as a water supply. This guidance also includes criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt). Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.

If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.

Soil Sample Results

NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:

Guidance Values for Anticipated Site Use	PFOA (ppb)	PFOS (ppb)
Unrestricted	0.66	0.88
Residential	6.6	8.8
Restricted Residential	33	44
Commercial	500	440
Industrial	600	440
Protection of Groundwater[2]	0.8	1.0

PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These

[2] The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).

additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP.

As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf.

Testing for Imported Soil

Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.

PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.

Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS

The following guidelines (general and PFAS-specific) can be used to assist with the development of a QAPP for projects within DER involving sampling and analysis of PFAS.

General Guidelines in Accordance with DER-10

- Document/work plan section title – Quality Assurance Project Plan
- Summarize project scope, goals, and objectives
- Provide project organization including names and resumes of the project manager, Quality Assurance Officer (QAO), field staff, and Data Validator
    - The QAO should not have another position on the project, such as project or task manager, that involves project productivity or profitability as a job performance criterion
- List the ELAP certified lab(s) to be used for analysis of samples
- Include a site map showing sample locations
- Provide detailed sampling procedures for each matrix
- Include Data Quality Usability Objectives
- List equipment decontamination procedures
- Include an "Analytical Methods/Quality Assurance Summary Table" specifying:
    - Matrix type
    - Number or frequency of samples to be collected per matrix
    - Number of field and trip blanks per matrix
    - Analytical parameters to be measured per matrix
    - Analytical methods to be used per matrix with minimum reporting limits
    - Number and type of matrix spike and matrix spike duplicate samples to be collected
    - Number and type of duplicate samples to be collected
    - Sample preservation to be used per analytical method and sample matrix
    - Sample container volume and type to be used per analytical method and sample matrix
    - Sample holding time to be used per analytical method and sample matrix
- Specify Category B laboratory data deliverables and preparation of a DUSR

Specific Guidelines for PFAS

- Include in the text that sampling for PFAS will take place
- Include in the text that PFAS will be analyzed by EPA Method 1633
- Include the list of PFAS compounds to be analyzed (*PFAS Analyte List*)
- Include the laboratory SOP for PFAS analysis
- List the minimum method-achievable Reporting Limits for PFAS
    - Reporting Limits should be less than or equal to:
        - Aqueous – 2 ng/L (ppt)
        - Solids – 0.5 µg/kg (ppb)
- Include the laboratory Method Detection Limits for the PFAS compounds to be analyzed
-
- Include detailed sampling procedures
    - Precautions to be taken
    - Pump and equipment types
    - Decontamination procedures
    - Approved materials only to be used
- Specify that regular ice only will be used for sample shipment
- Specify that equipment blanks should be collected at a minimum frequency of 1 per day per site for each matrix

Appendix B - Sampling Protocols for PFAS in Soils, Sediments and Solids

General

The objective of this protocol is to give general guidelines for the collection of soil, sediment and other solid samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Containers

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in to contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel spoon
- stainless steel bowl
- steel hand auger or shovel without any coatings

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Sampling is often conducted in areas where a vegetative turf has been established. In these cases, a pre-cleaned trowel or shovel should be used to carefully remove the turf so that it may be replaced at the conclusion of sampling. Surface soil samples (e.g. 0 to 6 inches below surface) should then be collected using a pre-cleaned, stainless steel spoon. Shallow subsurface soil samples (e.g. 6 to ~36 inches below surface) may be collected by digging a hole using a pre-cleaned hand auger or shovel. When the desired subsurface depth is reached, a pre-cleaned hand auger or spoon shall be used to obtain the sample.

When the sample is obtained, it should be deposited into a stainless steel bowl for mixing prior to filling the sample containers. The soil should be placed directly into the bowl and mixed thoroughly by rolling the material into the middle until the material is homogenized. At this point the material within the bowl can be placed into the laboratory provided container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A soil log or sample log shall document the location of the sample/borehole, depth of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix C - Sampling Protocols for PFAS in Monitoring Wells

General

The objective of this protocol is to give general guidelines for the collection of groundwater samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including plumbers tape and sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel inertia pump with HDPE tubing
- peristaltic pump equipped with HDPE tubing and silicone tubing
- stainless steel bailer with stainless steel ball
- bladder pump (identified as PFAS-free) with HDPE tubing

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Monitoring wells should be purged in accordance with the sampling procedure (standard/volume purge or low flow purge) identified in the site work plan, which will determine the appropriate time to collect the sample. If sampling using standard purge techniques, additional purging may be needed to reduce turbidity levels, so samples contain a limited amount of sediment within the sample containers. Sample containers that contain sediment may cause issues at the laboratory, which may result in elevated reporting limits and other issues during the sample preparation that can compromise data usability. Sampling personnel should don new nitrile gloves prior to sample collection due to the potential to contact PFAS containing items (not related to the sampling equipment) during the purging activities.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Additional equipment blank samples may be collected to assess other equipment that is utilized at the monitoring well
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A purge log shall document the location of the sample, sampling equipment, groundwater parameters, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix D - Sampling Protocols for PFAS in Surface Water

General

The objective of this protocol is to give general guidelines for the collection of surface water samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel cup

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Where conditions permit, (e.g. creek or pond) sampling devices (e.g. stainless steel cup) should be rinsed with site medium to be sampled prior to collection of the sample. At this point the sample can be collected and poured into the sample container.

If site conditions permit, samples can be collected directly into the laboratory container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A sample log shall document the location of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix E - Sampling Protocols for PFAS in Private Water Supply Wells

General

The objective of this protocol is to give general guidelines for the collection of water samples from private water supply wells (with a functioning pump) for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101. The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials (e.g. plumbers tape), including sample bottle cap liners with a PTFE layer.

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Locate and assess the pressure tank and determine if any filter units are present within the building. Establish the sample location as close to the well pump as possible, which is typically the spigot at the pressure tank. Ensure sampling equipment is kept clean during sampling as access to the pressure tank spigot, which is likely located close to the ground, may be obstructed and may hinder sample collection.

Prior to sampling, a faucet downstream of the pressure tank (e.g., washroom sink) should be run until the well pump comes on and a decrease in water temperature is noted which indicates that the water is coming from the well. If the homeowner is amenable, staff should run the water longer to purge the well (15+ minutes) to provide a sample representative of the water in the formation rather than standing water in the well and piping system including the pressure tank. At this point a new pair of nitrile gloves should be donned and the sample can be collected from the sample point at the pressure tank.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- If equipment was used, collect one equipment blank per day per site and a minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers.
- A field reagent blank (FRB) should be collected at a rate of one per 20 samples. The lab will provide a FRB bottle containing PFAS free water and one empty FRB bottle. In the field, pour the water from the one bottle into the empty FRB bottle and label appropriately.
- Request appropriate data deliverable (Category B) and an electronic data deliverable
- For sampling events where multiple private wells (homes or sites) are to be sampled per day, it is acceptable to collect QC samples at a rate of one per 20 across multiple sites or days.

Documentation

A sample log shall document the location of the private well, sample point location, owner contact information, sampling equipment, purge duration, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate and available (e.g. well construction, pump type and location, yield, installation date). Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appendix F - Sampling Protocols for PFAS in Fish

This appendix contains a copy of the current SOP developed by the Division of Fish and Wildlife (DFW) entitled "General Fish Handling Procedures for Contaminant Analysis" (Ver. 8). This SOP should be followed when collecting fish for contaminant analysis. Note, however, that the Bureau of Ecosystem Health will not be supplying bags or tags. All supplies are the responsibility of the collector

Procedure Name: General Fish Handling Procedures for Contaminant Analysis

Number: FW-005

Purpose: This procedure describes data collection, fish processing and delivery of fish collected for contaminant monitoring. It contains the chain of custody and collection record forms that should be used for the collections.

Organization: Environmental Monitoring Section
Bureau of Ecosystem Health
Division of Fish and Wildlife (DFW)
New York State Department of Environmental Conservation (NYSDEC)
625 Broadway
Albany, New York 12233-4756

Version: 8

Previous Version Date: 21 March 2018

Summary of Changes to this Version: Updated bureau name to Bureau of Ecosystem Health. Added direction to list the names of all field crew on the collection record. Minor formatting changes on chain of custody and collection records.

Originator or Revised by: Wayne Richter, Jesse Becker

Date: 26 April 2019

Quality Assurance Officer and Approval Date: Jesse Becker, 26 April 2019

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

GENERAL FISH HANDLING PROCEDURES FOR CONTAMINANT ANALYSES

A. Original copies of all continuity of evidence (i.e., Chain of Custody) and collection record forms must accompany delivery of fish to the lab. A copy shall be directed to the Project Leader or as appropriate, Wayne Richter. All necessary forms will be supplied by the Bureau of Ecosystem Health. Because some samples may be used in legal cases, it is critical that each section is filled out completely. Each Chain of Custody form has three main sections:

   1. The top box is to be filled out **and signed** by the person responsible for the fish collection (e.g., crew leader, field biologist, researcher). This person is responsible for delivery of the samples to DEC facilities or personnel (e.g., regional office or biologist).

   2. The second section is to be filled out **and signed** by the person responsible for the collections while being stored at DEC, before delivery to the analytical lab. This may be the same person as in (1), but it is still required that they complete the section. Also important is the **range of identification numbers** (i.e., tag numbers) included in the sample batch.

   3. Finally, the bottom box is to record any transfers between DEC personnel and facilities. Each subsequent transfer should be **identified, signed, and dated**, until laboratory personnel take possession of the fish.

B. The following data are required on each **Fish Collection Record** form:

   1. Project and Site Name.

   2. DEC Region.

   3. All personnel (and affiliation) involved in the collection.

   4. Method of collection (gill net, hook and line, etc.)

   5. Preservation Method.

C. The following data are to be taken on each fish collected and recorded on the **Fish Collection Record** form:

   1. Tag number - Each specimen is to be individually jaw tagged at time of collection with a unique number. Make sure the tag is turned out so that the number can be read without opening the bag. Use tags in sequential order. For small fish or composite samples place the tag inside the bag with the samples. The Bureau of Ecosystem Health can supply the tags.

   2. Species identification (please be explicit enough to enable assigning genus and species). Group fish by species when processing.

   3. Date collected.

   4. Sample location (waterway and nearest prominent identifiable landmark).

   5. Total length (nearest mm or smallest sub-unit on measuring instrument) and weight (nearest g or

smallest sub-unit of weight on weighing instrument). Take all measures as soon as possible with calibrated, protected instruments (e.g. from wind and upsets) and prior to freezing.

6. Sex - fish may be cut enough to allow sexing or other internal investigation, but do not eviscerate. Make any incision on the right side of the belly flap or exactly down the midline so that a left-side fillet can be removed.

D. General data collection recommendations:

1. It is helpful to use an ID or tag number that will be unique. It is best to use metal striped bass or other uniquely numbered metal tags. If uniquely numbered tags are unavailable, values based on the region, water body and year are likely to be unique: for example, R7CAY11001 for Region 7, Cayuga Lake, 2011, fish 1. If the fish are just numbered 1 through 20, we have to give them new numbers for our database, making it more difficult to trace your fish to their analytical results and creating an additional possibility for errors.

2. Process and record fish of the same species sequentially. Recording mistakes are less likely when all fish from a species are processed together. Starting with the bigger fish species helps avoid missing an individual.

3. If using Bureau of Ecosystem Health supplied tags or other numbered tags, use tags in sequence so that fish are recorded with sequential Tag Numbers. This makes data entry and login at the lab and use of the data in the future easier and reduces keypunch errors.

4. Record length and weight as soon as possible after collection and before freezing. Other data are recorded in the field upon collection. An age determination of each fish is optional, but if done, it is recorded in the appropriate “Age” column.

5. For composite samples of small fish, record the number of fish in the composite in the Remarks column. Record the length and weight of each individual in a composite. All fish in a composite sample should be of the same species and members of a composite should be visually matched for size.

6. Please submit photocopies of topographic maps or good quality navigation charts indicating sampling locations. GPS coordinates can be entered in the Location column of the collection record form in addition to or instead for providing a map. These records are of immense help to us (and hopefully you) in providing documented location records which are not dependent on memory and/or the same collection crew. In addition, they may be helpful for contaminant source trackdown and remediation/control efforts of the Department.

7. When recording data on fish measurements, it will help to ensure correct data recording for the data recorder to call back the numbers to the person making the measurements.

E. Each fish is to be placed in its own individual plastic bag. For small fish to be analyzed as a composite, put all of the fish for one composite in the same bag but use a separate bag for each composite. It is important to individually bag the fish to avoid difficulties or cross contamination when processing the fish for chemical analysis. Be sure to include the fish’s tag number inside the bag, preferably attached to the fish with the tag number turned out so it can be read. Tie or otherwise secure the bag closed. **The Bureau of Ecosystem Health will supply the bags.** If necessary, food grade bags may be procured from a suitable vendor (e.g., grocery store). It is preferable to redundantly label each bag with a manila tag tied between the knot and the body of the bag. This tag should be labeled with the project name, collection location, tag number, collection date, and fish species. If scales are collected, the scale envelope should be labeled with

the same information.

F. Groups of fish, by species, are to be placed in one large plastic bag per sampling location. **The Bureau of Ecosystem Health will supply the larger bags.** Tie or otherwise secure the bag closed. Label the site bag with a manila tag tied between the knot and the body of the bag. The tag should contain: project, collection location, collection date, species and **tag number ranges**. Having this information on the manila tag enables lab staff to know what is in the bag without opening it.

G. Do not eviscerate, fillet or otherwise dissect the fish unless specifically asked to. If evisceration or dissection is specified, the fish must be cut along the exact midline or on the right side so that the left side fillet can be removed intact at the laboratory. If filleting is specified, the procedure for taking a standard fillet (SOP PREPLAB 4) must be followed, including removing scales.

H. Special procedures for PFAS: Unlike legacy contaminants such as PCBs, which are rarely found in day to day life, PFAS are widely used and frequently encountered. Practices that avoid sample contamination are therefore necessary. While no standard practices have been established for fish, procedures for water quality sampling can provide guidance. The following practices should be used for collections when fish are to be analyzed for PFAS:

No materials containing Teflon.
No Post-it notes.
No ice packs; only water ice or dry ice.
Any gloves worn must be powder free nitrile.
No Gore-Tex or similar materials (Gore-Tex is a PFC with PFOA used in its manufacture).
No stain repellent or waterproof treated clothing; these are likely to contain PFCs.
Avoid plastic materials, other than HDPE, including clipboards and waterproof notebooks.
Wash hands after handling any food containers or packages as these may contain PFCs.
Keep pre-wrapped food containers and wrappers isolated from fish handling.
Wear clothing washed at least six times since purchase.
Wear clothing washed without fabric softener.
Staff should avoid cosmetics, moisturizers, hand creams and similar products on the day of sampling as many of these products contain PFCs (Fujii et al. 2013). Sunscreen or insect repellent should not contain ingredients with “fluor” in their name. Apply any sunscreen or insect repellent well downwind from all materials. Hands must be washed after touching any of these products.

I. All fish must be kept at a temperature <45° F (<8° C) immediately following data processing. As soon as possible, freeze at -20° C ± 5° C. Due to occasional freezer failures, daily freezer temperature logs are required. The freezer should be locked or otherwise secured to maintain chain of custody.

J. In most cases, samples should be delivered to the Analytical Services Unit at the Hale Creek field station. Coordinate delivery with field station staff and send copies of the collection records, continuity of evidence forms and freezer temperature logs to the field station. For samples to be analyzed elsewhere, non-routine collections or other questions, contact Wayne Richter, Bureau of Ecosystem Health, NYSDEC, 625 Broadway, Albany, New York 12233-4756, 518-402-8974, or the project leader about sample transfer. Samples will then be directed to the analytical facility and personnel noted on specific project descriptions.

K. A recommended equipment list is at the end of this document.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE
FISH COLLECTION RECORD

Project and Site Name _____ DEC Region _____

Collections made by (include all crew) _____

Sampling Method: □Electrofishing □Gill netting □Trap netting □Trawling □Seining □Angling □Other _____

Preservation Method: □Freezing □Other _____ Notes (SWFDB survey number): _____

FOR LAB USE ONLY- LAB ENTRY NO.	COLLECTION OR TAG NO.	SPECIES	DATE TAKEN	LOCATION	AGE	SEX &/OR REPROD. CONDIT	LENGTH ( )	WEIGHT ( )	REMARKS

richter: revised 2011, 5/7/15, 10/4/16, 3/20/17; becker: 3/23/17, 4/26/19

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CHAIN OF CUSTODY

I, _____, of _____ collected the
(Print Name) (Print Business Address)

following on _____, 20____ from _____
(Date) (Water Body)

in the vicinity of _____
(Landmark, Village, Road, etc.)

Town of _____, in _____ County.

Item(s) _____

_____

Said sample(s) were in my possession and handled according to standard procedures provided to me prior to collection. The sample(s) were placed in the custody of a representative of the New York State Department of Environmental Conservation on _____, 20_____.

_____ _____
Signature Date

I, _____, received the above mentioned sample(s) on the date specified and assigned identification number(s) _____ to the sample(s). I have recorded pertinent data for the sample(s) on the attached collection records. The sample(s) remained in my custody until subsequently transferred, prepared or shipped at times and on dates as attested to below.

_____ _____
Signature Date

SECOND RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
THIRD RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
FOURTH RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
RECEIVED IN LABORATORY BY (Print Name)	TIME & DATE	REMARKS
SIGNATURE	UNIT	
LOGGED IN BY (Print Name)	TIME & DATE	ACCESSION NUMBERS
SIGNATURE	UNIT	

richter: revised 21 April 2014; becker: 23 March 2017, 26 April, 2019

NOTICE OF WARRANTY

By signature to the chain of custody (reverse), the signatory warrants that the information provided is truthful and accurate to the best of his/her ability. The signatory affirms that he/she is willing to testify to those facts provided and the circumstances surrounding the same. Nothing in this warranty or chain of custody negates responsibility nor liability of the signatories for the truthfulness and accuracy of the statements provided.

HANDLING INSTRUCTIONS

On day of collection, collector(s) name(s), address(es), date, geographic location of capture (attach a copy of topographic map or navigation chart), species, number kept of each species, and description of capture vicinity (proper noun, if possible) along with name of Town and County must be indicated on reverse.

Retain organisms in manila tagged plastic bags to avoid mixing capture locations. Note appropriate information on each bag tag.

Keep samples as cool as possible. Put on ice if fish cannot be frozen within 12 hours. If fish are held more than 24 hours without freezing, they will not be retained or analyzed.

Initial recipient (either DEC or designated agent) of samples from collector(s) is responsible for obtaining and recording information on the collection record forms which will accompany the chain of custody. This person will seal the container using packing tape and writing his signature, the time and the date across the tape onto the container with indelible marker. Any time a seal is broken, for whatever purpose, the incident must be recorded on the Chain of Custody (reason, time, and date) in the purpose of transfer block. Container then is resealed using new tape and rewriting signature, with time and date.

EQUIPMENT LIST

Scale or balance of appropriate capacity for the fish to be collected.

Fish measuring board.

Plastic bags of an appropriate size for the fish to be collected and for site bags.

Individually numbered metal tags for fish.

Manila tags to label bags.

Small envelops, approximately 2” x 3.5”, if fish scales are to be collected.

Knife for removing scales.

Chain of custody and fish collection forms.

Clipboard.

Pens or markers.

Paper towels.

Dish soap and brush.

Bucket.

Cooler.

Ice.

Duct tape.

Appendix G – PFAS Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonic acids	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluoropentanesulfonic acid	PFPeS	2706-91-4
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorononanesulfonic acid	PFNS	68259-12-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
	Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Perfluoroalkyl carboxylic acids	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUnA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTeDA	376-06-7
Per- and Polyfluoroether carboxylic acids	Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
	Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
	Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
Fluorotelomer sulfonic acids	4:2 Fluorotelomer sulfonic acid	4:2-FTS	757124-72-4
	6:2 Fluorotelomer sulfonic acid	6:2-FTS	27619-97-2
	8:2 Fluorotelomer sulfonic acid	8:2-FTS	39108-34-4
Fluorotelomer carboxylic acids	3:3 Fluorotelomer carboxylic acid	3:3 FTCA	356-02-5
	5:3 Fluorotelomer carboxylic acid	5:3 FTCA	914637-49-3
	7:3 Fluorotelomer carboxylic acid	7:3 FTCA	812-70-4
Perfluorooctane sulfonamides	Perfluorooctane sulfonamide	PFOSA	754-91-6
	N-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8
	N-ethylperfluorooctane sulfonamide	NEtFOSA	4151-50-2
Perfluorooctane sulfonamidoacetic acids	N-methylperfluorooctane sulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethylperfluorooctane sulfonamidoacetic acid	N-EtFOSAA	2991-50-6
Perfluorooctane sulfonamide ethanols	N-methylperfluorooctane sulfonamidoethanol	MeFOSE	24448-09-7
	N-ethylperfluorooctane sulfonamidoethanol	EtFOSE	1691-99-2

Group	Chemical Name	Abbreviation	CAS Number
Ether sulfonic acids	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (F-53B Major)	9Cl-PF3ONS	756426-58-1
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (F-53B Minor)	11Cl-PF3OUdS	763051-92-9
	Perfluoro(2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7

Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids

General

These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER). Data reviewers should understand the methodology and techniques utilized in the analysis. Consultation with the end user of the data may be necessary to assist in determining data usability based on the data quality objectives in the Quality Assurance Project Plan. A familiarity with the laboratory's Standard Operating Procedure may also be needed to fully evaluate the data. If you have any questions, please contact DER's Quality Assurance Officer, Dana Barbarossa, at dana.barbarossa@dec.ny.gov.

Preservation and Holding Time

Samples should be preserved with ice to a temperature of less than 6°C upon arrival at the lab. The holding time is 28 days to extraction for aqueous and solid samples. The time from extraction to analysis for aqueous samples is 28 days and 40 days for solids.

Temperature greatly exceeds 6ºC upon arrival at the lab*	Use professional judgement to qualify detects and non-detects as estimated or rejected
Holding time exceeding 28 days to extraction	Use professional judgement to qualify detects and non-detects as estimated or rejected if holding time is grossly exceeded

*Samples that are delivered to the lab immediately after sampling may not meet the thermal preservation guidelines. Samples are considered acceptable if they arrive on ice or an attempt to chill the samples is observed.

Initial Calibration

The initial calibration should contain a minimum of six standards for linear fit and six standards for a quadratic fit. The relative standard deviation (RSD) for a quadratic fit calibration should be less than 20%.

The low-level calibration standard should be within 50% - 150% of the true value, and the mid-level calibration standard within 70% - 130% of the true value.

%RSD >20%	J flag detects and UJ non detects

Continuing Calibration Verification

Continuing calibration verification (CCV) checks should be analyzed at a frequency of one per ten field samples. If CCV recovery is very low, where detection of the analyte could be in question, ensure a low level CCV was analyzed and use to determine data quality.

CCV recovery <70 or >130%	J flag results

Blanks

There should be no detections in the method blanks above the reporting limits. Equipment blanks, field blanks, rinse blanks etc. should be evaluated in the same manner as method blanks. Use the most contaminated blank to evaluate the sample results.

Blank Result	Sample Result	Qualification
Any detection	<Reporting limit	Qualify as ND at reporting limit
Any detection	>Reporting Limit and >10x the blank result	No qualification
>Reporting limit	>Reporting limit and <10x blank result	J+ biased high

Field Duplicates

A blind field duplicate should be collected at rate of one per twenty samples. The relative percent difference (RPD) should be less than 30% for analyte concentrations greater than two times the reporting limit. Use the higher result for final reporting.

RPD >30%	Apply J qualifier to parent sample

Lab Control Spike

Lab control spikes should be analyzed with each extraction batch or one for every twenty samples. In the absence of lab derived criteria, use 70% - 130% recovery criteria to evaluate the data.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects

Matrix Spike/Matrix Spike Duplicate

One matrix spike and matrix spike duplicate should be collected at a rate of one per twenty samples. Use professional judgement to reject results based on out of control MS/MSD recoveries.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only
RPD >30%	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only

Extracted Internal Standards (Isotope Dilution Analytes)

Problematic analytes (e.g. PFBA, PFPeA, fluorotelomer sulfonates) can have wider recoveries without qualification. Qualify corresponding native compounds with a J flag if outside of the range.

Recovery <50% or >150%	Apply J qualifier
Recovery <25% or >150% for poor responding analytes	Apply J qualifier
Isotope Dilution Analyte (IDA) Recovery <10%	Reject results

Signal to Noise Ratio

The signal to noise ratio for the quantifier ion should be at least 3:1. If the ratio is less than 3:1, the peak is discernable from the baseline noise and symmetrical, the result can be reported. If the peak appears to be baseline noise and/or the shape is irregular, qualify the result as tentatively identified.

Reporting Limits

If project-specific reporting limits were not met, please indicate that in the report along with the reason (e.g. over dilution, dilution for non-target analytes, high sediment in aqueous samples).

Peak Integrations

Target analyte peaks should be integrated properly and consistently when compared to standards. Ensure branched isomer peaks are included for PFAS where standards are available. Inconsistencies should be brought to the attention of the laboratory or identified in the data review summary report.

Appendix B Laboratory Reports

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December 8, 2023

Payson Long
NYDEC_AECOM Environment - Latham, NY
40 British American Blvd.
Latham, NY 12110

Project Location: Staatsburg, NY
Client Job Number:
Project Number: 314008
Laboratory Work Order Number: 23K2746

Enclosed are results of analyses for samples as received by the laboratory on November 21, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kyle K. Stuckey
Project Manager

Table of Contents

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NYDEC_AECOM Environment - Latham, NY
40 British American Blvd.
Latham, NY 12110
ATTN: Payson Long

REPORT DATE: 12/8/2023

PURCHASE ORDER NUMBER: 141677

PROJECT NUMBER: 314008

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23K2746

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Staatsburg, NY

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Water-US-11202023	23K2746-01	Ground Water		SW-846 8270E	
Water-DS-11202023	23K2746-02	Ground Water		SW-846 8270E	
SOIL-US-11202023	23K2746-03	Soil		ASTM D6913	GAI-LAP-20-1996/AASHTO
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASHTO
				SW 846 9060A	
				SW-846 8270E	
SOIL-DS-11202023	23K2746-04	Soil		ASTM D6913	GAI-LAP-20-1996/AASHTO
				SM 2540G	
				SM D 422-63	GAI-LAP-20-1996/AASHTO
				SW 846 9060A	
				SW-846 8270E	
Water-DUP-11202023	23K2746-05	Ground Water		SW-846 8270E	
SOIL-DUP-11202023	23K2746-06	Soil		SM 2540G	
				SW-846 8270E	
FB-11202023	23K2746-07	Field Blank		SW-846 8270E	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SW 846 9060A

Qualifications:

MS-12

Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

Analyte & Samples(s) Qualified:

Total Organic Carbon

23K2746-04[SOIL-DS-11202023], B359310-MS1, B359310-MSD1

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: Water-US-11202023 Sampled: 11/20/2023 13:30

Sample ID: 23K2746-01

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	0.033	µg/L	1		SW-846 8270E	11/27/23	12/1/23 15:23	MEW

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	19.1	15-110		12/1/23 15:23

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: Water-DS-11202023 Sampled: 11/20/2023 12:25

Sample ID: 23K2746-02

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	0.032	µg/L	1		SW-846 8270E	11/27/23	12/1/23 17:04	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	21.7	15-110		12/1/23 17:04

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-US-11202023 Sampled: 11/20/2023 13:35

Sample ID: 23K2746-03

Sample Matrix: Soil

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.12	0.050	mg/Kg dry	1		SW-846 8270E	11/27/23	12/1/23 17:24	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	19.3	15-110		12/1/23 17:24

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-US-11202023 Sampled: 11/20/2023 13:35

Sample ID: 23K2746-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	40.7			% Wt	1		SM 2540G	11/22/23	11/22/23 12:27	DV
Total Organic Carbon	170000	250	160	mg/Kg dry	1		SW 846 9060A	11/30/23	11/30/23 16:03	NRH

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-US-11202023 Sampled: 11/20/2023 13:35

Sample ID: 23K2746-03

Sample Matrix: Soil

Particle Size

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	Attached	Attached	Attached	%	1		ASTM D6913	12/7/23	12/7/23 0:00	GTE

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-DS-11202023 Sampled: 11/20/2023 12:50

Sample ID: 23K2746-04

Sample Matrix: Soil

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.10	0.043	mg/Kg dry	1		SW-846 8270E	11/27/23	12/1/23 18:23	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	33.9	15-110		12/1/23 18:23

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-DS-11202023 Sampled: 11/20/2023 12:50

Sample ID: 23K2746-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	46.2			% Wt	1		SM 2540G	11/22/23	11/22/23 9:31	DV
Total Organic Carbon	110000	220	140	mg/Kg dry	1	MS-12	SW 846 9060A	11/30/23	11/30/23 12:57	NRH

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-DS-11202023 Sampled: 11/20/2023 12:50

Sample ID: 23K2746-04

Sample Matrix: Soil

Particle Size

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
See Attached Subcontracted Report	Attached	Attached	Attached	%	1		ASTM D6913	12/7/23	12/7/23 0:00	GTE

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: Water-DUP-11202023 Sampled: 11/20/2023 00:00

Sample ID: 23K2746-05

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.19	0.031	µg/L	1		SW-846 8270E	11/27/23	12/1/23 18:43	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	20.2	15-110		12/1/23 18:43

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-DUP-11202023 Sampled: 11/20/2023 00:00

Sample ID: 23K2746-06

Sample Matrix: Soil

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.11	0.044	mg/Kg dry	1		SW-846 8270E	11/27/23	12/1/23 19:03	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	25.3	15-110		12/1/23 19:03

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-DUP-11202023 Sampled: 11/20/2023 00:00

Sample ID: 23K2746-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	46.3			% Wt	1		SM 2540G	11/22/23	11/22/23 9:31	DV

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: FB-11202023 Sampled: 11/20/2023 12:00

Sample ID: 23K2746-07

Sample Matrix: Field Blank

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	0.033	µg/L	1		SW-846 8270E	11/27/23	12/1/23 19:24	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	20.1	15-110		12/1/23 19:24

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Sample Extraction Data

Prep Method: % Solids-SM 2540G

Lab Number [Field ID]	Batch	Date
23K2746-04 [SOIL-DS-11202023]	B358861	11/22/23
23K2746-06 [SOIL-DUP-11202023]	B358861	11/22/23

Prep Method: % Solids-SM 2540G

Lab Number [Field ID]	Batch	Date
23K2746-03 [SOIL-US-11202023]	B358862	11/22/23

SW 846 9060A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23K2746-03 [SOIL-US-11202023]	B359310	1.00	1.00	11/30/23
23K2746-04 [SOIL-DS-11202023]	B359310	1.00	1.00	11/30/23

Prep Method: SW-846 3546-SW-846 8270E

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23K2746-03 [SOIL-US-11202023]	B358984	20.4	1.00	11/27/23
23K2746-04 [SOIL-DS-11202023]	B358984	20.8	1.00	11/27/23
23K2746-06 [SOIL-DUP-11202023]	B358984	20.5	1.00	11/27/23

Prep Method: SW-846 3510C-SW-846 8270E

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23K2746-01 [Water-US-11202023]	B358992	1000	1.00	11/27/23
23K2746-02 [Water-DS-11202023]	B358992	1020	1.00	11/27/23
23K2746-05 [Water-DUP-11202023]	B358992	1040	1.00	11/27/23
23K2746-07 [FB-11202023]	B358992	1000	1.00	11/27/23

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QUALITY CONTROL

1,4-Dioxane by isotope dilution GC/MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B358984 - SW-846 3546											
Blank (B358984-BLK1)					Prepared: 11/27/23 Analyzed: 12/01/23						
1,4-Dioxane	ND	0.050	0.021	mg/Kg wet							
Surrogate: 1,4-Dioxane-d8	*0.132*			mg/Kg wet	0.500		26.5	15-110			
LCS (B358984-BS1)					Prepared: 11/27/23 Analyzed: 12/01/23						
1,4-Dioxane	0.411	0.050	0.021	mg/Kg wet	0.500		82.2	40-140			
Surrogate: 1,4-Dioxane-d8	*0.209*			mg/Kg wet	0.500		41.8	15-110			
LCS Dup (B358984-BSD1)					Prepared: 11/27/23 Analyzed: 12/01/23						
1,4-Dioxane	0.466	0.050	0.021	mg/Kg wet	0.500		93.2	40-140	12.4	30	
Surrogate: 1,4-Dioxane-d8	*0.193*			mg/Kg wet	0.500		38.6	15-110			
Matrix Spike (B358984-MS2)		**Source: 23K2746-04**			Prepared: 11/27/23 Analyzed: 12/01/23						
1,4-Dioxane	1.13	0.11	0.045	mg/Kg dry	1.08	ND	105	30-140			
Surrogate: 1,4-Dioxane-d8	*0.402*			mg/Kg dry	1.08		37.1	15-110			
Matrix Spike Dup (B358984-MSD2)		**Source: 23K2746-04**			Prepared: 11/27/23 Analyzed: 12/01/23						
1,4-Dioxane	1.02	0.11	0.045	mg/Kg dry	1.08	ND	94.6	30-140	9.99	30	
Surrogate: 1,4-Dioxane-d8	*0.349*			mg/Kg dry	1.08		32.3	15-110			
Batch B358992 - SW-846 3510C											
Blank (B358992-BLK1)					Prepared: 11/27/23 Analyzed: 12/01/23						
1,4-Dioxane	ND	0.20	0.033	µg/L							
Surrogate: 1,4-Dioxane-d8	*2.48*			µg/L	10.0		24.8	15-110			
LCS (B358992-BS1)					Prepared: 11/27/23 Analyzed: 12/01/23						
1,4-Dioxane	11.0	0.20	0.033	µg/L	10.0		110	40-140			
Surrogate: 1,4-Dioxane-d8	*2.33*			µg/L	10.0		23.3	15-110			
LCS Dup (B358992-BSD1)					Prepared: 11/27/23 Analyzed: 12/01/23						
1,4-Dioxane	11.2	0.20	0.033	µg/L	10.0		112	40-140	1.60	30	
Surrogate: 1,4-Dioxane-d8	*2.31*			µg/L	10.0		23.1	15-110			
Matrix Spike (B358992-MS1)		**Source: 23K2746-02**			Prepared: 11/27/23 Analyzed: 12/01/23						
1,4-Dioxane	10.8	0.19	0.031	µg/L	9.62	ND	113	30-140			
Surrogate: 1,4-Dioxane-d8	*2.22*			µg/L	9.62		23.1	15-110			
Matrix Spike Dup (B358992-MSD1)		**Source: 23K2746-02**			Prepared: 11/27/23 Analyzed: 12/01/23						
1,4-Dioxane	10.8	0.19	0.031	µg/L	9.62	ND	112	30-140	0.133	30	
Surrogate: 1,4-Dioxane-d8	*2.34*			µg/L	9.62		24.3	15-110			

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QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B358861 - % Solids												
Duplicate (B358861-DUP1)		**Source: 23K2746-04**			Prepared & Analyzed: 11/22/23							
% Solids	45.2			% Wt		46.2				2.27	10	
Batch B359310 - SW 846 9060A												
Blank (B359310-BLK1)					Prepared & Analyzed: 11/30/23							
Total Organic Carbon	ND	100	65	mg/Kg wet								
LCS (B359310-BS1)					Prepared & Analyzed: 11/30/23							
Total Organic Carbon	751	100	65	mg/Kg wet	750		100		67.3-125			
LCS Dup (B359310-BSD1)					Prepared & Analyzed: 11/30/23							
Total Organic Carbon	714	100	65	mg/Kg wet	750		95.1		67.3-125	5.12	26.4	
Matrix Spike (B359310-MS1)		**Source: 23K2746-04**			Prepared & Analyzed: 11/30/23							
Total Organic Carbon	141000	220	140	mg/Kg dry	1620	109000	**1970**	*	85-115			MS-12
Matrix Spike Dup (B359310-MSD1)		**Source: 23K2746-04**			Prepared & Analyzed: 11/30/23							
Total Organic Carbon	138000	220	140	mg/Kg dry	1620	109000	**1810**	*	85-115	1.78	20	MS-12

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
MS-12	Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW 846 9060A in Soil	
Total Organic Carbon	ME,NY,NH,VA
SW-846 8270E in Soil	
1,4-Dioxane	NY,NH
SW-846 8270E in Water	
1,4-Dioxane	NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
NY	New York State Department of Health	10899 NELAP	04/1/2024
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
ME	State of Maine	MA00100	06/9/2025
VA	Commonwealth of Virginia	460217	12/14/2023

Pace Analytical
Phone: 612-607-6400
Fax: 612-607-6444

23K2146

https://www.pacelabs.com/ Doc # 380 Rev 1_03242017

CHAIN OF CUSTODY RECORD (New York)

1800 Elm Street SE
Minneapolis, MN 55414

Page 1 of 1

RM

Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name: NYSDEC / Payson Long.
Address: 425 Broadway Ave, Albany, NY,
Phone:
Client Name: NOW Corporation.
Project Location: Stuyvesant, NY
Project Number: 60631041J
Project Manager: Payson Long
Pace Analytical Quote Name/Number
Invoice Recipient: NYSDEC
Sampled By: Mike Izzebelli + Steve Gray

Turnaround Time
7-Day [X] 10-Day [ ]
Due Date:
1-Day [ ] 3-Day [ ]
2-Day [ ] 4-Day [ ]

Report Format
Format: PDF [X] EXCEL [ ]
Other:
CLP Like Data Pkg Required: [ ]
Email To: lindsay.mitchell@dec.ny.gov
Fax To #:

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code	1,4-Dioxane SIM	PFAS 1633	Total organic Carbon	5-Grain Size	PFAS 1633-TSS
	# of Containers							2	2	1	1	1
	Preservation Code							1	1	1	1	1
	Container Code							A	P	A	A	P
1	Water - US - 11202023	11/20/23	1330		X	GW	P,A	X	X			X
2	Water - DS - 11202023	11/20/23	1225		X	GW	P,A	X	X			X
3	Soil - US - 11202023	11/20/23	1335	X		S	P,A	X	X	X	X	
4	Soil - DS - 11202023	11/20/23	1250	X		S	P,A	X	X	X	X	
5	Water - Dup - 11202023	11/20/23			X	GW	P,A	X	X			X
6	Soil - Dup - 11202023	11/20/23		X		S	P,A	X	X			
7	FB - 11202023	11/20/23	1200			O	P,A	X	X			
8	EB - 11202023	11/20/23	1305			O	P,A	X	X			

ANALYSIS REQUESTED

Field Filtered [ ]
Lab to Filter [ ]

Field Filtered [ ]
Lab to Filter [ ]

Comments:
Water - DS - 11202023 & Soil - DS - 11202023 have extra volume for MS/MSD.

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

[3] Container Codes:
A = Amber Glass
G = Glass
P = Plastic
ST = Sterile
V = Vial
S = Summa Canister
T = Tedlar Bag
O = Other (please define)

Relinquished by: (signature)	Date/Time:
Michael A. Izzebelli	11/20/23 1615
Received by: (signature)	Date/Time:
[signature] AM	11/20/23 1615
Relinquished by: (signature)	Date/Time:
[signature] AM	11/20/23 1615
Received by: (signature)	Date/Time:
[signature] 1.25.9	11/21/23 748
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Regulatory Requirements
[ ] AWQ STDS [ ] NY TOGS
[ ] NYC Sewer Discharge [ ] NY CP-51
[ ] Part 360 GW (Landfill)
[ ] NY Restricted Use
[ ] NY Unrestricted Use
[ ] NY Part 375

Reporting Requirements
[ ] Enhanced Data Package
[X] NYSDEC EQuIS EDD
[ ] EQuIS (Standard) EDD
[ ] NY Regulatory EDD
[ ] NY Regs Hits-Only EDD

Cat B deliverables

NELAC and AIHA-LAP, LLC Accredited

Project Entity
[X] Government [ ] Municipality [ ] MWRA [ ] WRTA
[ ] Federal [ ] 21 J [ ] School
[ ] City [ ] Brownfield [ ] MBTA

Other
[ ] Chromatogram
[ ] AIHA-LAP,LLC

PCB ONLY
[ ] Soxhlet
[ ] Non Soxhlet

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-ELON-0001 v07_Sample Receiving Checklist
	Effective Date: 07/13/2023

Log In Back-Sheet

Client NYSDEC Arcadis

Project NCM Corp

MCP/RCP Required NA

Deliverable Package Requirement NA

Location Stuartsburg, NY

PWSID# (When Applicable) NA

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time LA 11/21/23 748

Back-Sheet By / Date / Time LA 11/21/23 907

Temperature Method Gun #5

Temp ✓ < 6° C Actual Temperature 1.2 1.5 9 10 8

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

Notes regarding Samples/COC outside of SOP:

Client sent equipment blank in 8oz, not enough volume

Login Sample Receipt Checklist – (Rejection Criteria Listing – Using Acceptance Policy) Any False statement will be brought to the attention of the Client – True or False

	True	False
Received on Ice	☑	☐
Received in Cooler	☑	☐
Custody Seal: DATE TIME	☐	☑
COC Relinquished	☑	☐
COC/Samples Labels Agree	☑	☐
All Samples in Good Condition	☑	☐
Samples Received within Holding Time	☑	☐
Is there enough Volume	☒	☑
Proper Media/Container Used	☑	☑
Splitting Samples Required	☐	☐
MS/MSD	☐	☑
Trip Blanks	☐	☑
Lab to Filters	☐	☑
COC Legible	☑	☐

COC Included: (Check all included)

Client	☐	Analysis	☑	Sampler Name	☑
Project	☑	IDs	☑	Collection Date/Time	☑

All Samples Proper pH: N/A ☐ ☐

Additional Container Notes

Note: West Virginia requires all samples to have their temperature taken. Note any outliers.

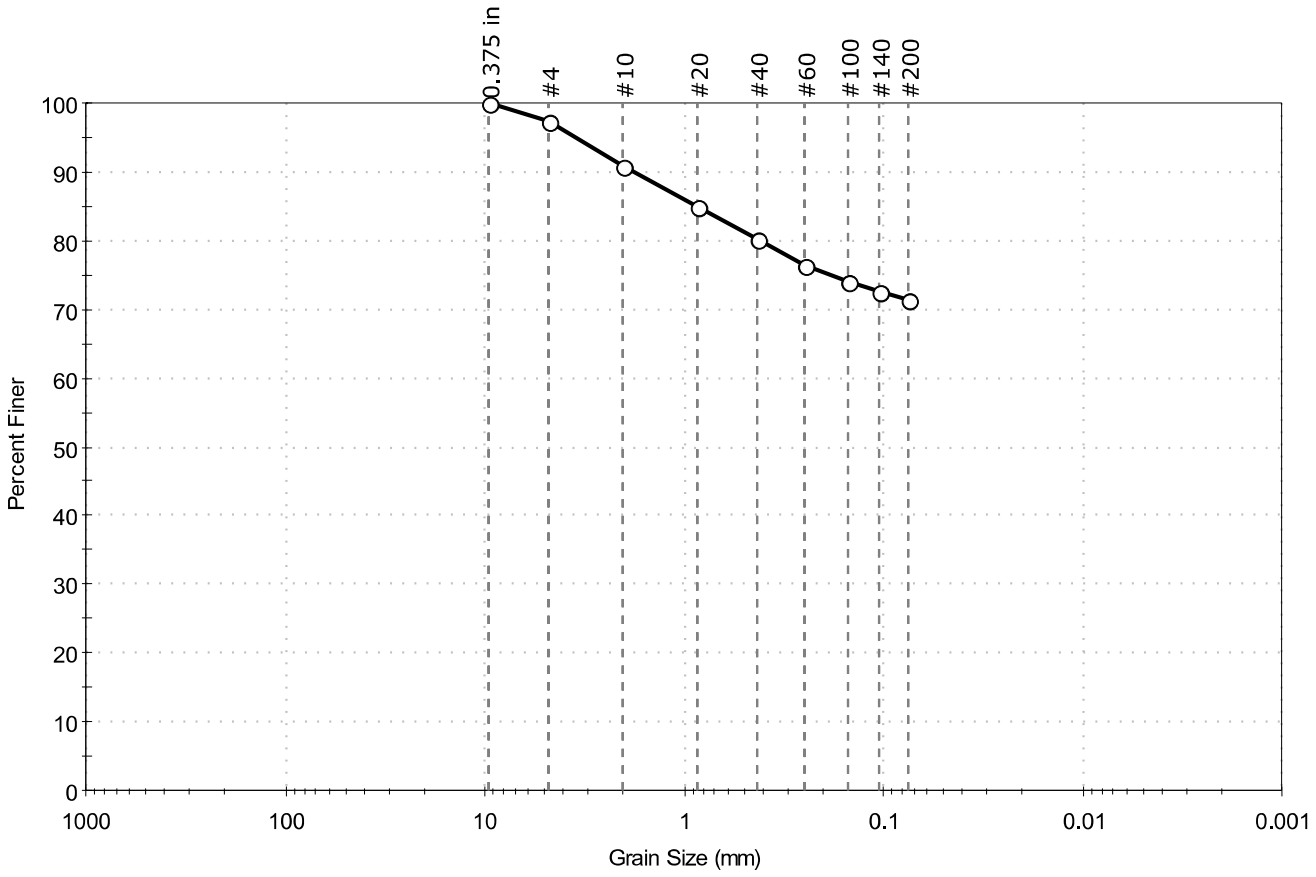
Sample			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
16oz Amb/Clear	Soils Jars	(Circle Amb/Clear)																				
8oz Amb/Clear					3	5		1		1												
4oz Amb/Clear																						
2oz Amb/Clear																						
Unpreserved	Ambers	1 Liter	2	4			2		2													
HCL																						
Sulfuric																						
Sulfuric		250mL																				
Phosphoric																						
HCl																						
Unpreserved		100mL																				
Unpreserved	Plastics	1 Liter																				
Sulfuric																						
Unpreserved		500mL																				
Sulfuric																						
Unpreserved		250mL																				
Trizma																						
Sulfuric																						
Nitric																						
NaOH																						
Ammonium Acetate																						
NaOH/Zinc																						
Unpreserved	VOA Vials																					
HCl																						
MeOH																						
D.I. Water																						
BiSulfate																						
Col/Bact	Other / Fill in																					

GeoTesting EXPRESS

Client:	Pace New England				
Project:	23K2746				
Location:	---			Project No:	GTX-318228
Boring ID:	---	Sample Type:	jar	Tested By:	ckg
Sample ID:	23K2746-03	Test Date:	12/07/23	Checked By:	ank
Depth :	---	Test Id:	747916		

Test Comment: ---
Visual Description: Moist, very dark gray clay with sand
Sample Comment: Sample contains organics

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
–	2.5	26.1	71.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	97		
#10	2.00	91		
#20	0.85	85		
#40	0.42	80		
#60	0.25	76		
#100	0.15	74		
#140	0.11	73		
#200	0.075	71		

Coefficients

D_{85} = 0.8651 mm D_{30} = N/A
D_{60} = N/A D_{15} = N/A
D_{50} = N/A D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

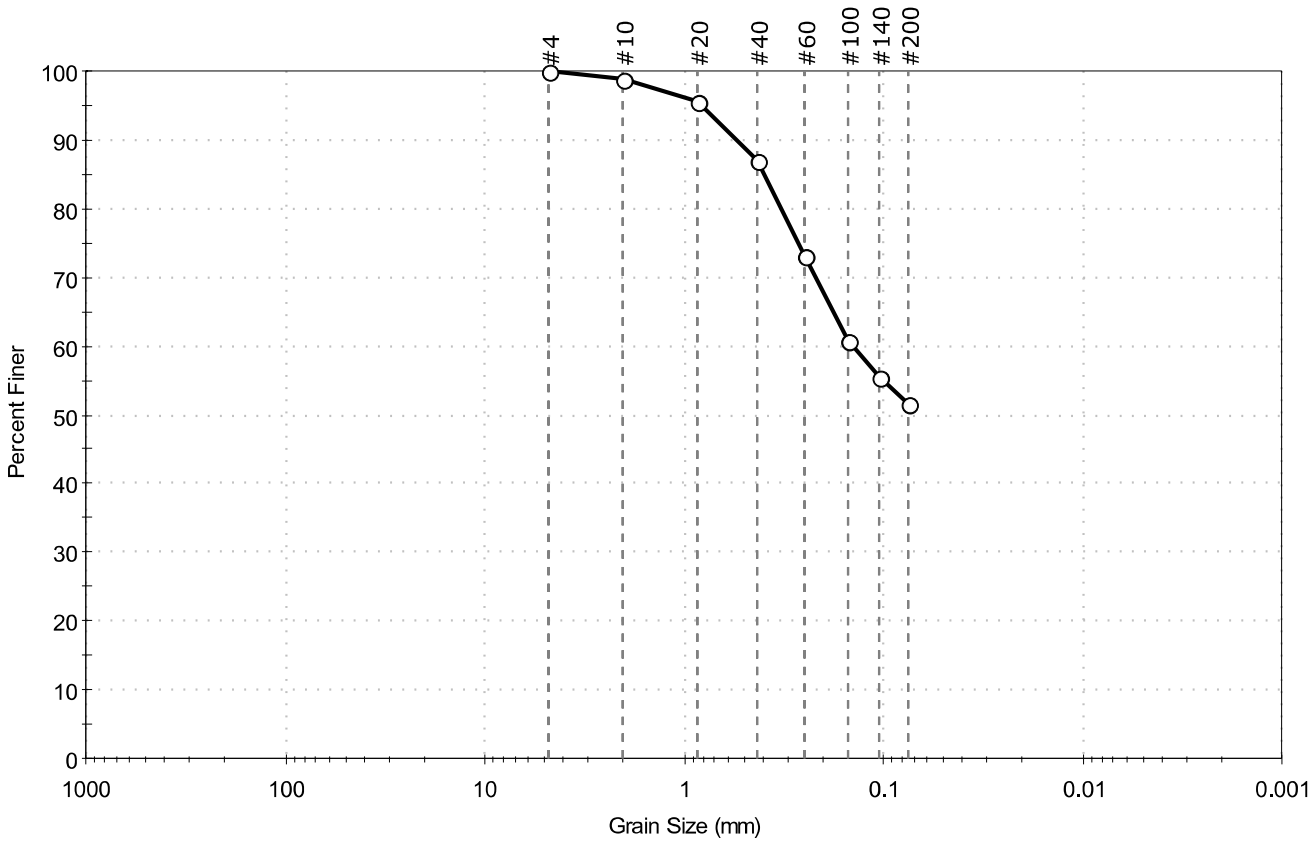
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	Pace New England				
Project:	23K2746				
Location:	---			Project No:	GTX-318228
Boring ID:	---	Sample Type:	jar	Tested By:	ckg
Sample ID:	23K2746-04	Test Date:	12/07/23	Checked By:	ank
Depth :	---	Test Id:	747917		
Test Comment:	---				
Visual Description:	Moist, dark grayish brown sandy silt with organics				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
–	0.0	48.4	51.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	96		
#40	0.42	87		
#60	0.25	73		
#100	0.15	61		
#140	0.11	55		
#200	0.075	52		

Coefficients

D_{85} = 0.3940 mm	D_{30} = N/A
D_{60} = 0.1438 mm	D_{15} = N/A
D_{50} = N/A	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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December 22, 2023

Payson Long
NYDEC_AECOM Environment - Latham, NY
40 British American Blvd.
Latham, NY 12110

Project Location: Staatsburg, NY
Client Job Number:
Project Number: 314008
Laboratory Work Order Number: 23K2747

Enclosed are results of analyses for samples as received by the laboratory on November 21, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kyle K. Stuckey
Project Manager

Table of Contents

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NYDEC_AECOM Environment - Latham, NY
40 British American Blvd.
Latham, NY 12110
ATTN: Payson Long

REPORT DATE: 12/22/2023

PURCHASE ORDER NUMBER: 141677

PROJECT NUMBER: 314008

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23K2747

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Staatsburg, NY

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
Water-US-11202023	23K2747-01	Ground Water		Draft Method 1633	
Water-DS11202023	23K2747-02	Ground Water		Draft Method 1633	
Soil-US-11202023	23K2747-03	Soil		Draft Method 1633	
				SM 2540G	
Soil-DS-11202023	23K2747-04	Soil		Draft Method 1633	
				SM 2540G	
Water-DUP-11202023	23K2747-05	Ground Water		Draft Method 1633	
Soil-DUP-11202023	23K2747-06	Soil		Draft Method 1633	
				SM 2540G	
FB-11202023	23K2747-07	Field Blank		Draft Method 1633	
EB-11202023	23K2747-08	Equipment Blank Water		Draft Method 1633	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

Draft Method 1633

Qualifications:

H-01

Recommended sample holding time was exceeded, but analysis was performed before 2X the allowable holding time.

Analyte & Samples(s) Qualified:

Total Suspended Solids
23K2747-01[Water-US-11202023], 23K2747-02[Water-DS11202023], 23K2747-05[Water-DUP-11202023]

L-03

Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

3-Perfluoropropyl propanoic acid (
23K2747-03RE1[Soil-US-11202023], 23K2747-04RE1[Soil-DS-11202023], 23K2747-06RE1[Soil-DUP-11202023], B360635-BS1

MS-07A

Matrix spike and spike duplicate recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possibility of matrix effects that lead to low bias or non-homogeneous sample aliquot cannot be eliminated.

Analyte & Samples(s) Qualified:

2H,2H,3H,3H-Perfluorooctanoic ac
B359423-MS1, B360635-MS1, B360635-MSD1

3-Perfluoropropyl propanoic acid (
B359423-MS1, B360635-MS1, B360635-MSD1

PF-18

Re-analysis confirmed Extracted Internal Standard failure due to matrix effects.

Analyte & Samples(s) Qualified:

D3-NMeFOSA
B359423-MS1

D5-NEtFOSA
B359423-MS1, B360635-MS1, B360635-MSD1

N-ethyl perfluorooctanesulfonamid
B359423-MS1, B360635-MS1, B360635-MSD1

N-methyl perfluoroocatnesulfonam
B359423-MS1

R-06

Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.

Analyte & Samples(s) Qualified:

2H,2H,3H,3H-Perfluorooctanoic ac
B360635-MSD1

Z-01

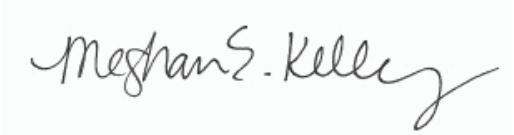
Analyte detected in method blank > 1/3 MRL.

Analyte & Samples(s) Qualified:

Perfluorobutanoic acid (PFBA)
B359423-BLK1

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Meghan E. Kelley
Reporting Specialist

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-US-11202023 | Sampled: 11/20/2023 13:30

Sample ID: 23K2747-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.9	4.1	1.5	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoropentanoic acid (PFPeA)	0.65	2.0	0.35	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.0	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.0	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorooctanoic acid (PFOA)	0.83	1.0	0.23	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorononanoic acid (PFNA)	ND	1.0	0.19	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorodecanoic acid (PFDA)	ND	1.0	0.19	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.0	0.28	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.0	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.0	0.28	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorotetradecanoic acid (PFTeDA)	ND	1.0	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorobutanesulfonic acid (PFBS)	0.60	1.0	0.26	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	1.0	0.24	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.0	0.21	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.0	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	1.0	0.32	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorononanesulfonic acid (PFNS)	ND	1.0	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	1.0	0.32	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	1.0	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	4.1	0.71	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	4.1	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	4.1	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	1.0	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	1.0	0.42	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	1.0	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.0	0.45	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.0	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	10	2.7	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	10	2.5	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	0.70	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
9Cl-PF3ONS (F53B Minor)	ND	4.1	0.87	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
11Cl-PF3OUdS (F53B Major)	ND	4.1	0.98	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	10	1.8	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	51	10	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	51	9.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.50	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-US-11202023 Sampled: 11/20/2023 13:30

Sample ID: 23K2747-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	2.0	0.51	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	2.0	0.41	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.88	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	53.9	10-130		12/6/23 15:16
13C5-PFPeA	97.1	35-150		12/6/23 15:16
13C5-PFHxA	98.5	55-150		12/6/23 15:16
13C4-PFHpA	101	55-150		12/6/23 15:16
13C8-PFOA	98.5	60-140		12/6/23 15:16
13C9-PFNA	100	55-140		12/6/23 15:16
13C6-PFDA	98.0	50-140		12/6/23 15:16
13C7-PFUnA	94.7	30-140		12/6/23 15:16
13C2-PFDoA	88.2	10-150		12/6/23 15:16
13C2-PFTeDA	69.1	10-130		12/6/23 15:16
13C3-PFBS	92.1	55-150		12/6/23 15:16
13C3-PFHxS	98.8	55-150		12/6/23 15:16
13C8-PFOS	90.8	45-140		12/6/23 15:16
13C2-4:2FTS	87.5	60-200		12/6/23 15:16
13C2-6:2FTS	93.0	60-200		12/6/23 15:16
13C2-8:2FTS	87.8	50-200		12/6/23 15:16
13C8-PFOSA	88.5	30-130		12/6/23 15:16
D3-NMeFOSA	85.3	15-130		12/6/23 15:16
D5-NEtFOSA	84.5	10-130		12/6/23 15:16
D3-NMeFOSAA	91.6	45-200		12/6/23 15:16
D5-NEtFOSAA	88.8	10-200		12/6/23 15:16
D7-NMeFOSE	79.9	10-150		12/6/23 15:16
D9-NEtFOSE	77.2	10-150		12/6/23 15:16
13C3-HFPO-DA	95.2	25-160		12/6/23 15:16

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-US-11202023 Sampled: 11/20/2023 13:30

Sample ID: 23K2747-01

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Total Suspended Solids	ND	10	mg/L	1	H-01	Draft Method 1633	11/28/23	11/28/23 13:24	LL

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-DS11202023 | Sampled: 11/20/2023 12:25

Sample ID: 23K2747-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.1	3.9	1.4	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoropentanoic acid (PFPeA)	0.67	1.9	0.34	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorohexanoic acid (PFHxA)	0.62	0.97	0.21	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoroheptanoic acid (PFHpA)	0.48	0.97	0.25	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorooctanoic acid (PFOA)	0.98	0.97	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorononanoic acid (PFNA)	ND	0.97	0.18	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorodecanoic acid (PFDA)	ND	0.97	0.18	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoroundecanoic acid (PFUnA)	ND	0.97	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorododecanoic acid (PFDoA)	ND	0.97	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	0.97	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorotetradecanoic acid (PFTeDA)	ND	0.97	0.24	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorobutanesulfonic acid (PFBS)	0.62	0.97	0.25	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.97	0.23	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.97	0.20	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	0.97	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.97	0.28	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.97	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.9	0.67	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	3.9	0.95	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.9	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.97	0.40	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.97	0.43	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.97	0.21	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	9.7	2.5	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	9.7	2.4	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.9	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.9	0.66	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
9Cl-PF3ONS (F53B Minor)	ND	3.9	0.82	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
11Cl-PF3OUdS (F53B Major)	ND	3.9	0.94	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	9.7	1.7	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	48	9.9	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	48	8.5	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.47	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-DS11202023 Sampled: 11/20/2023 12:25

Sample ID: 23K2747-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	1.9	0.48	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	1.9	0.39	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.84	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	48.1	10-130		12/6/23 15:32
13C5-PFPeA	88.3	35-150		12/6/23 15:32
13C5-PFHxA	91.1	55-150		12/6/23 15:32
13C4-PFHpA	93.3	55-150		12/6/23 15:32
13C8-PFOA	94.3	60-140		12/6/23 15:32
13C9-PFNA	90.3	55-140		12/6/23 15:32
13C6-PFDA	91.8	50-140		12/6/23 15:32
13C7-PFUnA	85.3	30-140		12/6/23 15:32
13C2-PFDoA	81.5	10-150		12/6/23 15:32
13C2-PFTeDA	64.8	10-130		12/6/23 15:32
13C3-PFBS	88.6	55-150		12/6/23 15:32
13C3-PFHxS	96.0	55-150		12/6/23 15:32
13C8-PFOS	90.5	45-140		12/6/23 15:32
13C2-4:2FTS	84.3	60-200		12/6/23 15:32
13C2-6:2FTS	90.3	60-200		12/6/23 15:32
13C2-8:2FTS	83.3	50-200		12/6/23 15:32
13C8-PFOSA	84.3	30-130		12/6/23 15:32
D3-NMeFOSA	80.2	15-130		12/6/23 15:32
D5-NEtFOSA	82.7	10-130		12/6/23 15:32
D3-NMeFOSAA	87.1	45-200		12/6/23 15:32
D5-NEtFOSAA	84.5	10-200		12/6/23 15:32
D7-NMeFOSE	78.3	10-150		12/6/23 15:32
D9-NEtFOSE	75.9	10-150		12/6/23 15:32
13C3-HFPO-DA	85.9	25-160		12/6/23 15:32

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-DS11202023 Sampled: 11/20/2023 12:25

Sample ID: 23K2747-02

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Total Suspended Solids	ND	10	mg/L	1	H-01	Draft Method 1633	11/28/23	11/28/23 13:24	LL

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-US-11202023 | Sampled: 11/20/2023 13:35

Sample ID: 23K2747-03

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.29	0.79	0.14	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoropentanoic acid (PFPeA)	0.15	0.39	0.026	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorohexanoic acid (PFHxA)	0.12	0.20	0.013	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoroheptanoic acid (PFHpA)	0.10	0.20	0.015	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorooctanoic acid (PFOA)	0.47	0.20	0.029	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorononanoic acid (PFNA)	0.28	0.20	0.026	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorodecanoic acid (PFDA)	0.29	0.20	0.018	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoroundecanoic acid (PFUnA)	0.42	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorododecanoic acid (PFDoA)	0.17	0.20	0.021	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorotridecanoic acid (PFTrDA)	0.15	0.20	0.027	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorotetradecanoic acid (PFTeDA)	0.088	0.20	0.018	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.029	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.025	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.022	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorooctanesulfonic acid (PFOS)	0.96	0.20	0.035	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.030	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.044	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.021	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.79	0.074	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.79	0.081	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.79	0.073	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.027	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.028	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.041	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	2.0	0.15	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.17	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.79	0.065	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.79	0.080	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
9Cl-PF3ONS (F53B Minor)	ND	0.79	0.076	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
11Cl-PF3OUdS (F53B Major)	ND	0.79	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	2.0	0.17	µg/kg dry	1	L-03	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	9.8	1.2	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	9.8	0.96	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.39	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-US-11202023 | Sampled: 11/20/2023 13:35

Sample ID: 23K2747-03

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.39	0.041	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.39	0.031	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.39	0.040	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	84.9	10-130		12/21/23 8:39
13C5-PFPeA	88.7	35-150		12/21/23 8:39
13C5-PFHxA	88.7	55-150		12/21/23 8:39
13C4-PFHpA	94.3	55-150		12/21/23 8:39
13C8-PFOA	88.5	60-140		12/21/23 8:39
13C9-PFNA	86.9	55-140		12/21/23 8:39
13C6-PFDA	89.3	50-140		12/21/23 8:39
13C7-PFUnA	84.3	30-140		12/21/23 8:39
13C2-PFDoA	83.5	10-150		12/21/23 8:39
13C2-PFTeDA	54.3	10-130		12/21/23 8:39
13C3-PFBS	81.8	55-150		12/21/23 8:39
13C3-PFHxS	94.1	55-150		12/21/23 8:39
13C8-PFOS	91.1	45-140		12/21/23 8:39
13C2-4:2FTS	96.5	60-200		12/21/23 8:39
13C2-6:2FTS	137	60-200		12/21/23 8:39
13C2-8:2FTS	166	50-200		12/21/23 8:39
13C8-PFOSA	83.3	30-130		12/21/23 8:39
D3-NMeFOSA	26.4	15-130		12/21/23 8:39
D5-NEtFOSA	14.7	10-130		12/21/23 8:39
D3-NMeFOSAA	108	45-200		12/21/23 8:39
D5-NEtFOSAA	128	10-200		12/21/23 8:39
D7-NMeFOSE	38.9	10-150		12/21/23 8:39
D9-NEtFOSE	28.9	10-150		12/21/23 8:39
13C3-HFPO-DA	84.7	25-160		12/21/23 8:39

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-US-11202023 Sampled: 11/20/2023 13:35

Sample ID: 23K2747-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	39.4		% Wt	1		SM 2540G	11/22/23	11/22/23 9:31	DV

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-DS-11202023 | Sampled: 11/20/2023 12:50

Sample ID: 23K2747-04

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.20	0.79	0.14	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoropentanoic acid (PFPeA)	ND	0.39	0.026	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorohexanoic acid (PFHxA)	0.041	0.20	0.013	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.015	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorooctanoic acid (PFOA)	0.13	0.20	0.029	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorononanoic acid (PFNA)	0.11	0.20	0.026	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorodecanoic acid (PFDA)	0.090	0.20	0.018	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoroundecanoic acid (PFUnA)	0.17	0.20	0.020	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorododecanoic acid (PFDoA)	0.076	0.20	0.021	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorotridecanoic acid (PFTrDA)	0.080	0.20	0.027	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorotetradecanoic acid (PFTeDA)	0.052	0.20	0.018	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.029	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.025	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.022	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorooctanesulfonic acid (PFOS)	0.35	0.20	0.035	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.030	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.044	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.021	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.79	0.074	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.79	0.081	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.79	0.073	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.027	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.028	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.041	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	2.0	0.15	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.17	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.79	0.064	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.79	0.080	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
9Cl-PF3ONS (F53B Minor)	ND	0.79	0.076	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
11Cl-PF3OUdS (F53B Major)	ND	0.79	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	2.0	0.17	µg/kg dry	1	L-03	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	9.8	1.2	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	9.8	0.96	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.39	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-DS-11202023 | Sampled: 11/20/2023 12:50

Sample ID: 23K2747-04

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.39	0.041	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.39	0.031	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.39	0.040	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	43.6	10-130		12/21/23 8:54
13C5-PFPeA	67.1	35-150		12/21/23 8:54
13C5-PFHxA	88.8	55-150		12/21/23 8:54
13C4-PFHpA	94.6	55-150		12/21/23 8:54
13C8-PFOA	93.1	60-140		12/21/23 8:54
13C9-PFNA	91.3	55-140		12/21/23 8:54
13C6-PFDA	93.3	50-140		12/21/23 8:54
13C7-PFUnA	89.2	30-140		12/21/23 8:54
13C2-PFDoA	91.4	10-150		12/21/23 8:54
13C2-PFTeDA	74.6	10-130		12/21/23 8:54
13C3-PFBS	81.2	55-150		12/21/23 8:54
13C3-PFHxS	92.9	55-150		12/21/23 8:54
13C8-PFOS	92.0	45-140		12/21/23 8:54
13C2-4:2FTS	87.5	60-200		12/21/23 8:54
13C2-6:2FTS	129	60-200		12/21/23 8:54
13C2-8:2FTS	156	50-200		12/21/23 8:54
13C8-PFOSA	89.5	30-130		12/21/23 8:54
D3-NMeFOSA	54.3	15-130		12/21/23 8:54
D5-NEtFOSA	35.0	10-130		12/21/23 8:54
D3-NMeFOSAA	110	45-200		12/21/23 8:54
D5-NEtFOSAA	125	10-200		12/21/23 8:54
D7-NMeFOSE	53.3	10-150		12/21/23 8:54
D9-NEtFOSE	48.6	10-150		12/21/23 8:54
13C3-HFPO-DA	84.8	25-160		12/21/23 8:54

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-DS-11202023 Sampled: 11/20/2023 12:50

Sample ID: 23K2747-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	42.4		% Wt	1		SM 2540G	11/22/23	11/22/23 9:31	DV

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-DUP-11202023 | Sampled: 11/20/2023 00:00

Sample ID: 23K2747-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.6	3.9	1.4	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoropentanoic acid (PFPeA)	1.5	1.9	0.34	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorohexanoic acid (PFHxA)	0.64	0.97	0.21	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoroheptanoic acid (PFHpA)	0.42	0.97	0.25	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorooctanoic acid (PFOA)	1.1	0.97	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorononanoic acid (PFNA)	ND	0.97	0.19	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorodecanoic acid (PFDA)	ND	0.97	0.18	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoroundecanoic acid (PFUnA)	ND	0.97	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorododecanoic acid (PFDoA)	ND	0.97	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	0.97	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorotetradecanoic acid (PFTeDA)	ND	0.97	0.24	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorobutanesulfonic acid (PFBS)	0.66	0.97	0.25	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.97	0.23	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.97	0.20	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	0.97	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.97	0.29	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.97	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.97	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.9	0.68	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	3.9	0.96	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.9	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.97	0.40	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.97	0.43	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.97	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	9.7	2.6	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	9.7	2.4	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.9	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.9	0.67	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
9Cl-PF3ONS (F53B Minor)	ND	3.9	0.83	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
11Cl-PF3OUdS (F53B Major)	ND	3.9	0.94	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	9.7	1.8	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	49	9.9	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	49	8.6	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.48	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-DUP-11202023 Sampled: 11/20/2023 00:00

Sample ID: 23K2747-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	1.9	0.48	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	1.9	0.39	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.84	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	39.6	10-130		12/6/23 15:49
13C5-PFPeA	85.8	35-150		12/6/23 15:49
13C5-PFHxA	87.4	55-150		12/6/23 15:49
13C4-PFHpA	90.4	55-150		12/6/23 15:49
13C8-PFOA	89.2	60-140		12/6/23 15:49
13C9-PFNA	83.7	55-140		12/6/23 15:49
13C6-PFDA	84.7	50-140		12/6/23 15:49
13C7-PFUnA	80.1	30-140		12/6/23 15:49
13C2-PFDoA	76.0	10-150		12/6/23 15:49
13C2-PFTeDA	57.8	10-130		12/6/23 15:49
13C3-PFBS	81.5	55-150		12/6/23 15:49
13C3-PFHxS	86.1	55-150		12/6/23 15:49
13C8-PFOS	85.2	45-140		12/6/23 15:49
13C2-4:2FTS	76.1	60-200		12/6/23 15:49
13C2-6:2FTS	81.7	60-200		12/6/23 15:49
13C2-8:2FTS	75.5	50-200		12/6/23 15:49
13C8-PFOSA	81.0	30-130		12/6/23 15:49
D3-NMeFOSA	77.6	15-130		12/6/23 15:49
D5-NEtFOSA	77.3	10-130		12/6/23 15:49
D3-NMeFOSAA	82.1	45-200		12/6/23 15:49
D5-NEtFOSAA	76.9	10-200		12/6/23 15:49
D7-NMeFOSE	71.9	10-150		12/6/23 15:49
D9-NEtFOSE	67.5	10-150		12/6/23 15:49
13C3-HFPO-DA	82.9	25-160		12/6/23 15:49

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-DUP-11202023 Sampled: 11/20/2023 00:00

Sample ID: 23K2747-05

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Total Suspended Solids	ND	10	mg/L	1	H-01	Draft Method 1633	11/28/23	11/28/23 13:24	LL

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-DUP-11202023 | Sampled: 11/20/2023 00:00

Sample ID: 23K2747-06

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.17	0.80	0.14	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoropentanoic acid (PFPeA)	ND	0.40	0.026	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.014	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.015	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorooctanoic acid (PFOA)	0.12	0.20	0.029	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorononanoic acid (PFNA)	0.10	0.20	0.026	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorodecanoic acid (PFDA)	0.080	0.20	0.019	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoroundecanoic acid (PFUnA)	0.16	0.20	0.020	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorododecanoic acid (PFDoA)	0.079	0.20	0.022	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorotridecanoic acid (PFTrDA)	0.079	0.20	0.027	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorotetradecanoic acid (PFTeDA)	0.052	0.20	0.018	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.030	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.025	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.022	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorooctanesulfonic acid (PFOS)	0.35	0.20	0.036	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.030	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.045	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.021	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.80	0.075	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.80	0.082	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.80	0.074	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.20	0.021	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.028	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.028	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.042	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	2.0	0.15	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.17	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.80	0.065	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.80	0.081	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
9Cl-PF3ONS (F53B Minor)	ND	0.80	0.077	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
11Cl-PF3OUdS (F53B Major)	ND	0.80	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	2.0	0.17	µg/kg dry	1	L-03	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	10	1.2	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	10	0.98	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.40	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-DUP-11202023 Sampled: 11/20/2023 00:00

Sample ID: 23K2747-06

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	0.042	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	0.031	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	0.041	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual		
13C4-PFBA	79.7	10-130		12/21/23	9:10
13C5-PFPeA	83.8	35-150		12/21/23	9:10
13C5-PFHxA	86.1	55-150		12/21/23	9:10
13C4-PFHpA	90.8	55-150		12/21/23	9:10
13C8-PFOA	87.7	60-140		12/21/23	9:10
13C9-PFNA	83.3	55-140		12/21/23	9:10
13C6-PFDA	90.5	50-140		12/21/23	9:10
13C7-PFUnA	91.0	30-140		12/21/23	9:10
13C2-PFDoA	92.7	10-150		12/21/23	9:10
13C2-PFTeDA	61.4	10-130		12/21/23	9:10
13C3-PFBS	77.2	55-150		12/21/23	9:10
13C3-PFHxS	89.5	55-150		12/21/23	9:10
13C8-PFOS	86.4	45-140		12/21/23	9:10
13C2-4:2FTS	83.3	60-200		12/21/23	9:10
13C2-6:2FTS	114	60-200		12/21/23	9:10
13C2-8:2FTS	159	50-200		12/21/23	9:10
13C8-PFOSA	84.8	30-130		12/21/23	9:10
D3-NMeFOSA	27.0	15-130		12/21/23	9:10
D5-NEtFOSA	14.5	10-130		12/21/23	9:10
D3-NMeFOSAA	109	45-200		12/21/23	9:10
D5-NEtFOSAA	127	10-200		12/21/23	9:10
D7-NMeFOSE	41.1	10-150		12/21/23	9:10
D9-NEtFOSE	34.5	10-150		12/21/23	9:10
13C3-HFPO-DA	83.4	25-160		12/21/23	9:10

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-DUP-11202023 Sampled: 11/20/2023 00:00

Sample ID: 23K2747-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	40.0		% Wt	1		SM 2540G	11/22/23	11/22/23 9:31	DV

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: FB-11202023 | Sampled: 11/20/2023 12:00

Sample ID: 23K2747-07

Sample Matrix: Field Blank

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.2	1.5	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoropentanoic acid (PFPeA)	ND	2.1	0.37	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.1	0.23	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.1	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorooctanoic acid (PFOA)	ND	1.1	0.24	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorononanoic acid (PFNA)	ND	1.1	0.20	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorodecanoic acid (PFDA)	ND	1.1	0.20	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.1	0.29	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.1	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.1	0.29	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorotetradecanoic acid (PFTeDA)	ND	1.1	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorobutanesulfonic acid (PFBS)	ND	1.1	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	1.1	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.1	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.1	0.32	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	1.1	0.34	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorononanesulfonic acid (PFNS)	ND	1.1	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	1.1	0.33	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	1.1	0.28	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	4.2	0.74	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	4.2	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	4.2	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	1.1	0.32	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	1.1	0.44	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	1.1	0.33	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.1	0.46	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.1	0.23	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	11	2.8	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	11	2.6	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.2	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.2	0.73	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
9Cl-PF3ONS (F53B Minor)	ND	4.2	0.90	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
11Cl-PF3OUdS (F53B Major)	ND	4.2	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	11	1.9	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	53	11	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	53	9.3	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.1	0.52	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: FB-11202023 | Sampled: 11/20/2023 12:00

Sample ID: 23K2747-07

Sample Matrix: Field Blank

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	2.1	0.53	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	2.1	0.42	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.1	0.91	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	92.5	10-130		12/6/23 16:05
13C5-PFPeA	90.8	35-150		12/6/23 16:05
13C5-PFHxA	93.5	55-150		12/6/23 16:05
13C4-PFHpA	95.1	55-150		12/6/23 16:05
13C8-PFOA	92.0	60-140		12/6/23 16:05
13C9-PFNA	93.0	55-140		12/6/23 16:05
13C6-PFDA	93.4	50-140		12/6/23 16:05
13C7-PFUnA	89.6	30-140		12/6/23 16:05
13C2-PFDoA	85.0	10-150		12/6/23 16:05
13C2-PFTeDA	82.5	10-130		12/6/23 16:05
13C3-PFBS	86.1	55-150		12/6/23 16:05
13C3-PFHxS	94.9	55-150		12/6/23 16:05
13C8-PFOS	92.6	45-140		12/6/23 16:05
13C2-4:2FTS	70.8	60-200		12/6/23 16:05
13C2-6:2FTS	94.9	60-200		12/6/23 16:05
13C2-8:2FTS	91.2	50-200		12/6/23 16:05
13C8-PFOSA	84.0	30-130		12/6/23 16:05
D3-NMeFOSA	84.5	15-130		12/6/23 16:05
D5-NEtFOSA	86.8	10-130		12/6/23 16:05
D3-NMeFOSAA	91.9	45-200		12/6/23 16:05
D5-NEtFOSAA	89.6	10-200		12/6/23 16:05
D7-NMeFOSE	84.7	10-150		12/6/23 16:05
D9-NEtFOSE	83.5	10-150		12/6/23 16:05
13C3-HFPO-DA	90.6	25-160		12/6/23 16:05

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: FB-11202023 Sampled: 11/20/2023 12:00

Sample ID: 23K2747-07

Sample Matrix: Field Blank

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Total Suspended Solids	ND	10	mg/L	1		Draft Method 1633	11/22/23	11/22/23 6:32	LL

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: EB-11202023 | Sampled: 11/20/2023 13:05

Sample ID: 23K2747-08

Sample Matrix: Equipment Blank Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.4	3.9	1.4	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluoropentanoic acid (PFPeA)	ND	2.0	0.34	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorohexanoic acid (PFHxA)	0.30	0.98	0.21	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluoroheptanoic acid (PFHpA)	ND	0.98	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorooctanoic acid (PFOA)	0.63	0.98	0.22	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorononanoic acid (PFNA)	ND	0.98	0.19	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorodecanoic acid (PFDA)	1.2	0.98	0.18	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluoroundecanoic acid (PFUnA)	ND	0.98	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorododecanoic acid (PFDoA)	1.0	0.98	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	0.98	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorotetradecanoic acid (PFTeDA)	ND	0.98	0.24	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorobutanesulfonic acid (PFBS)	ND	0.98	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.98	0.23	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.98	0.20	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.98	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	0.98	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.98	0.29	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.98	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.98	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.9	0.68	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	3.9	0.96	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.9	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.98	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.98	0.41	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.98	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.98	0.43	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.98	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	9.8	2.6	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	9.8	2.4	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.9	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.9	0.67	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
9Cl-PF3ONS (F53B Minor)	ND	3.9	0.83	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
11Cl-PF3OUdS (F53B Major)	ND	3.9	0.94	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	9.8	1.8	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	49	10	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	49	8.6	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.48	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: EB-11202023 Sampled: 11/20/2023 13:05

Sample ID: 23K2747-08

Sample Matrix: Equipment Blank Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	2.0	0.49	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	2.0	0.39	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.85	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:20	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	91.5	10-130		12/6/23 16:20
13C5-PFPeA	89.1	35-150		12/6/23 16:20
13C5-PFHxA	92.2	55-150		12/6/23 16:20
13C4-PFHpA	92.8	55-150		12/6/23 16:20
13C8-PFOA	93.2	60-140		12/6/23 16:20
13C9-PFNA	94.6	55-140		12/6/23 16:20
13C6-PFDA	90.0	50-140		12/6/23 16:20
13C7-PFUnA	90.3	30-140		12/6/23 16:20
13C2-PFDoA	86.4	10-150		12/6/23 16:20
13C2-PFTeDA	81.6	10-130		12/6/23 16:20
13C3-PFBS	87.4	55-150		12/6/23 16:20
13C3-PFHxS	95.4	55-150		12/6/23 16:20
13C8-PFOS	90.0	45-140		12/6/23 16:20
13C2-4:2FTS	70.7	60-200		12/6/23 16:20
13C2-6:2FTS	95.0	60-200		12/6/23 16:20
13C2-8:2FTS	92.4	50-200		12/6/23 16:20
13C8-PFOSA	82.4	30-130		12/6/23 16:20
D3-NMeFOSA	80.6	15-130		12/6/23 16:20
D5-NEtFOSA	84.4	10-130		12/6/23 16:20
D3-NMeFOSAA	89.1	45-200		12/6/23 16:20
D5-NEtFOSAA	81.3	10-200		12/6/23 16:20
D7-NMeFOSE	84.2	10-150		12/6/23 16:20
D9-NEtFOSE	83.4	10-150		12/6/23 16:20
13C3-HFPO-DA	90.1	25-160		12/6/23 16:20

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: EB-11202023 Sampled: 11/20/2023 13:05

Sample ID: 23K2747-08

Sample Matrix: Equipment Blank Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Total Suspended Solids	ND	10	mg/L	1		Draft Method 1633	11/22/23	11/22/23 6:32	LL

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Sample Extraction Data

Prep Method: Draft Method 1633-Draft Method 1633

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
23K2747-03RE1 [Soil-US-11202023]	B360635	12.9	5.00	12/18/23
23K2747-04RE1 [Soil-DS-11202023]	B360635	12.0	5.00	12/18/23
23K2747-06RE1 [Soil-DUP-11202023]	B360635	12.5	5.00	12/18/23

Draft Method 1633

Lab Number [Field ID]	Batch	Initial [mL]	Date
23K2747-07 [FB-11202023]	B358816	50.0	11/22/23
23K2747-08 [EB-11202023]	B358816	50.0	11/22/23

Draft Method 1633

Lab Number [Field ID]	Batch	Initial [mL]	Date
23K2747-01 [Water-US-11202023]	B359076	50.0	11/28/23
23K2747-02 [Water-DS11202023]	B359076	50.0	11/28/23
23K2747-05 [Water-DUP-11202023]	B359076	50.0	11/28/23

Prep Method: Draft Method 1633-Draft Method 1633 **Leachates were extracted on 11/28/2023 per NO PREP in Batch B359076**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23K2747-01 [Water-US-11202023]	B359414	492	5.00	11/30/23
23K2747-02 [Water-DS11202023]	B359414	517	5.00	11/30/23
23K2747-05 [Water-DUP-11202023]	B359414	513	5.00	11/30/23
23K2747-07 [FB-11202023]	B359414	474	5.00	11/30/23
23K2747-08 [EB-11202023]	B359414	512	5.00	11/30/23

Prep Method: % Solids-SM 2540G

Lab Number [Field ID]	Batch	Date
23K2747-03 [Soil-US-11202023]	B358861	11/22/23
23K2747-04 [Soil-DS-11202023]	B358861	11/22/23
23K2747-06 [Soil-DUP-11202023]	B358861	11/22/23

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359414 - Draft Method 1633											
Blank (B359414-BLK1)					Prepared: 12/04/23 Analyzed: 12/06/23						
Perfluorobutanoic acid (PFBA)	ND	3.9	1.4	ng/L							
Perfluoropentanoic acid (PFPeA)	0.44	2.0	0.34	ng/L							J
Perfluorohexanoic acid (PFHxA)	ND	0.98	0.21	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	0.98	0.25	ng/L							
Perfluorooctanoic acid (PFOA)	ND	0.98	0.22	ng/L							
Perfluorononanoic acid (PFNA)	ND	0.98	0.19	ng/L							
Perfluorodecanoic acid (PFDA)	ND	0.98	0.18	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	0.98	0.27	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	0.98	0.25	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	0.98	0.26	ng/L							
Perfluorotetradecanoic acid (PFTeDA)	ND	0.98	0.24	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	0.98	0.25	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	0.98	0.23	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	0.98	0.20	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.98	0.30	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	0.98	0.31	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	0.98	0.29	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	0.98	0.31	ng/L							
Perfluorododecanesulfonic acid (PFDoS)	ND	0.98	0.26	ng/L							
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.9	0.68	ng/L							
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	3.9	0.97	ng/L							
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.9	1.1	ng/L							
Perfluorooctanesulfonamide (PFOSA)	ND	0.98	0.30	ng/L							
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.98	0.41	ng/L							
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.98	0.30	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	0.98	0.43	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	0.98	0.22	ng/L							
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	9.8	2.6	ng/L							
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	9.8	2.4	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.9	1.0	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.9	0.67	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	3.9	0.83	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	3.9	0.95	ng/L							
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	9.8	1.8	ng/L							
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	49	10	ng/L							
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	49	8.6	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.48	ng/L							
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	2.0	0.49	ng/L							
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	2.0	0.39	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.85	ng/L							

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359414 - Draft Method 1633											
Blank (B359414-BLK1)					Prepared: 12/04/23 Analyzed: 12/06/23						
Surrogate: 13C4-PFBA	*91.6*			ng/L	97.8		93.6	10-130			
Surrogate: 13C5-PFPeA	*45.1*			ng/L	48.9		92.2	35-150			
Surrogate: 13C5-PFHxA	*23.0*			ng/L	24.4		94.1	55-150			
Surrogate: 13C4-PFHpA	*23.2*			ng/L	24.4		95.1	55-150			
Surrogate: 13C8-PFOA	*22.4*			ng/L	24.4		91.5	60-140			
Surrogate: 13C9-PFNA	*12.0*			ng/L	12.2		98.0	55-140			
Surrogate: 13C6-PFDA	*11.4*			ng/L	12.2		93.4	50-140			
Surrogate: 13C7-PFUnA	*11.2*			ng/L	12.2		91.8	30-140			
Surrogate: 13C2-PFDoA	*11.1*			ng/L	12.2		90.5	10-150			
Surrogate: 13C2-PFTeDA	*10.9*			ng/L	12.2		89.3	10-130			
Surrogate: 13C3-PFBS	*22.1*			ng/L	24.4		90.5	55-150			
Surrogate: 13C3-PFHxS	*23.6*			ng/L	24.4		96.7	55-150			
Surrogate: 13C8-PFOS	*23.1*			ng/L	24.4		94.5	45-140			
Surrogate: 13C2-4:2FTS	*37.3*			ng/L	48.9		76.2	60-200			
Surrogate: 13C2-6:2FTS	*46.9*			ng/L	48.9		95.9	60-200			
Surrogate: 13C2-8:2FTS	*42.7*			ng/L	48.9		87.4	50-200			
Surrogate: 13C8-PFOSA	*20.9*			ng/L	24.4		85.4	30-130			
Surrogate: D3-NMeFOSA	*20.4*			ng/L	24.4		83.3	15-130			
Surrogate: D5-NEtFOSA	*21.8*			ng/L	24.4		89.2	10-130			
Surrogate: D3-NMeFOSAA	*44.3*			ng/L	48.9		90.6	45-200			
Surrogate: D5-NEtFOSAA	*43.3*			ng/L	48.9		88.6	10-200			
Surrogate: D7-NMeFOSE	*211*			ng/L	244		86.4	10-150			
Surrogate: D9-NEtFOSE	*216*			ng/L	244		88.2	10-150			
Surrogate: 13C3-HFPO-DA	*89.2*			ng/L	97.8		91.3	25-160			
LCS (B359414-BS1)					Prepared: 12/04/23 Analyzed: 12/06/23						
Perfluorobutanoic acid (PFBA)	105	4.0	1.4	ng/L	95.2		110	58-148			
Perfluoropentanoic acid (PFPeA)	49.3	2.0	0.34	ng/L	47.6		104	54-152			
Perfluorohexanoic acid (PFHxA)	24.9	0.99	0.21	ng/L	23.8		105	55-152			
Perfluoroheptanoic acid (PFHpA)	24.5	0.99	0.25	ng/L	23.8		103	54-154			
Perfluorooctanoic acid (PFOA)	25.3	0.99	0.22	ng/L	23.8		106	52-161			
Perfluorononanoic acid (PFNA)	24.8	0.99	0.19	ng/L	23.8		104	59-149			
Perfluorodecanoic acid (PFDA)	24.2	0.99	0.18	ng/L	23.8		101	52-147			
Perfluoroundecanoic acid (PFUnA)	25.0	0.99	0.27	ng/L	23.8		105	48-159			
Perfluorododecanoic acid (PFDoA)	25.1	0.99	0.26	ng/L	23.8		105	64-142			
Perfluorotridecanoic acid (PFTrDA)	25.4	0.99	0.27	ng/L	23.8		107	49-148			
Perfluorotetradecanoic acid (PFTeDA)	25.8	0.99	0.25	ng/L	23.8		108	47-161			
Perfluorobutanesulfonic acid (PFBS)	21.7	0.99	0.26	ng/L	21.1		103	62-144			
Perfluoropentanesulfonic acid (PFPeS)	23.3	0.99	0.24	ng/L	22.4		104	59-151			
Perfluorohexanesulfonic acid (PFHxS)	22.3	0.99	0.20	ng/L	21.8		103	57-146			
Perfluoroheptanesulfonic acid (PFHpS)	24.2	0.99	0.30	ng/L	22.7		107	55-152			
Perfluorooctanesulfonic acid (PFOS)	22.3	0.99	0.32	ng/L	22.1		101	58-149			
Perfluorononanesulfonic acid (PFNS)	23.2	0.99	0.29	ng/L	22.9		101	52-148			
Perfluorodecanesulfonic acid (PFDS)	23.2	0.99	0.31	ng/L	23.0		101	51-147			
Perfluorododecanesulfonic acid (PFDoS)	22.4	0.99	0.26	ng/L	23.1		97.2	36-145			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	102	4.0	0.69	ng/L	89.3		115	67-146			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	102	4.0	0.98	ng/L	90.4		113	61-151			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	106	4.0	1.1	ng/L	91.6		116	63-152			
Perfluorooctanesulfonamide (PFOSA)	25.0	0.99	0.30	ng/L	23.8		105	61-148			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359414 - Draft Method 1633											
LCS (B359414-BS1)					Prepared: 12/04/23 Analyzed: 12/06/23						
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	24.5	0.99	0.41	ng/L	23.8		103	63-145			
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	23.1	0.99	0.31	ng/L	23.8		97.0	65-139			
N-MeFOSAA (NMeFOSAA)	24.8	0.99	0.44	ng/L	23.8		104	58-144			
N-EtFOSAA (NEtFOSAA)	24.9	0.99	0.22	ng/L	23.8		105	59-146			
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	244	9.9	2.6	ng/L	238		102	71-136			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	251	9.9	2.4	ng/L	238		106	69-137			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	91.4	4.0	1.0	ng/L	95.2		96.0	63-144			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	87.9	4.0	0.68	ng/L	89.9		97.8	68-146			
9Cl-PF3ONS (F53B Minor)	89.7	4.0	0.84	ng/L	89.3		100	56-156			
11Cl-PF3OUdS (F53B Major)	93.0	4.0	0.96	ng/L	89.9		103	46-156			
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	217	9.9	1.8	ng/L	238		91.4	62-129			
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	1180	50	10	ng/L	1190		98.8	63-134			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	1120	50	8.7	ng/L	1190		93.9	50-138			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	45.0	2.0	0.49	ng/L	42.4		106	56-151			
Perfluoro-3-methoxypropanoic acid (PFMPA)	45.9	2.0	0.49	ng/L	47.6		96.4	51-145			
Perfluoro-4-methoxybutanoic acid (PFMBA)	47.5	2.0	0.40	ng/L	47.6		99.9	55-148			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	48.5	2.0	0.86	ng/L	47.6		102	48-161			
Surrogate: 13C4-PFBA	*94.4*			ng/L	99.2		95.2	10-130			
Surrogate: 13C5-PFPeA	*47.2*			ng/L	49.6		95.2	35-150			
Surrogate: 13C5-PFHxA	*23.9*			ng/L	24.8		96.3	55-150			
Surrogate: 13C4-PFHpA	*24.0*			ng/L	24.8		96.8	55-150			
Surrogate: 13C8-PFOA	*23.2*			ng/L	24.8		93.6	60-140			
Surrogate: 13C9-PFNA	*11.9*			ng/L	12.4		95.8	55-140			
Surrogate: 13C6-PFDA	*11.7*			ng/L	12.4		94.2	50-140			
Surrogate: 13C7-PFUnA	*11.1*			ng/L	12.4		89.2	30-140			
Surrogate: 13C2-PFDoA	*10.6*			ng/L	12.4		85.4	10-150			
Surrogate: 13C2-PFTeDA	*10.1*			ng/L	12.4		81.6	10-130			
Surrogate: 13C3-PFBS	*22.7*			ng/L	24.8		91.4	55-150			
Surrogate: 13C3-PFHxS	*23.8*			ng/L	24.8		95.9	55-150			
Surrogate: 13C8-PFOS	*23.7*			ng/L	24.8		95.5	45-140			
Surrogate: 13C2-4:2FTS	*40.8*			ng/L	49.6		82.4	60-200			
Surrogate: 13C2-6:2FTS	*50.0*			ng/L	49.6		101	60-200			
Surrogate: 13C2-8:2FTS	*48.1*			ng/L	49.6		97.1	50-200			
Surrogate: 13C8-PFOSA	*19.5*			ng/L	24.8		78.8	30-130			
Surrogate: D3-NMeFOSA	*18.6*			ng/L	24.8		74.9	15-130			
Surrogate: D5-NEtFOSA	*20.1*			ng/L	24.8		81.2	10-130			
Surrogate: D3-NMeFOSAA	*45.4*			ng/L	49.6		91.6	45-200			
Surrogate: D5-NEtFOSAA	*45.4*			ng/L	49.6		91.5	10-200			
Surrogate: D7-NMeFOSE	*195*			ng/L	248		78.7	10-150			
Surrogate: D9-NEtFOSE	*197*			ng/L	248		79.3	10-150			
Surrogate: 13C3-HFPO-DA	*91.4*			ng/L	99.2		92.2	25-160			
MRL Check (B359414-MRL1)					Prepared: 12/04/23 Analyzed: 12/06/23						

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359414 - Draft Method 1633											
MRL Check (B359414-MRL1)					Prepared: 12/04/23 Analyzed: 12/06/23						
Perfluorobutanoic acid (PFBA)	9.40	3.9	1.4	ng/L	7.81		120	44-157			
Perfluoropentanoic acid (PFPeA)	4.03	2.0	0.34	ng/L	3.91		103	57-148			
Perfluorohexanoic acid (PFHxA)	2.08	0.98	0.21	ng/L	1.95		106	62-149			
Perfluoroheptanoic acid (PFHpA)	1.93	0.98	0.25	ng/L	1.95		98.9	56-150			
Perfluorooctanoic acid (PFOA)	1.64	0.98	0.22	ng/L	1.95		84.2	57-161			
Perfluorononanoic acid (PFNA)	1.90	0.98	0.19	ng/L	1.95		97.4	53-157			
Perfluorodecanoic acid (PFDA)	1.99	0.98	0.18	ng/L	1.95		102	43-158			
Perfluoroundecanoic acid (PFUnA)	1.97	0.98	0.27	ng/L	1.95		101	50-155			
Perfluorododecanoic acid (PFDoA)	1.87	0.98	0.25	ng/L	1.95		95.7	60-141			
Perfluorotridecanoic acid (PFTrDA)	1.83	0.98	0.26	ng/L	1.95		93.8	52-140			
Perfluorotetradecanoic acid (PFTeDA)	1.98	0.98	0.24	ng/L	1.95		101	52-156			
Perfluorobutanesulfonic acid (PFBS)	1.66	0.98	0.25	ng/L	1.73		95.9	63-145			
Perfluoropentanesulfonic acid (PFPeS)	1.91	0.98	0.23	ng/L	1.84		104	58-144			
Perfluorohexanesulfonic acid (PFHxS)	1.98	0.98	0.20	ng/L	1.79		111	44-158			
Perfluoroheptanesulfonic acid (PFHpS)	1.84	0.98	0.30	ng/L	1.86		98.7	51-150			
Perfluorooctanesulfonic acid (PFOS)	1.85	0.98	0.31	ng/L	1.81		102	43-162			
Perfluorononanesulfonic acid (PFNS)	1.79	0.98	0.29	ng/L	1.88		95.1	46-151			
Perfluorodecanesulfonic acid (PFDS)	1.76	0.98	0.31	ng/L	1.88		93.5	50-144			
Perfluorododecanesulfonic acid (PFDoS)	1.78	0.98	0.26	ng/L	1.89		93.9	30-138			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	8.06	3.9	0.68	ng/L	7.32		110	52-158			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	7.44	3.9	0.96	ng/L	7.42		100	48-158			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	8.94	3.9	1.1	ng/L	7.52		119	46-165			
Perfluorooctanesulfonamide (PFOSA)	2.06	0.98	0.30	ng/L	1.95		106	47-163			
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	1.98	0.98	0.41	ng/L	1.95		102	54-155			
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1.82	0.98	0.30	ng/L	1.95		93.1	49-156			
N-MeFOSAA (NMeFOSAA)	1.98	0.98	0.43	ng/L	1.95		101	32-160			
N-EtFOSAA (NEtFOSAA)	1.99	0.98	0.22	ng/L	1.95		102	51-154			
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	19.2	9.8	2.6	ng/L	19.5		98.5	56-151			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	19.8	9.8	2.4	ng/L	19.5		101	60-147			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6.77	3.9	1.0	ng/L	7.81		86.6	58-154			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	6.17	3.9	0.67	ng/L	7.37		83.6	61-148			
9Cl-PF3ONS (F53B Minor)	6.27	3.9	0.83	ng/L	7.32		85.7	44-167			
11Cl-PF3OUdS (F53B Major)	6.41	3.9	0.95	ng/L	7.37		87.0	36-158			
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	16.7	9.8	1.8	ng/L	19.5		85.4	32-161			
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	88.8	49	10	ng/L	97.7		91.0	39-156			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	85.1	49	8.6	ng/L	97.7		87.2	36-149			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.26	2.0	0.48	ng/L	3.48		93.9	56-144			
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.66	2.0	0.49	ng/L	3.91		93.6	48-150			
Perfluoro-4-methoxybutanoic acid (PFMBA)	3.46	2.0	0.39	ng/L	3.91		88.6	49-154			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	3.98	2.0	0.85	ng/L	3.91		102	47-160			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359414 - Draft Method 1633											
MRL Check (B359414-MRL1)					Prepared: 12/04/23 Analyzed: 12/06/23						
Surrogate: 13C4-PFBA	*91.8*			ng/L	97.7		94.0	10-130			
Surrogate: 13C5-PFPeA	*45.4*			ng/L	48.8		93.1	35-150			
Surrogate: 13C5-PFHxA	*22.8*			ng/L	24.4		93.3	55-150			
Surrogate: 13C4-PFHpA	*23.5*			ng/L	24.4		96.1	55-150			
Surrogate: 13C8-PFOA	*23.1*			ng/L	24.4		94.6	60-140			
Surrogate: 13C9-PFNA	*11.3*			ng/L	12.2		92.7	55-140			
Surrogate: 13C6-PFDA	*11.3*			ng/L	12.2		92.8	50-140			
Surrogate: 13C7-PFUnA	*10.5*			ng/L	12.2		85.6	30-140			
Surrogate: 13C2-PFDoA	*10.4*			ng/L	12.2		85.3	10-150			
Surrogate: 13C2-PFTeDA	*9.81*			ng/L	12.2		80.3	10-130			
Surrogate: 13C3-PFBS	*22.4*			ng/L	24.4		91.7	55-150			
Surrogate: 13C3-PFHxS	*22.9*			ng/L	24.4		93.7	55-150			
Surrogate: 13C8-PFOS	*22.7*			ng/L	24.4		92.9	45-140			
Surrogate: 13C2-4:2FTS	*36.0*			ng/L	48.8		73.8	60-200			
Surrogate: 13C2-6:2FTS	*46.5*			ng/L	48.8		95.3	60-200			
Surrogate: 13C2-8:2FTS	*42.9*			ng/L	48.8		87.8	50-200			
Surrogate: 13C8-PFOSA	*18.9*			ng/L	24.4		77.4	30-130			
Surrogate: D3-NMeFOSA	*17.0*			ng/L	24.4		69.6	15-130			
Surrogate: D5-NEtFOSA	*18.6*			ng/L	24.4		76.0	10-130			
Surrogate: D3-NMeFOSAA	*44.1*			ng/L	48.8		90.4	45-200			
Surrogate: D5-NEtFOSAA	*42.6*			ng/L	48.8		87.2	10-200			
Surrogate: D7-NMeFOSE	*187*			ng/L	244		76.6	10-150			
Surrogate: D9-NEtFOSE	*184*			ng/L	244		75.2	10-150			
Surrogate: 13C3-HFPO-DA	*90.5*			ng/L	97.7		92.7	25-160			
Matrix Spike (B359414-MS1)		**Source: 23K2747-02**			Prepared: 12/04/23 Analyzed: 12/06/23						
Perfluorobutanoic acid (PFBA)	97.3	3.9	1.4	ng/L	92.6	2.10	103	58-148			
Perfluoropentanoic acid (PFPeA)	48.0	1.9	0.33	ng/L	46.3	0.668	102	54-152			
Perfluorohexanoic acid (PFHxA)	24.0	0.96	0.21	ng/L	23.1	0.616	101	55-152			
Perfluoroheptanoic acid (PFHpA)	24.1	0.96	0.25	ng/L	23.1	0.480	102	54-154			
Perfluorooctanoic acid (PFOA)	24.9	0.96	0.22	ng/L	23.1	0.976	103	52-161			
Perfluorononanoic acid (PFNA)	24.0	0.96	0.18	ng/L	23.1	ND	104	59-149			
Perfluorodecanoic acid (PFDA)	23.6	0.96	0.18	ng/L	23.1	ND	102	52-147			
Perfluoroundecanoic acid (PFUnA)	23.7	0.96	0.26	ng/L	23.1	ND	102	48-159			
Perfluorododecanoic acid (PFDoA)	24.0	0.96	0.25	ng/L	23.1	ND	104	64-142			
Perfluorotridecanoic acid (PFTrDA)	22.5	0.96	0.26	ng/L	23.1	ND	97.2	49-148			
Perfluorotetradecanoic acid (PFTeDA)	23.8	0.96	0.24	ng/L	23.1	ND	103	47-161			
Perfluorobutanesulfonic acid (PFBS)	21.5	0.96	0.25	ng/L	20.5	0.616	102	62-144			
Perfluoropentanesulfonic acid (PFPeS)	22.5	0.96	0.23	ng/L	21.8	ND	104	59-151			
Perfluorohexanesulfonic acid (PFHxS)	22.2	0.96	0.20	ng/L	21.2	ND	105	57-146			
Perfluoroheptanesulfonic acid (PFHpS)	22.6	0.96	0.29	ng/L	22.0	ND	102	55-152			
Perfluorooctanesulfonic acid (PFOS)	22.3	0.96	0.31	ng/L	21.5	ND	104	58-149			
Perfluorononanesulfonic acid (PFNS)	22.0	0.96	0.28	ng/L	22.3	ND	98.8	52-148			
Perfluorodecanesulfonic acid (PFDS)	21.2	0.96	0.30	ng/L	22.3	ND	94.7	51-147			
Perfluorododecanesulfonic acid (PFDoS)	17.8	0.96	0.26	ng/L	22.5	ND	79.2	36-145			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	101	3.9	0.67	ng/L	86.8	ND	117	67-146			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	101	3.9	0.95	ng/L	88.0	ND	114	61-151			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	103	3.9	1.0	ng/L	89.1	ND	115	63-152			
Perfluorooctanesulfonamide (PFOSA)	24.1	0.96	0.30	ng/L	23.1	ND	104	61-148			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359414 - Draft Method 1633											
Matrix Spike (B359414-MS1)	**Source: 23K2747-02**				Prepared: 12/04/23 Analyzed: 12/06/23						
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	22.8	0.96	0.40	ng/L	23.1	ND	98.4	63-145			
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	22.0	0.96	0.30	ng/L	23.1	ND	94.9	65-139			
N-MeFOSAA (NMeFOSAA)	24.7	0.96	0.42	ng/L	23.1	ND	107	58-144			
N-EtFOSAA (NEtFOSAA)	24.4	0.96	0.21	ng/L	23.1	ND	105	59-146			
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	231	9.6	2.5	ng/L	231	ND	99.6	71-136			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	236	9.6	2.4	ng/L	231	ND	102	69-137			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	94.5	3.9	1.0	ng/L	92.6	ND	102	63-144			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	88.6	3.9	0.66	ng/L	87.4	ND	101	68-146			
9Cl-PF3ONS (F53B Minor)	87.8	3.9	0.82	ng/L	86.8	ND	101	56-156			
11Cl-PF3OUdS (F53B Major)	87.2	3.9	0.93	ng/L	87.4	ND	99.8	46-156			
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	166	9.6	1.7	ng/L	231	ND	71.8	62-129			
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	1170	48	9.8	ng/L	1160	ND	101	63-134			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	1130	48	8.5	ng/L	1160	ND	98.0	50-138			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	41.3	1.9	0.47	ng/L	41.2	ND	100	56-151			
Perfluoro-3-methoxypropanoic acid (PFMPA)	36.7	1.9	0.48	ng/L	46.3	ND	79.4	51-145			
Perfluoro-4-methoxybutanoic acid (PFMBA)	45.6	1.9	0.39	ng/L	46.3	ND	98.4	55-148			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	42.9	1.9	0.84	ng/L	46.3	ND	92.7	48-161			
Surrogate: 13C4-PFBA	*37.5*			ng/L	96.4		38.9	10-130			
Surrogate: 13C5-PFPeA	*42.8*			ng/L	48.2		88.7	35-150			
Surrogate: 13C5-PFHxA	*22.0*			ng/L	24.1		91.2	55-150			
Surrogate: 13C4-PFHpA	*22.5*			ng/L	24.1		93.2	55-150			
Surrogate: 13C8-PFOA	*21.8*			ng/L	24.1		90.3	60-140			
Surrogate: 13C9-PFNA	*11.0*			ng/L	12.1		91.0	55-140			
Surrogate: 13C6-PFDA	*11.1*			ng/L	12.1		92.2	50-140			
Surrogate: 13C7-PFUnA	*10.9*			ng/L	12.1		90.1	30-140			
Surrogate: 13C2-PFDoA	*10.1*			ng/L	12.1		84.1	10-150			
Surrogate: 13C2-PFTeDA	*8.09*			ng/L	12.1		67.1	10-130			
Surrogate: 13C3-PFBS	*21.2*			ng/L	24.1		87.8	55-150			
Surrogate: 13C3-PFHxS	*22.0*			ng/L	24.1		91.3	55-150			
Surrogate: 13C8-PFOS	*22.0*			ng/L	24.1		91.1	45-140			
Surrogate: 13C2-4:2FTS	*41.8*			ng/L	48.2		86.7	60-200			
Surrogate: 13C2-6:2FTS	*45.4*			ng/L	48.2		94.1	60-200			
Surrogate: 13C2-8:2FTS	*43.6*			ng/L	48.2		90.4	50-200			
Surrogate: 13C8-PFOSA	*20.7*			ng/L	24.1		85.8	30-130			
Surrogate: D3-NMeFOSA	*20.4*			ng/L	24.1		84.4	15-130			
Surrogate: D5-NEtFOSA	*20.7*			ng/L	24.1		85.8	10-130			
Surrogate: D3-NMeFOSAA	*41.5*			ng/L	48.2		86.0	45-200			
Surrogate: D5-NEtFOSAA	*39.6*			ng/L	48.2		82.2	10-200			
Surrogate: D7-NMeFOSE	*194*			ng/L	241		80.5	10-150			
Surrogate: D9-NEtFOSE	*188*			ng/L	241		77.9	10-150			
Surrogate: 13C3-HFPO-DA	*83.1*			ng/L	96.4		86.1	25-160			
Matrix Spike Dup (B359414-MSD1)	**Source: 23K2747-02**				Prepared: 12/04/23 Analyzed: 12/06/23						

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359414 - Draft Method 1633											
Matrix Spike Dup (B359414-MSD1)	**Source: 23K2747-02**				Prepared: 12/04/23 Analyzed: 12/06/23						
Perfluorobutanoic acid (PFBA)	90.8	3.6	1.3	ng/L	86.9	2.10	102	58-148	6.97	20	
Perfluoropentanoic acid (PFPeA)	44.3	1.8	0.31	ng/L	43.4	0.668	101	54-152	8.05	20	
Perfluorohexanoic acid (PFHxA)	22.2	0.90	0.19	ng/L	21.7	0.616	99.6	55-152	7.52	25	
Perfluoroheptanoic acid (PFHpA)	22.2	0.90	0.23	ng/L	21.7	0.480	100	54-154	8.21	25	
Perfluorooctanoic acid (PFOA)	22.8	0.90	0.20	ng/L	21.7	0.976	101	52-161	8.69	25	
Perfluorononanoic acid (PFNA)	22.9	0.90	0.17	ng/L	21.7	ND	105	59-149	5.05	25	
Perfluorodecanoic acid (PFDA)	22.7	0.90	0.17	ng/L	21.7	ND	105	52-147	3.82	25	
Perfluoroundecanoic acid (PFUnA)	21.7	0.90	0.25	ng/L	21.7	ND	99.9	48-159	8.66	30	
Perfluorododecanoic acid (PFDoA)	22.6	0.90	0.23	ng/L	21.7	ND	104	64-142	6.04	25	
Perfluorotridecanoic acid (PFTrDA)	21.6	0.90	0.25	ng/L	21.7	ND	99.5	49-148	3.97	25	
Perfluorotetradecanoic acid (PFTeDA)	22.4	0.90	0.23	ng/L	21.7	ND	103	47-161	5.89	25	
Perfluorobutanesulfonic acid (PFBS)	20.7	0.90	0.24	ng/L	19.3	0.616	104	62-144	3.92	20	
Perfluoropentanesulfonic acid (PFPeS)	20.2	0.90	0.22	ng/L	20.4	ND	99.0	59-151	10.8	25	
Perfluorohexanesulfonic acid (PFHxS)	19.9	0.90	0.19	ng/L	19.9	ND	100	57-146	11.2	25	
Perfluoroheptanesulfonic acid (PFHpS)	21.6	0.90	0.28	ng/L	20.7	ND	105	55-152	4.28	25	
Perfluorooctanesulfonic acid (PFOS)	20.2	0.90	0.29	ng/L	20.1	ND	100	58-149	9.82	20	
Perfluorononanesulfonic acid (PFNS)	19.8	0.90	0.27	ng/L	20.9	ND	94.8	52-148	10.5	25	
Perfluorodecanesulfonic acid (PFDS)	19.5	0.90	0.28	ng/L	21.0	ND	93.1	51-147	8.11	25	
Perfluorododecanesulfonic acid (PFDoS)	16.2	0.90	0.24	ng/L	21.1	ND	77.0	36-145	9.21	30	
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	89.4	3.6	0.63	ng/L	81.4	ND	110	67-146	12.4	25	
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	91.8	3.6	0.89	ng/L	82.5	ND	111	61-151	9.11	30	
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	93.2	3.6	0.98	ng/L	83.6	ND	111	63-152	9.77	30	
Perfluorooctanesulfonamide (PFOSA)	22.3	0.90	0.28	ng/L	21.7	ND	102	61-148	7.83	20	
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	21.6	0.90	0.38	ng/L	21.7	ND	99.3	63-145	5.43	25	
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	19.8	0.90	0.28	ng/L	21.7	ND	91.4	65-139	10.1	25	
N-MeFOSAA (NMeFOSAA)	22.9	0.90	0.40	ng/L	21.7	ND	106	58-144	7.36	25	
N-EtFOSAA (NEtFOSAA)	23.1	0.90	0.20	ng/L	21.7	ND	106	59-146	5.65	25	
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	218	9.0	2.4	ng/L	217	ND	100	71-136	5.72	20	
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	218	9.0	2.2	ng/L	217	ND	100	69-137	7.81	25	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	87.8	3.6	0.95	ng/L	86.9	ND	101	63-144	7.30	25	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	83.0	3.6	0.62	ng/L	82.0	ND	101	68-146	6.59	20	
9Cl-PF3ONS (F53B Minor)	84.5	3.6	0.77	ng/L	81.4	ND	104	56-156	3.91	30	
11Cl-PF3OUdS (F53B Major)	84.7	3.6	0.88	ng/L	82.0	ND	103	46-156	2.92	35	
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	165	9.0	1.6	ng/L	217	ND	76.1	62-129	0.464	20	
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	1140	45	9.2	ng/L	1090	ND	105	63-134	2.54	20	
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	1110	45	8.0	ng/L	1090	ND	103	50-138	1.81	25	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	39.1	1.8	0.44	ng/L	38.7	ND	101	56-151	5.57	20	
Perfluoro-3-methoxypropanoic acid (PFMPA)	34.2	1.8	0.45	ng/L	43.4	ND	78.8	51-145	7.09	25	
Perfluoro-4-methoxybutanoic acid (PFMBA)	42.6	1.8	0.36	ng/L	43.4	ND	98.2	55-148	6.63	20	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	41.3	1.8	0.78	ng/L	43.4	ND	95.2	48-161	3.72	35	

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359414 - Draft Method 1633											
Matrix Spike Dup (B359414-MSD1)	**Source: 23K2747-02**				Prepared: 12/04/23 Analyzed: 12/06/23						
Surrogate: 13C4-PFBA	*30.3*			ng/L	90.5		33.5	10-130			
Surrogate: 13C5-PFPeA	*40.2*			ng/L	45.2		88.8	35-150			
Surrogate: 13C5-PFHxA	*20.8*			ng/L	22.6		91.9	55-150			
Surrogate: 13C4-PFHpA	*21.3*			ng/L	22.6		94.1	55-150			
Surrogate: 13C8-PFOA	*20.1*			ng/L	22.6		89.0	60-140			
Surrogate: 13C9-PFNA	*10.4*			ng/L	11.3		91.9	55-140			
Surrogate: 13C6-PFDA	*9.98*			ng/L	11.3		88.2	50-140			
Surrogate: 13C7-PFUnA	*9.95*			ng/L	11.3		88.0	30-140			
Surrogate: 13C2-PFDoA	*9.49*			ng/L	11.3		83.9	10-150			
Surrogate: 13C2-PFTeDA	*7.55*			ng/L	11.3		66.8	10-130			
Surrogate: 13C3-PFBS	*19.6*			ng/L	22.6		86.8	55-150			
Surrogate: 13C3-PFHxS	*20.8*			ng/L	22.6		91.9	55-150			
Surrogate: 13C8-PFOS	*20.5*			ng/L	22.6		90.5	45-140			
Surrogate: 13C2-4:2FTS	*40.2*			ng/L	45.2		88.9	60-200			
Surrogate: 13C2-6:2FTS	*45.1*			ng/L	45.2		99.7	60-200			
Surrogate: 13C2-8:2FTS	*42.8*			ng/L	45.2		94.6	50-200			
Surrogate: 13C8-PFOSA	*19.1*			ng/L	22.6		84.5	30-130			
Surrogate: D3-NMeFOSA	*18.2*			ng/L	22.6		80.4	15-130			
Surrogate: D5-NEtFOSA	*18.9*			ng/L	22.6		83.4	10-130			
Surrogate: D3-NMeFOSAA	*39.2*			ng/L	45.2		86.7	45-200			
Surrogate: D5-NEtFOSAA	*37.9*			ng/L	45.2		83.8	10-200			
Surrogate: D7-NMeFOSE	*175*			ng/L	226		77.6	10-150			
Surrogate: D9-NEtFOSE	*170*			ng/L	226		75.2	10-150			
Surrogate: 13C3-HFPO-DA	*78.0*			ng/L	90.5		86.2	25-160			
Batch B359423 - Draft Method 1633											
Blank (B359423-BLK1)					Prepared: 12/06/23 Analyzed: 12/11/23						
Perfluorobutanoic acid (PFBA)	0.29	0.78	0.14	µg/kg wet							Z-01, J
Perfluoropentanoic acid (PFPeA)	ND	0.39	0.025	µg/kg wet							
Perfluorohexanoic acid (PFHxA)	ND	0.19	0.013	µg/kg wet							
Perfluoroheptanoic acid (PFHpA)	ND	0.19	0.015	µg/kg wet							
Perfluorooctanoic acid (PFOA)	ND	0.19	0.028	µg/kg wet							
Perfluorononanoic acid (PFNA)	ND	0.19	0.025	µg/kg wet							
Perfluorodecanoic acid (PFDA)	ND	0.19	0.018	µg/kg wet							
Perfluoroundecanoic acid (PFUnA)	ND	0.19	0.020	µg/kg wet							
Perfluorododecanoic acid (PFDoA)	ND	0.19	0.021	µg/kg wet							
Perfluorotridecanoic acid (PFTrDA)	ND	0.19	0.026	µg/kg wet							
Perfluorotetradecanoic acid (PFTeDA)	ND	0.19	0.018	µg/kg wet							
Perfluorobutanesulfonic acid (PFBS)	ND	0.19	0.019	µg/kg wet							
Perfluoropentanesulfonic acid (PFPeS)	ND	0.19	0.029	µg/kg wet							
Perfluorohexanesulfonic acid (PFHxS)	ND	0.19	0.024	µg/kg wet							
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.19	0.022	µg/kg wet							
Perfluorooctanesulfonic acid (PFOS)	ND	0.19	0.035	µg/kg wet							
Perfluorononanesulfonic acid (PFNS)	ND	0.19	0.029	µg/kg wet							
Perfluorodecanesulfonic acid (PFDS)	ND	0.19	0.044	µg/kg wet							
Perfluorododecanesulfonic acid (PFDoS)	ND	0.19	0.021	µg/kg wet							
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.78	0.073	µg/kg wet							
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.78	0.080	µg/kg wet							
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.78	0.072	µg/kg wet							

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359423 - Draft Method 1633											
Blank (B359423-BLK1)					Prepared: 12/06/23 Analyzed: 12/11/23						
Perfluorooctanesulfonamide (PFOSA)	ND	0.19	0.10	µg/kg wet							
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.19	0.020	µg/kg wet							
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.19	0.027	µg/kg wet							
N-MeFOSAA (NMeFOSAA)	ND	0.19	0.027	µg/kg wet							
N-EtFOSAA (NEtFOSAA)	ND	0.19	0.041	µg/kg wet							
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	1.9	0.15	µg/kg wet							
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	1.9	0.17	µg/kg wet							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.78	0.064	µg/kg wet							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.78	0.079	µg/kg wet							
9Cl-PF3ONS (F53B Minor)	ND	0.78	0.075	µg/kg wet							
11Cl-PF3OUdS (F53B Major)	ND	0.78	0.10	µg/kg wet							
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	1.9	0.16	µg/kg wet							
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	9.7	1.2	µg/kg wet							
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	9.7	0.95	µg/kg wet							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.39	0.019	µg/kg wet							
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.39	0.041	µg/kg wet							
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.39	0.030	µg/kg wet							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.39	0.039	µg/kg wet							
Surrogate: 13C4-PFBA	*8.32*			µg/kg wet	9.72		85.6	10-130			
Surrogate: 13C5-PFPeA	*4.16*			µg/kg wet	4.86		85.6	35-150			
Surrogate: 13C5-PFHxA	*2.11*			µg/kg wet	2.43		86.7	55-150			
Surrogate: 13C4-PFHpA	*2.17*			µg/kg wet	2.43		89.2	55-150			
Surrogate: 13C8-PFOA	*2.02*			µg/kg wet	2.43		83.2	60-140			
Surrogate: 13C9-PFNA	*1.04*			µg/kg wet	1.21		85.8	55-140			
Surrogate: 13C6-PFDA	*1.08*			µg/kg wet	1.21		88.6	50-140			
Surrogate: 13C7-PFUnA	*1.06*			µg/kg wet	1.21		87.6	30-140			
Surrogate: 13C2-PFDoA	*1.03*			µg/kg wet	1.21		84.6	10-150			
Surrogate: 13C2-PFTeDA	*0.956*			µg/kg wet	1.21		78.7	10-130			
Surrogate: 13C3-PFBS	*1.99*			µg/kg wet	2.43		81.9	55-150			
Surrogate: 13C3-PFHxS	*2.15*			µg/kg wet	2.43		88.4	55-150			
Surrogate: 13C8-PFOS	*2.18*			µg/kg wet	2.43		89.9	45-140			
Surrogate: 13C2-4:2FTS	*3.35*			µg/kg wet	4.86		68.9	60-200			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359423 - Draft Method 1633											
Blank (B359423-BLK1)					Prepared: 12/06/23 Analyzed: 12/11/23						
Surrogate: 13C2-6:2FTS	*4.22*			µg/kg wet	4.86		86.9	60-200			
Surrogate: 13C2-8:2FTS	*3.87*			µg/kg wet	4.86		79.7	50-200			
Surrogate: 13C8-PFOSA	*1.91*			µg/kg wet	2.43		78.7	30-130			
Surrogate: D3-NMeFOSA	*1.76*			µg/kg wet	2.43		72.4	15-130			
Surrogate: D5-NEtFOSA	*1.77*			µg/kg wet	2.43		72.7	10-130			
Surrogate: D3-NMeFOSAA	*4.12*			µg/kg wet	4.86		84.8	45-200			
Surrogate: D5-NEtFOSAA	*4.05*			µg/kg wet	4.86		83.3	10-200			
Surrogate: D7-NMeFOSE	*16.7*			µg/kg wet	24.3		68.7	10-150			
Surrogate: D9-NEtFOSE	*16.3*			µg/kg wet	24.3		67.3	10-150			
Surrogate: 13C3-HFPO-DA	*8.61*			µg/kg wet	9.72		88.6	25-160			
Matrix Spike (B359423-MS1)		**Source: 23K2747-04**			Prepared: 12/06/23 Analyzed: 12/11/23						
Perfluorobutanoic acid (PFBA)	10.1	0.79	0.14	µg/kg dry	9.51	0.307	103	58-148			
Perfluoropentanoic acid (PFPeA)	5.04	0.40	0.026	µg/kg dry	4.76	0.0383	105	54-152			
Perfluorohexanoic acid (PFHxA)	2.53	0.20	0.013	µg/kg dry	2.38	0.0436	104	55-152			
Perfluoroheptanoic acid (PFHpA)	2.43	0.20	0.015	µg/kg dry	2.38	0.0266	101	54-154			
Perfluorooctanoic acid (PFOA)	2.50	0.20	0.029	µg/kg dry	2.38	0.116	100	52-161			
Perfluorononanoic acid (PFNA)	2.45	0.20	0.026	µg/kg dry	2.38	0.0938	99.0	59-149			
Perfluorodecanoic acid (PFDA)	2.47	0.20	0.018	µg/kg dry	2.38	0.0987	99.7	52-147			
Perfluoroundecanoic acid (PFUnA)	2.54	0.20	0.020	µg/kg dry	2.38	0.172	99.4	48-159			
Perfluorododecanoic acid (PFDoA)	2.48	0.20	0.022	µg/kg dry	2.38	0.0774	101	64-142			
Perfluorotridecanoic acid (PFTrDA)	2.26	0.20	0.027	µg/kg dry	2.38	0.0849	91.3	49-148			
Perfluorotetradecanoic acid (PFTeDA)	2.46	0.20	0.018	µg/kg dry	2.38	0.0491	101	47-161			
Perfluorobutanesulfonic acid (PFBS)	2.14	0.20	0.020	µg/kg dry	2.11	ND	102	62-144			
Perfluoropentanesulfonic acid (PFPeS)	2.17	0.20	0.029	µg/kg dry	2.24	ND	97.2	59-151			
Perfluorohexanesulfonic acid (PFHxS)	2.04	0.20	0.025	µg/kg dry	2.18	ND	93.6	57-146			
Perfluoroheptanesulfonic acid (PFHpS)	2.30	0.20	0.022	µg/kg dry	2.27	ND	102	55-152			
Perfluorooctanesulfonic acid (PFOS)	2.53	0.20	0.035	µg/kg dry	2.21	0.314	100	58-149			
Perfluorononanesulfonic acid (PFNS)	2.26	0.20	0.030	µg/kg dry	2.29	ND	98.6	52-148			
Perfluorodecanesulfonic acid (PFDS)	2.40	0.20	0.044	µg/kg dry	2.29	ND	104	51-147			
Perfluorododecanesulfonic acid (PFDoS)	1.55	0.20	0.021	µg/kg dry	2.31	ND	67.4	36-145			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	9.65	0.79	0.074	µg/kg dry	8.92	ND	108	67-146			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	9.68	0.79	0.081	µg/kg dry	9.04	ND	107	61-151			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	9.44	0.79	0.074	µg/kg dry	9.16	ND	103	63-152			
Perfluorooctanesulfonamide (PFOSA)	2.42	0.20	0.10	µg/kg dry	2.38	ND	102	61-148			
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	2.49	0.20	0.021	µg/kg dry	2.38	ND	105	63-145			PF-18
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2.55	0.20	0.028	µg/kg dry	2.38	ND	107	65-139			PF-18
N-MeFOSAA (NMeFOSAA)	2.30	0.20	0.028	µg/kg dry	2.38	ND	96.6	58-144			
N-EtFOSAA (NEtFOSAA)	2.39	0.20	0.042	µg/kg dry	2.38	ND	101	59-146			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B359423 - Draft Method 1633												
Matrix Spike (B359423-MS1)	**Source: 23K2747-04**				Prepared: 12/06/23 Analyzed: 12/11/23							
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	24.1	2.0	0.15	µg/kg dry	23.8	ND	101		71-136			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	22.9	2.0	0.17	µg/kg dry	23.8	ND	96.5		69-137			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.00	0.79	0.065	µg/kg dry	9.51	ND	94.6		63-144			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8.55	0.79	0.080	µg/kg dry	8.98	ND	95.3		68-146			
9Cl-PF3ONS (F53B Minor)	8.75	0.79	0.076	µg/kg dry	8.92	ND	98.1		56-156			
11Cl-PF3OUdS (F53B Major)	9.70	0.79	0.10	µg/kg dry	8.98	ND	108		46-156			
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	10.1	2.0	0.17	µg/kg dry	23.8	ND	**42.5**	*	62-129			MS-07A
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	45.8	9.9	1.2	µg/kg dry	119	ND	**38.5**	*	63-134			MS-07A
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	89.7	9.9	0.97	µg/kg dry	119	ND	75.4		50-138			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.74	0.40	0.020	µg/kg dry	4.23	ND	88.4		56-151			
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.56	0.40	0.042	µg/kg dry	4.76	ND	74.8		51-145			
Perfluoro-4-methoxybutanoic acid (PFMBA)	3.91	0.40	0.031	µg/kg dry	4.76	ND	82.3		55-148			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	4.03	0.40	0.040	µg/kg dry	4.76	ND	84.7		48-161			
Surrogate: 13C4-PFBA	*7.92*			µg/kg dry	9.91		79.9		10-130			
Surrogate: 13C5-PFPeA	*3.85*			µg/kg dry	4.95		77.7		35-150			
Surrogate: 13C5-PFHxA	*1.96*			µg/kg dry	2.48		78.9		55-150			
Surrogate: 13C4-PFHpA	*2.03*			µg/kg dry	2.48		81.9		55-150			
Surrogate: 13C8-PFOA	*1.96*			µg/kg dry	2.48		79.1		60-140			
Surrogate: 13C9-PFNA	*0.994*			µg/kg dry	1.24		80.2		55-140			
Surrogate: 13C6-PFDA	*1.01*			µg/kg dry	1.24		81.4		50-140			
Surrogate: 13C7-PFUnA	*1.03*			µg/kg dry	1.24		82.8		30-140			
Surrogate: 13C2-PFDoA	*1.03*			µg/kg dry	1.24		83.2		10-150			
Surrogate: 13C2-PFTeDA	*0.563*			µg/kg dry	1.24		45.4		10-130			
Surrogate: 13C3-PFBS	*1.91*			µg/kg dry	2.48		77.1		55-150			
Surrogate: 13C3-PFHxS	*2.09*			µg/kg dry	2.48		84.4		55-150			
Surrogate: 13C8-PFOS	*1.96*			µg/kg dry	2.48		79.2		45-140			
Surrogate: 13C2-4:2FTS	*4.25*			µg/kg dry	4.95		85.9		60-200			
Surrogate: 13C2-6:2FTS	*5.67*			µg/kg dry	4.95		114		60-200			
Surrogate: 13C2-8:2FTS	*6.96*			µg/kg dry	4.95		141		50-200			
Surrogate: 13C8-PFOSA	*1.98*			µg/kg dry	2.48		80.0		30-130			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B359423 - Draft Method 1633												
Matrix Spike (B359423-MS1)	**Source: 23K2747-04**				Prepared: 12/06/23 Analyzed: 12/11/23							
Surrogate: D3-NMeFOSA	*0.368*			µg/kg dry	2.48		**14.9**	*	15-130			PF-18
Surrogate: D5-NEtFOSA	*0.166*			µg/kg dry	2.48		**6.70**	*	10-130			PF-18
Surrogate: D3-NMeFOSAA	*4.54*			µg/kg dry	4.95		91.6		45-200			
Surrogate: D5-NEtFOSAA	*5.20*			µg/kg dry	4.95		105		10-200			
Surrogate: D7-NMeFOSE	*9.53*			µg/kg dry	24.8		38.5		10-150			
Surrogate: D9-NEtFOSE	*8.12*			µg/kg dry	24.8		32.8		10-150			
Surrogate: 13C3-HFPO-DA	*7.93*			µg/kg dry	9.91		80.0		25-160			
Batch B360635 - Draft Method 1633												
Blank (B360635-BLK1)					Prepared: 12/18/23 Analyzed: 12/21/23							
Perfluorobutanoic acid (PFBA)	ND	0.78	0.14	µg/kg wet								
Perfluoropentanoic acid (PFPeA)	ND	0.39	0.025	µg/kg wet								
Perfluorohexanoic acid (PFHxA)	ND	0.19	0.013	µg/kg wet								
Perfluoroheptanoic acid (PFHpA)	ND	0.19	0.015	µg/kg wet								
Perfluorooctanoic acid (PFOA)	ND	0.19	0.028	µg/kg wet								
Perfluorononanoic acid (PFNA)	ND	0.19	0.025	µg/kg wet								
Perfluorodecanoic acid (PFDA)	ND	0.19	0.018	µg/kg wet								
Perfluoroundecanoic acid (PFUnA)	ND	0.19	0.020	µg/kg wet								
Perfluorododecanoic acid (PFDoA)	ND	0.19	0.021	µg/kg wet								
Perfluorotridecanoic acid (PFTrDA)	ND	0.19	0.026	µg/kg wet								
Perfluorotetradecanoic acid (PFTeDA)	ND	0.19	0.018	µg/kg wet								
Perfluorobutanesulfonic acid (PFBS)	ND	0.19	0.019	µg/kg wet								
Perfluoropentanesulfonic acid (PFPeS)	ND	0.19	0.029	µg/kg wet								
Perfluorohexanesulfonic acid (PFHxS)	ND	0.19	0.024	µg/kg wet								
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.19	0.022	µg/kg wet								
Perfluorooctanesulfonic acid (PFOS)	ND	0.19	0.035	µg/kg wet								
Perfluorononanesulfonic acid (PFNS)	ND	0.19	0.029	µg/kg wet								
Perfluorodecanesulfonic acid (PFDS)	ND	0.19	0.044	µg/kg wet								
Perfluorododecanesulfonic acid (PFDoS)	ND	0.19	0.021	µg/kg wet								
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.78	0.073	µg/kg wet								
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.78	0.080	µg/kg wet								
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.78	0.072	µg/kg wet								
Perfluorooctanesulfonamide (PFOSA)	ND	0.19	0.10	µg/kg wet								
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.19	0.020	µg/kg wet								
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.19	0.027	µg/kg wet								
N-MeFOSAA (NMeFOSAA)	ND	0.19	0.027	µg/kg wet								
N-EtFOSAA (NEtFOSAA)	ND	0.19	0.041	µg/kg wet								
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	1.9	0.15	µg/kg wet								
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	1.9	0.17	µg/kg wet								

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B360635 - Draft Method 1633											
Blank (B360635-BLK1)					Prepared: 12/18/23 Analyzed: 12/21/23						
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.78	0.064	µg/kg wet							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.78	0.079	µg/kg wet							
9Cl-PF3ONS (F53B Minor)	ND	0.78	0.075	µg/kg wet							
11Cl-PF3OUdS (F53B Major)	ND	0.78	0.10	µg/kg wet							
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	1.9	0.16	µg/kg wet							
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	9.7	1.2	µg/kg wet							
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	9.7	0.95	µg/kg wet							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.39	0.019	µg/kg wet							
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.39	0.041	µg/kg wet							
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.39	0.030	µg/kg wet							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.39	0.039	µg/kg wet							
Surrogate: 13C4-PFBA	*8.81*			µg/kg wet	9.73		90.6	10-130			
Surrogate: 13C5-PFPeA	*4.56*			µg/kg wet	4.87		93.8	35-150			
Surrogate: 13C5-PFHxA	*2.30*			µg/kg wet	2.43		94.6	55-150			
Surrogate: 13C4-PFHpA	*2.37*			µg/kg wet	2.43		97.5	55-150			
Surrogate: 13C8-PFOA	*2.32*			µg/kg wet	2.43		95.3	60-140			
Surrogate: 13C9-PFNA	*1.17*			µg/kg wet	1.22		95.8	55-140			
Surrogate: 13C6-PFDA	*1.17*			µg/kg wet	1.22		96.3	50-140			
Surrogate: 13C7-PFUnA	*1.09*			µg/kg wet	1.22		89.4	30-140			
Surrogate: 13C2-PFDoA	*1.07*			µg/kg wet	1.22		88.1	10-150			
Surrogate: 13C2-PFTeDA	*1.01*			µg/kg wet	1.22		83.4	10-130			
Surrogate: 13C3-PFBS	*1.92*			µg/kg wet	2.43		79.0	55-150			
Surrogate: 13C3-PFHxS	*2.32*			µg/kg wet	2.43		95.2	55-150			
Surrogate: 13C8-PFOS	*2.35*			µg/kg wet	2.43		96.5	45-140			
Surrogate: 13C2-4:2FTS	*3.67*			µg/kg wet	4.87		75.4	60-200			
Surrogate: 13C2-6:2FTS	*5.16*			µg/kg wet	4.87		106	60-200			
Surrogate: 13C2-8:2FTS	*6.06*			µg/kg wet	4.87		125	50-200			
Surrogate: 13C8-PFOSA	*2.01*			µg/kg wet	2.43		82.6	30-130			
Surrogate: D3-NMeFOSA	*1.62*			µg/kg wet	2.43		66.7	15-130			
Surrogate: D5-NEtFOSA	*1.67*			µg/kg wet	2.43		68.6	10-130			

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Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B360635 - Draft Method 1633											
Blank (B360635-BLK1)					Prepared: 12/18/23 Analyzed: 12/21/23						
Surrogate: D3-NMeFOSAA	*4.67*			µg/kg wet	4.87		95.9	45-200			
Surrogate: D5-NEtFOSAA	*3.75*			µg/kg wet	4.87		77.0	10-200			
Surrogate: D7-NMeFOSE	*15.6*			µg/kg wet	24.3		64.3	10-150			
Surrogate: D9-NEtFOSE	*15.3*			µg/kg wet	24.3		63.0	10-150			
Surrogate: 13C3-HFPO-DA	*9.08*			µg/kg wet	9.73		93.3	25-160			
LCS (B360635-BS1)					Prepared: 12/18/23 Analyzed: 12/21/23						
Perfluorobutanoic acid (PFBA)	8.21	0.79	0.14	µg/kg wet	9.54		86.1	58-148			
Perfluoropentanoic acid (PFPeA)	3.92	0.40	0.026	µg/kg wet	4.77		82.3	54-152			
Perfluorohexanoic acid (PFHxA)	1.91	0.20	0.014	µg/kg wet	2.38		80.1	55-152			
Perfluoroheptanoic acid (PFHpA)	1.92	0.20	0.015	µg/kg wet	2.38		80.7	54-154			
Perfluorooctanoic acid (PFOA)	1.94	0.20	0.029	µg/kg wet	2.38		81.5	52-161			
Perfluorononanoic acid (PFNA)	1.99	0.20	0.026	µg/kg wet	2.38		83.4	59-149			
Perfluorodecanoic acid (PFDA)	1.90	0.20	0.018	µg/kg wet	2.38		79.7	52-147			
Perfluoroundecanoic acid (PFUnA)	2.00	0.20	0.020	µg/kg wet	2.38		84.0	48-159			
Perfluorododecanoic acid (PFDoA)	2.03	0.20	0.022	µg/kg wet	2.38		85.0	64-142			
Perfluorotridecanoic acid (PFTrDA)	1.97	0.20	0.027	µg/kg wet	2.38		82.7	49-148			
Perfluorotetradecanoic acid (PFTeDA)	2.00	0.20	0.018	µg/kg wet	2.38		84.1	47-161			
Perfluorobutanesulfonic acid (PFBS)	1.77	0.20	0.020	µg/kg wet	2.12		83.5	62-144			
Perfluoropentanesulfonic acid (PFPeS)	1.84	0.20	0.030	µg/kg wet	2.24		82.0	59-151			
Perfluorohexanesulfonic acid (PFHxS)	1.70	0.20	0.025	µg/kg wet	2.18		78.0	57-146			
Perfluoroheptanesulfonic acid (PFHpS)	1.93	0.20	0.022	µg/kg wet	2.27		84.8	55-152			
Perfluorooctanesulfonic acid (PFOS)	1.78	0.20	0.036	µg/kg wet	2.21		80.4	58-149			
Perfluorononanesulfonic acid (PFNS)	1.90	0.20	0.030	µg/kg wet	2.29		83.0	52-148			
Perfluorodecanesulfonic acid (PFDS)	1.85	0.20	0.045	µg/kg wet	2.30		80.3	51-147			
Perfluorododecanesulfonic acid (PFDoS)	1.65	0.20	0.021	µg/kg wet	2.31		71.5	36-145			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	7.58	0.79	0.074	µg/kg wet	8.94		84.7	67-146			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	7.48	0.79	0.081	µg/kg wet	9.06		82.6	61-151			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	8.61	0.79	0.074	µg/kg wet	9.18		93.8	63-152			
Perfluorooctanesulfonamide (PFOSA)	2.02	0.20	0.10	µg/kg wet	2.38		84.5	61-148			
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	1.54	0.20	0.021	µg/kg wet	2.38		64.7	63-145			
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1.61	0.20	0.028	µg/kg wet	2.38		67.4	65-139			
N-MeFOSAA (NMeFOSAA)	1.86	0.20	0.028	µg/kg wet	2.38		78.0	58-144			
N-EtFOSAA (NEtFOSAA)	2.08	0.20	0.042	µg/kg wet	2.38		87.4	59-146			
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	19.3	2.0	0.15	µg/kg wet	23.8		81.1	71-136			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	19.8	2.0	0.17	µg/kg wet	23.8		83.2	69-137			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.82	0.79	0.065	µg/kg wet	9.54		82.0	63-144			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.13	0.79	0.080	µg/kg wet	9.00		79.2	68-146			
9Cl-PF3ONS (F53B Minor)	7.93	0.79	0.076	µg/kg wet	8.94		88.7	56-156			
11Cl-PF3OUdS (F53B Major)	8.03	0.79	0.10	µg/kg wet	9.00		89.3	46-156			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B360635 - Draft Method 1633												
LCS (B360635-BS1)					Prepared: 12/18/23 Analyzed: 12/21/23							
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	14.1	2.0	0.17	µg/kg wet	26.0		**54.1**	*	62-129			L-03
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	85.9	9.9	1.2	µg/kg wet	130		66.1		63-134			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	90.9	9.9	0.97	µg/kg wet	130		69.9		50-138			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.64	0.40	0.020	µg/kg wet	4.24		85.7		56-151			
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.50	0.40	0.042	µg/kg wet	4.77		73.4		51-145			
Perfluoro-4-methoxybutanoic acid (PFMBA)	3.65	0.40	0.031	µg/kg wet	4.77		76.5		55-148			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	3.80	0.40	0.040	µg/kg wet	4.77		79.8		48-161			
Surrogate: 13C4-PFBA	*9.17*			µg/kg wet	9.93		92.3		10-130			
Surrogate: 13C5-PFPeA	*4.59*			µg/kg wet	4.97		92.4		35-150			
Surrogate: 13C5-PFHxA	*2.33*			µg/kg wet	2.48		93.8		55-150			
Surrogate: 13C4-PFHpA	*2.38*			µg/kg wet	2.48		96.0		55-150			
Surrogate: 13C8-PFOA	*2.40*			µg/kg wet	2.48		96.5		60-140			
Surrogate: 13C9-PFNA	*1.15*			µg/kg wet	1.24		92.3		55-140			
Surrogate: 13C6-PFDA	*1.21*			µg/kg wet	1.24		97.8		50-140			
Surrogate: 13C7-PFUnA	*1.15*			µg/kg wet	1.24		92.5		30-140			
Surrogate: 13C2-PFDoA	*1.11*			µg/kg wet	1.24		89.4		10-150			
Surrogate: 13C2-PFTeDA	*1.06*			µg/kg wet	1.24		85.0		10-130			
Surrogate: 13C3-PFBS	*2.04*			µg/kg wet	2.48		82.2		55-150			
Surrogate: 13C3-PFHxS	*2.33*			µg/kg wet	2.48		94.0		55-150			
Surrogate: 13C8-PFOS	*2.26*			µg/kg wet	2.48		91.1		45-140			
Surrogate: 13C2-4:2FTS	*3.90*			µg/kg wet	4.97		78.4		60-200			
Surrogate: 13C2-6:2FTS	*5.68*			µg/kg wet	4.97		114		60-200			
Surrogate: 13C2-8:2FTS	*6.67*			µg/kg wet	4.97		134		50-200			
Surrogate: 13C8-PFOSA	*2.00*			µg/kg wet	2.48		80.4		30-130			
Surrogate: D3-NMeFOSA	*1.82*			µg/kg wet	2.48		73.4		15-130			
Surrogate: D5-NEtFOSA	*1.79*			µg/kg wet	2.48		72.1		10-130			
Surrogate: D3-NMeFOSAA	*4.80*			µg/kg wet	4.97		96.5		45-200			
Surrogate: D5-NEtFOSAA	*4.53*			µg/kg wet	4.97		91.2		10-200			
Surrogate: D7-NMeFOSE	*17.5*			µg/kg wet	24.8		70.3		10-150			

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QUALITY CONTROL

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Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B360635 - Draft Method 1633											
LCS (B360635-BS1)					Prepared: 12/18/23 Analyzed: 12/21/23						
Surrogate: D9-NEtFOSE	*17.1*			µg/kg wet	24.8		68.8	10-150			
Surrogate: 13C3-HFPO-DA	*9.10*			µg/kg wet	9.93		91.6	25-160			
MRL Check (B360635-MRL1)					Prepared: 12/18/23 Analyzed: 12/21/23						
Perfluorobutanoic acid (PFBA)	0.753	0.79	0.14	µg/kg wet	0.788		95.6	44-157			J
Perfluoropentanoic acid (PFPeA)	0.337	0.39	0.026	µg/kg wet	0.394		85.5	57-148			J
Perfluorohexanoic acid (PFHxA)	0.158	0.20	0.013	µg/kg wet	0.197		80.4	62-149			J
Perfluoroheptanoic acid (PFHpA)	0.161	0.20	0.015	µg/kg wet	0.197		81.8	56-150			J
Perfluorooctanoic acid (PFOA)	0.160	0.20	0.029	µg/kg wet	0.197		81.0	57-161			J
Perfluorononanoic acid (PFNA)	0.147	0.20	0.026	µg/kg wet	0.197		74.4	53-157			J
Perfluorodecanoic acid (PFDA)	0.165	0.20	0.018	µg/kg wet	0.197		83.9	43-158			J
Perfluoroundecanoic acid (PFUnA)	0.161	0.20	0.020	µg/kg wet	0.197		81.9	50-155			J
Perfluorododecanoic acid (PFDoA)	0.175	0.20	0.021	µg/kg wet	0.197		88.8	60-141			J
Perfluorotridecanoic acid (PFTrDA)	0.172	0.20	0.027	µg/kg wet	0.197		87.4	52-140			J
Perfluorotetradecanoic acid (PFTeDA)	0.167	0.20	0.018	µg/kg wet	0.197		84.9	52-156			J
Perfluorobutanesulfonic acid (PFBS)	0.152	0.20	0.020	µg/kg wet	0.175		87.0	63-145			J
Perfluoropentanesulfonic acid (PFPeS)	0.156	0.20	0.029	µg/kg wet	0.185		84.5	58-144			J
Perfluorohexanesulfonic acid (PFHxS)	0.158	0.20	0.025	µg/kg wet	0.180		87.4	44-158			J
Perfluoroheptanesulfonic acid (PFHpS)	0.149	0.20	0.022	µg/kg wet	0.188		79.3	51-150			J
Perfluorooctanesulfonic acid (PFOS)	0.161	0.20	0.035	µg/kg wet	0.183		88.3	43-162			J
Perfluorononanesulfonic acid (PFNS)	0.161	0.20	0.030	µg/kg wet	0.190		85.1	46-151			J
Perfluorodecanesulfonic acid (PFDS)	0.160	0.20	0.044	µg/kg wet	0.190		84.1	50-144			J
Perfluorododecanesulfonic acid (PFDoS)	0.145	0.20	0.021	µg/kg wet	0.191		75.8	30-138			J
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	0.624	0.79	0.074	µg/kg wet	0.739		84.5	52-158			J
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	0.676	0.79	0.081	µg/kg wet	0.749		90.3	48-158			J
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	0.718	0.79	0.073	µg/kg wet	0.758		94.7	46-165			J
Perfluorooctanesulfonamide (PFOSA)	0.175	0.20	0.10	µg/kg wet	0.197		88.6	47-163			J
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	0.150	0.20	0.020	µg/kg wet	0.197		76.2	54-155			J
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	0.144	0.20	0.027	µg/kg wet	0.197		72.9	49-156			J
N-MeFOSAA (NMeFOSAA)	0.188	0.20	0.028	µg/kg wet	0.197		95.6	32-160			J
N-EtFOSAA (NEtFOSAA)	0.186	0.20	0.041	µg/kg wet	0.197		94.6	51-154			J
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	1.66	2.0	0.15	µg/kg wet	1.97		84.5	56-151			J
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	1.64	2.0	0.17	µg/kg wet	1.97		83.3	60-147			J
Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.669	0.79	0.065	µg/kg wet	0.788		85.0	58-154			J
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	0.611	0.79	0.080	µg/kg wet	0.744		82.2	61-148			J
9Cl-PF3ONS (F53B Minor)	0.658	0.79	0.076	µg/kg wet	0.739		89.0	44-167			J
11Cl-PF3OUdS (F53B Major)	0.656	0.79	0.10	µg/kg wet	0.744		88.2	36-158			J
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	1.05	2.0	0.17	µg/kg wet	1.97		53.5	32-161			J
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	6.67	9.9	1.2	µg/kg wet	9.85		67.7	39-156			J
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	6.81	9.9	0.96	µg/kg wet	9.85		69.2	36-149			J

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B360635 - Draft Method 1633											
MRL Check (B360635-MRL1)					Prepared: 12/18/23 Analyzed: 12/21/23						
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	0.312	0.39	0.020	µg/kg wet	0.351		89.0	56-144			J
Perfluoro-3-methoxypropanoic acid (PFMPA)	0.326	0.39	0.041	µg/kg wet	0.394		82.7	48-150			J
Perfluoro-4-methoxybutanoic acid (PFMBA)	0.325	0.39	0.031	µg/kg wet	0.394		82.6	49-154			J
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	0.318	0.39	0.040	µg/kg wet	0.394		80.6	47-160			J
Surrogate: 13C4-PFBA	*9.47*			µg/kg wet	9.85		96.1	10-130			
Surrogate: 13C5-PFPeA	*4.78*			µg/kg wet	4.93		97.1	35-150			
Surrogate: 13C5-PFHxA	*2.40*			µg/kg wet	2.46		97.4	55-150			
Surrogate: 13C4-PFHpA	*2.48*			µg/kg wet	2.46		101	55-150			
Surrogate: 13C8-PFOA	*2.41*			µg/kg wet	2.46		97.7	60-140			
Surrogate: 13C9-PFNA	*1.21*			µg/kg wet	1.23		98.0	55-140			
Surrogate: 13C6-PFDA	*1.23*			µg/kg wet	1.23		100	50-140			
Surrogate: 13C7-PFUnA	*1.21*			µg/kg wet	1.23		98.2	30-140			
Surrogate: 13C2-PFDoA	*1.12*			µg/kg wet	1.23		91.0	10-150			
Surrogate: 13C2-PFTeDA	*1.09*			µg/kg wet	1.23		88.6	10-130			
Surrogate: 13C3-PFBS	*2.05*			µg/kg wet	2.46		83.1	55-150			
Surrogate: 13C3-PFHxS	*2.45*			µg/kg wet	2.46		99.4	55-150			
Surrogate: 13C8-PFOS	*2.34*			µg/kg wet	2.46		94.8	45-140			
Surrogate: 13C2-4:2FTS	*3.79*			µg/kg wet	4.93		76.9	60-200			
Surrogate: 13C2-6:2FTS	*6.04*			µg/kg wet	4.93		123	60-200			
Surrogate: 13C2-8:2FTS	*6.67*			µg/kg wet	4.93		136	50-200			
Surrogate: 13C8-PFOSA	*1.94*			µg/kg wet	2.46		78.7	30-130			
Surrogate: D3-NMeFOSA	*1.71*			µg/kg wet	2.46		69.4	15-130			
Surrogate: D5-NEtFOSA	*1.72*			µg/kg wet	2.46		69.7	10-130			
Surrogate: D3-NMeFOSAA	*5.21*			µg/kg wet	4.93		106	45-200			
Surrogate: D5-NEtFOSAA	*5.13*			µg/kg wet	4.93		104	10-200			
Surrogate: D7-NMeFOSE	*15.1*			µg/kg wet	24.6		61.3	10-150			
Surrogate: D9-NEtFOSE	*15.5*			µg/kg wet	24.6		63.0	10-150			
Surrogate: 13C3-HFPO-DA	*9.43*			µg/kg wet	9.85		95.8	25-160			
Matrix Spike (B360635-MS1)					**Source: 23K2747-04RE1** Prepared: 12/18/23 Analyzed: 12/21/23						
Perfluorobutanoic acid (PFBA)	8.99	0.79	0.14	µg/kg dry	9.52	0.198	92.3	58-148			

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Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B360635 - Draft Method 1633												
Matrix Spike (B360635-MS1)	**Source: 23K2747-04RE1**				Prepared: 12/18/23 Analyzed: 12/21/23							
Perfluoropentanoic acid (PFPeA)	4.55	0.40	0.026	µg/kg dry	4.76	ND	95.6		54-152			
Perfluorohexanoic acid (PFHxA)	2.16	0.20	0.014	µg/kg dry	2.38	0.0407	88.9		55-152			
Perfluoroheptanoic acid (PFHpA)	2.15	0.20	0.015	µg/kg dry	2.38	ND	90.3		54-154			
Perfluorooctanoic acid (PFOA)	2.24	0.20	0.029	µg/kg dry	2.38	0.134	88.3		52-161			
Perfluorononanoic acid (PFNA)	2.24	0.20	0.026	µg/kg dry	2.38	0.106	89.8		59-149			
Perfluorodecanoic acid (PFDA)	2.21	0.20	0.018	µg/kg dry	2.38	0.0896	89.0		52-147			
Perfluoroundecanoic acid (PFUnA)	2.28	0.20	0.020	µg/kg dry	2.38	0.173	88.4		48-159			
Perfluorododecanoic acid (PFDoA)	2.25	0.20	0.022	µg/kg dry	2.38	0.0758	91.1		64-142			
Perfluorotridecanoic acid (PFTrDA)	2.07	0.20	0.027	µg/kg dry	2.38	0.0796	83.5		49-148			
Perfluorotetradecanoic acid (PFTeDA)	2.16	0.20	0.018	µg/kg dry	2.38	0.0522	88.5		47-161			
Perfluorobutanesulfonic acid (PFBS)	1.95	0.20	0.020	µg/kg dry	2.11	ND	92.1		62-144			
Perfluoropentanesulfonic acid (PFPeS)	1.89	0.20	0.030	µg/kg dry	2.24	ND	84.5		59-151			
Perfluorohexanesulfonic acid (PFHxS)	1.84	0.20	0.025	µg/kg dry	2.18	ND	84.4		57-146			
Perfluoroheptanesulfonic acid (PFHpS)	2.15	0.20	0.022	µg/kg dry	2.27	ND	94.6		55-152			
Perfluorooctanesulfonic acid (PFOS)	2.29	0.20	0.035	µg/kg dry	2.21	0.347	88.1		58-149			
Perfluorononanesulfonic acid (PFNS)	2.11	0.20	0.030	µg/kg dry	2.29	ND	92.0		52-148			
Perfluorodecanesulfonic acid (PFDS)	2.12	0.20	0.045	µg/kg dry	2.30	ND	92.3		51-147			
Perfluorododecanesulfonic acid (PFDoS)	1.44	0.20	0.021	µg/kg dry	2.31	ND	62.5		36-145			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	7.85	0.79	0.074	µg/kg dry	8.93	ND	88.0		67-146			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	7.89	0.79	0.081	µg/kg dry	9.05	ND	87.2		61-151			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	8.51	0.79	0.074	µg/kg dry	9.17	ND	92.8		63-152			
Perfluorooctanesulfonamide (PFOSA)	2.20	0.20	0.10	µg/kg dry	2.38	ND	92.3		61-148			
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	2.32	0.20	0.021	µg/kg dry	2.38	ND	97.3		63-145			
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2.56	0.20	0.028	µg/kg dry	2.38	ND	108		65-139			PF-18
N-MeFOSAA (NMeFOSAA)	2.06	0.20	0.028	µg/kg dry	2.38	ND	86.4		58-144			
N-EtFOSAA (NEtFOSAA)	2.09	0.20	0.042	µg/kg dry	2.38	ND	87.7		59-146			
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	20.5	2.0	0.15	µg/kg dry	23.8	ND	86.0		71-136			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	19.7	2.0	0.17	µg/kg dry	23.8	ND	82.8		69-137			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.36	0.79	0.065	µg/kg dry	9.52	ND	87.8		63-144			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.66	0.79	0.080	µg/kg dry	8.99	ND	85.3		68-146			
9Cl-PF3ONS (F53B Minor)	8.42	0.79	0.076	µg/kg dry	8.93	ND	94.3		56-156			
11Cl-PF3OUdS (F53B Major)	9.26	0.79	0.10	µg/kg dry	8.99	ND	103		46-156			
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	7.73	2.0	0.17	µg/kg dry	26.0	ND	**29.8**	*	62-129			MS-07A
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	29.1	9.9	1.2	µg/kg dry	130	ND	**22.4**	*	63-134			MS-07A
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	70.9	9.9	0.97	µg/kg dry	130	ND	54.7		50-138			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.96	0.40	0.020	µg/kg dry	4.24	ND	93.5		56-151			
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.70	0.40	0.042	µg/kg dry	4.76	ND	77.8		51-145			
Perfluoro-4-methoxybutanoic acid (PFMBA)	4.11	0.40	0.031	µg/kg dry	4.76	ND	86.4		55-148			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	3.59	0.40	0.040	µg/kg dry	4.76	ND	75.3		48-161			

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QUALITY CONTROL

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Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B360635 - Draft Method 1633												
Matrix Spike (B360635-MS1)	**Source: 23K2747-04RE1**			Prepared: 12/18/23 Analyzed: 12/21/23								
Surrogate: 13C4-PFBA	*8.19*			µg/kg dry	9.92		82.6		10-130			
Surrogate: 13C5-PFPeA	*4.13*			µg/kg dry	4.96		83.2		35-150			
Surrogate: 13C5-PFHxA	*2.11*			µg/kg dry	2.48		85.2		55-150			
Surrogate: 13C4-PFHpA	*2.20*			µg/kg dry	2.48		88.8		55-150			
Surrogate: 13C8-PFOA	*2.10*			µg/kg dry	2.48		84.7		60-140			
Surrogate: 13C9-PFNA	*1.02*			µg/kg dry	1.24		82.1		55-140			
Surrogate: 13C6-PFDA	*1.07*			µg/kg dry	1.24		86.2		50-140			
Surrogate: 13C7-PFUnA	*1.03*			µg/kg dry	1.24		83.0		30-140			
Surrogate: 13C2-PFDoA	*1.07*			µg/kg dry	1.24		86.1		10-150			
Surrogate: 13C2-PFTeDA	*0.688*			µg/kg dry	1.24		55.5		10-130			
Surrogate: 13C3-PFBS	*1.88*			µg/kg dry	2.48		75.9		55-150			
Surrogate: 13C3-PFHxS	*2.15*			µg/kg dry	2.48		86.5		55-150			
Surrogate: 13C8-PFOS	*2.05*			µg/kg dry	2.48		82.6		45-140			
Surrogate: 13C2-4:2FTS	*4.70*			µg/kg dry	4.96		94.8		60-200			
Surrogate: 13C2-6:2FTS	*6.41*			µg/kg dry	4.96		129		60-200			
Surrogate: 13C2-8:2FTS	*7.66*			µg/kg dry	4.96		154		50-200			
Surrogate: 13C8-PFOSA	*2.11*			µg/kg dry	2.48		85.1		30-130			
Surrogate: D3-NMeFOSA	*0.624*			µg/kg dry	2.48		25.2		15-130			
Surrogate: D5-NEtFOSA	*0.200*			µg/kg dry	2.48		**8.07**	*	10-130			PF-18
Surrogate: D3-NMeFOSAA	*5.16*			µg/kg dry	4.96		104		45-200			
Surrogate: D5-NEtFOSAA	*6.09*			µg/kg dry	4.96		123		10-200			
Surrogate: D7-NMeFOSE	*9.64*			µg/kg dry	24.8		38.9		10-150			
Surrogate: D9-NEtFOSE	*8.09*			µg/kg dry	24.8		32.6		10-150			
Surrogate: 13C3-HFPO-DA	*8.24*			µg/kg dry	9.92		83.1		25-160			
Matrix Spike Dup (B360635-MSD1)	**Source: 23K2747-04RE1**			Prepared: 12/18/23 Analyzed: 12/21/23								
Perfluorobutanoic acid (PFBA)	9.30	0.80	0.14	µg/kg dry	9.55	0.198	95.3		58-148	3.34	20	
Perfluoropentanoic acid (PFPeA)	4.61	0.40	0.026	µg/kg dry	4.77	ND	96.5		54-152	1.24	20	
Perfluorohexanoic acid (PFHxA)	2.25	0.20	0.014	µg/kg dry	2.39	0.0407	92.5		55-152	4.17	25	
Perfluoroheptanoic acid (PFHpA)	2.22	0.20	0.015	µg/kg dry	2.39	ND	93.2		54-154	3.31	25	
Perfluorooctanoic acid (PFOA)	2.32	0.20	0.029	µg/kg dry	2.39	0.134	91.5		52-161	3.55	25	
Perfluorononanoic acid (PFNA)	2.41	0.20	0.026	µg/kg dry	2.39	0.106	96.6		59-149	7.19	25	
Perfluorodecanoic acid (PFDA)	2.22	0.20	0.018	µg/kg dry	2.39	0.0896	89.1		52-147	0.364	25	

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Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC		%REC Limits	RPD		RPD Limit	Notes
Batch B360635 - Draft Method 1633													
Matrix Spike Dup (B360635-MSD1)	**Source: 23K2747-04RE1**				Prepared: 12/18/23 Analyzed: 12/21/23								
Perfluoroundecanoic acid (PFUnA)	2.41	0.20	0.020	µg/kg dry	2.39	0.173	93.6		48-159	5.51		30	
Perfluorododecanoic acid (PFDoA)	2.31	0.20	0.022	µg/kg dry	2.39	0.0758	93.5		64-142	2.71		25	
Perfluorotridecanoic acid (PFTrDA)	2.18	0.20	0.027	µg/kg dry	2.39	0.0796	88.1		49-148	5.44		25	
Perfluorotetradecanoic acid (PFTeDA)	2.30	0.20	0.018	µg/kg dry	2.39	0.0522	94.4		47-161	6.47		25	
Perfluorobutanesulfonic acid (PFBS)	2.02	0.20	0.020	µg/kg dry	2.12	ND	95.1		62-144	3.52		20	
Perfluoropentanesulfonic acid (PFPeS)	2.01	0.20	0.030	µg/kg dry	2.24	ND	89.5		59-151	6.08		25	
Perfluorohexanesulfonic acid (PFHxS)	1.94	0.20	0.025	µg/kg dry	2.18	ND	88.7		57-146	5.17		25	
Perfluoroheptanesulfonic acid (PFHpS)	2.07	0.20	0.022	µg/kg dry	2.27	ND	91.0		55-152	3.68		25	
Perfluorooctanesulfonic acid (PFOS)	2.32	0.20	0.036	µg/kg dry	2.21	0.347	89.2		58-149	1.23		20	
Perfluorononanesulfonic acid (PFNS)	2.07	0.20	0.030	µg/kg dry	2.30	ND	89.9		52-148	2.06		25	
Perfluorodecanesulfonic acid (PFDS)	2.18	0.20	0.045	µg/kg dry	2.30	ND	94.5		51-147	2.64		25	
Perfluorododecanesulfonic acid (PFDoS)	1.64	0.20	0.021	µg/kg dry	2.32	ND	70.9		36-145	12.9		30	
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	8.29	0.80	0.074	µg/kg dry	8.95	ND	92.6		67-146	5.39		25	
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	8.69	0.80	0.082	µg/kg dry	9.07	ND	95.8		61-151	9.58		30	
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	8.88	0.80	0.074	µg/kg dry	9.19	ND	96.7		63-152	4.32		30	
Perfluorooctanesulfonamide (PFOSA)	2.29	0.20	0.10	µg/kg dry	2.39	ND	96.0		61-148	4.13		20	
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	2.37	0.20	0.021	µg/kg dry	2.39	ND	99.2		63-145	2.16		25	
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2.07	0.20	0.028	µg/kg dry	2.39	ND	86.8		65-139	21.2		25	PF-18
N-MeFOSAA (NMeFOSAA)	2.20	0.20	0.028	µg/kg dry	2.39	ND	92.0		58-144	6.56		25	
N-EtFOSAA (NEtFOSAA)	2.18	0.20	0.042	µg/kg dry	2.39	ND	91.2		59-146	4.23		25	
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	21.8	2.0	0.15	µg/kg dry	23.9	ND	91.3		71-136	6.25		20	
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	20.9	2.0	0.17	µg/kg dry	23.9	ND	87.8		69-137	6.12		25	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.79	0.80	0.065	µg/kg dry	9.55	ND	92.1		63-144	4.95		25	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8.28	0.80	0.081	µg/kg dry	9.01	ND	91.8		68-146	7.69		20	
9Cl-PF3ONS (F53B Minor)	9.10	0.80	0.077	µg/kg dry	8.95	ND	102		56-156	7.75		30	
11Cl-PF3OUdS (F53B Major)	10.1	0.80	0.10	µg/kg dry	9.01	ND	112		46-156	8.20		35	
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	7.57	2.0	0.17	µg/kg dry	26.0	ND	**29.1**	*	62-129	2.12		20	MS-07A
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	37.3	9.9	1.2	µg/kg dry	130	ND	**28.7**	*	63-134	**24.6**	*	20	MS-07A, R-06
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	77.5	9.9	0.97	µg/kg dry	130	ND	59.6		50-138	8.86		25	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	4.28	0.40	0.020	µg/kg dry	4.25	ND	101		56-151	7.79		20	
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.87	0.40	0.042	µg/kg dry	4.77	ND	81.1		51-145	4.50		25	
Perfluoro-4-methoxybutanoic acid (PFMBA)	4.34	0.40	0.031	µg/kg dry	4.77	ND	90.9		55-148	5.30		20	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	4.16	0.40	0.040	µg/kg dry	4.77	ND	87.1		48-161	14.8		35	
Surrogate: 13C4-PFBA	*7.49*			µg/kg dry	9.95		75.3		10-130				
Surrogate: 13C5-PFPeA	*3.98*			µg/kg dry	4.97		80.1		35-150				
Surrogate: 13C5-PFHxA	*2.06*			µg/kg dry	2.49		82.7		55-150				
Surrogate: 13C4-PFHpA	*2.17*			µg/kg dry	2.49		87.2		55-150				

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Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B360635 - Draft Method 1633												
Matrix Spike Dup (B360635-MSD1)		**Source: 23K2747-04RE1**		Prepared: 12/18/23 Analyzed: 12/21/23								
Surrogate: 13C8-PFOA	*2.07*			µg/kg dry	2.49		83.2		60-140			
Surrogate: 13C9-PFNA	*1.02*			µg/kg dry	1.24		81.8		55-140			
Surrogate: 13C6-PFDA	*1.06*			µg/kg dry	1.24		85.1		50-140			
Surrogate: 13C7-PFUnA	*1.03*			µg/kg dry	1.24		83.2		30-140			
Surrogate: 13C2-PFDoA	*1.07*			µg/kg dry	1.24		85.7		10-150			
Surrogate: 13C2-PFTeDA	*0.731*			µg/kg dry	1.24		58.8		10-130			
Surrogate: 13C3-PFBS	*1.87*			µg/kg dry	2.49		75.3		55-150			
Surrogate: 13C3-PFHxS	*2.10*			µg/kg dry	2.49		84.5		55-150			
Surrogate: 13C8-PFOS	*2.10*			µg/kg dry	2.49		84.6		45-140			
Surrogate: 13C2-4:2FTS	*4.64*			µg/kg dry	4.97		93.2		60-200			
Surrogate: 13C2-6:2FTS	*6.40*			µg/kg dry	4.97		129		60-200			
Surrogate: 13C2-8:2FTS	*7.73*			µg/kg dry	4.97		156		50-200			
Surrogate: 13C8-PFOSA	*2.12*			µg/kg dry	2.49		85.3		30-130			
Surrogate: D3-NMeFOSA	*0.502*			µg/kg dry	2.49		20.2		15-130			
Surrogate: D5-NEtFOSA	*0.230*			µg/kg dry	2.49		**9.24**	*	10-130			PF-18
Surrogate: D3-NMeFOSAA	*5.14*			µg/kg dry	4.97		103		45-200			
Surrogate: D5-NEtFOSAA	*5.94*			µg/kg dry	4.97		119		10-200			
Surrogate: D7-NMeFOSE	*10.0*			µg/kg dry	24.9		40.2		10-150			
Surrogate: D9-NEtFOSE	*8.74*			µg/kg dry	24.9		35.2		10-150			
Surrogate: 13C3-HFPO-DA	*7.93*			µg/kg dry	9.95		79.7		25-160			

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QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	DL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B359076 - Draft Method 1633											
Blank (B359076-BLK1)					Prepared & Analyzed: 11/28/23						
Total Suspended Solids	ND	5.0		mg/L							
LCS (B359076-BS1)					Prepared & Analyzed: 11/28/23						
Total Suspended Solids	139	5.0		mg/L	200		69.5	64.1-125			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit
DL	Method Detection Limit
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
H-01	Recommended sample holding time was exceeded, but analysis was performed before 2X the allowable holding time.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-03	Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.
MS-07A	Matrix spike and spike duplicate recovery is outside of control limits. Analysis is in control based on laboratory fortified blank recovery. Possibility of matrix effects that lead to low bias or non-homogeneous sample aliquot cannot be eliminated.
PF-18	Re-analysis confirmed Extracted Internal Standard failure due to matrix effects.
R-06	Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.
Z-01	Analyte detected in method blank > 1/3 MRL.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
Draft Method 1633 in Soil	
Perfluorobutanoic acid (PFBA)	NH-P,NY,PA,WV
Perfluoropentanoic acid (PFPeA)	NH-P,NY,PA,WV
Perfluorohexanoic acid (PFHxA)	NH-P,NY,PA,WV
Perfluoroheptanoic acid (PFHpA)	NH-P,NY,PA,WV
Perfluorooctanoic acid (PFOA)	NH-P,NY,PA,WV
Perfluorononanoic acid (PFNA)	NH-P,NY,PA,WV
Perfluorodecanoic acid (PFDA)	NH-P,NY,PA,WV
Perfluoroundecanoic acid (PFUnA)	NH-P,NY,PA,WV
Perfluorododecanoic acid (PFDoA)	NH-P,NY,PA,WV
Perfluorotridecanoic acid (PFTrDA)	NH-P,NY,PA,WV
Perfluorotetradecanoic acid (PFTeDA)	NH-P,PA,WV
Perfluorobutanesulfonic acid (PFBS)	NH-P,PA,WV
Perfluoropentanesulfonic acid (PFPeS)	NH-P,PA,WV
Perfluorohexanesulfonic acid (PFHxS)	NH-P,PA,WV
Perfluoroheptanesulfonic acid (PFHpS)	NH-P,PA,WV
Perfluorooctanesulfonic acid (PFOS)	NH-P,NY,PA,WV
Perfluorononanesulfonic acid (PFNS)	NH-P,PA,WV
Perfluorodecanesulfonic acid (PFDS)	NH-P,PA,WV
Perfluorododecanesulfonic acid (PFDoS)	NH-P,PA,WV
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	NH-P,PA,WV
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	NH-P,PA,WV
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	NH-P,NY,PA,WV
Perfluorooctanesulfonamide (PFOSA)	NH-P,PA,WV
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	NH-P,PA,WV
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NH-P,PA,WV
N-MeFOSAA (NMeFOSAA)	NH-P,NY,PA,WV
N-EtFOSAA (NEtFOSAA)	NH-P,PA,WV
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	NH-P,PA,WV
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	NH-P,PA,WV
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,PA,WV
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,PA,WV
9Cl-PF3ONS (F53B Minor)	NH-P,PA,WV
11Cl-PF3OUdS (F53B Major)	NH-P,PA,WV
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	NH-P,PA,WV
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	NH-P,PA,WV
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	NH-P,PA,WV
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NH-P,PA,WV
Perfluoro-3-methoxypropanoic acid (PFMPA)	NH-P,PA,WV
Perfluoro-4-methoxybutanoic acid (PFMBA)	NH-P,PA,WV
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P,PA,WV
Draft Method 1633 in Water	
Total Suspended Solids	CT,MA,NH,NY,RI,NC,ME,VA
Perfluorobutanoic acid (PFBA)	NH-P,NY,PA,WV
Perfluoropentanoic acid (PFPeA)	NH-P,NY,PA,WV
Perfluorohexanoic acid (PFHxA)	NH-P,NY,PA,WV
Perfluoroheptanoic acid (PFHpA)	NH-P,NY,PA,WV

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
Draft Method 1633 in Water	
Perfluorooctanoic acid (PFOA)	NH-P,NY,PA,WV
Perfluorononanoic acid (PFNA)	NH-P,NY,PA,WV
Perfluorodecanoic acid (PFDA)	NH-P,NY,PA,WV
Perfluoroundecanoic acid (PFUnA)	NH-P,NY,PA,WV
Perfluorododecanoic acid (PFDoA)	NH-P,NY,PA,WV
Perfluorotridecanoic acid (PFTrDA)	NH-P,NY,PA,WV
Perfluorotetradecanoic acid (PFTeDA)	NH-P,NY,PA,WV
Perfluorobutanesulfonic acid (PFBS)	NH-P,NY,PA,WV
Perfluoropentanesulfonic acid (PFPeS)	NH-P,NY,PA,WV
Perfluorohexanesulfonic acid (PFHxS)	NH-P,NY,PA,WV
Perfluoroheptanesulfonic acid (PFHpS)	NH-P,NY,PA,WV
Perfluorooctanesulfonic acid (PFOS)	NH-P,NY,PA,WV
Perfluorononanesulfonic acid (PFNS)	NH-P,PA,WV
Perfluorodecanesulfonic acid (PFDS)	NH-P,PA,WV
Perfluorododecanesulfonic acid (PFDoS)	NH-P,PA,WV
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	NH-P,PA,WV
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	NH-P,NY,PA,WV
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	NH-P,NY,PA,WV
Perfluorooctanesulfonamide (PFOSA)	NH-P,PA,WV
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	NH-P,PA,WV
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NH-P,PA,WV
N-MeFOSAA (NMeFOSAA)	NH-P,NY,PA,WV
N-EtFOSAA (NEtFOSAA)	NH-P,NY,PA,WV
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	NH-P,PA,WV
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	NH-P,PA,WV
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,NY,PA,WV
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,NY,PA,WV
9Cl-PF3ONS (F53B Minor)	NH-P,NY,PA,WV
11Cl-PF3OUdS (F53B Major)	NH-P,NY,PA,WV
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	NH-P,PA,WV
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	NH-P,PA,WV
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	NH-P,PA,WV
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NH-P,NY,PA,WV
Perfluoro-3-methoxypropanoic acid (PFMPA)	NH-P,NY,PA,WV
Perfluoro-4-methoxybutanoic acid (PFMBA)	NH-P,PA,WV
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P,PA,WV

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Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2024
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2024
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
RI	Rhode Island Department of Health	LAO00373	12/30/2023
NC	North Carolina Div. of Water Quality	652	12/31/2023
ME	State of Maine	MA00100	06/9/2025
VA	Commonwealth of Virginia	460217	12/14/2024
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2024
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2024
WV	West Virginia DEP Division of Water and Waste Management	419	08/31/2024

Pace Analytical Fax: 612-607-6344 https://www.pacelabs.com/ Doc # 380 Rev 1_03242017

CHAIN OF CUSTODY RECORD (New York)

1800 Elm Street SE
Minneapolis, MN 55414

Table of Contents

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Contact: https://www.pacelabs.com/contact-us/contact-environmental-sciences/

Company Name: NYSDEC / Payson Long

Address: 625 Broadway Ave, Albany, NY,

Phone:

Project Name: NOW Corporation.

Project Location: Stratsburg, NY

Project Number: 60631041.0

Project Manager: Payson Long

Pace Analytical Quote Name/Number

Invoice Recipient: NYSDEC

Sampled By: Mike Izzebski, Steve Grey

Required Turnaround Time: 7-Day [X] 10-Day [ ] Due Date:

Rush Turnaround Required: 1-Day [ ] 3-Day [ ] 2-Day [ ] 4-Day [ ]

Data Delivery: Format: PDF [X] EXCEL [ ] Other:

CLP Like Data Pkg Required: [ ]

Email To: lindsay.mitchell@aecom.com

Fax To #:

ANALYSIS REQUESTED

Pace Analytical Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Composite	Grab	Matrix Code	Conc Code	1,4-Dioxane SIM	PFAS 1633	Total organic Carbon	S-Grain Size	PFAS 1633-TSS
1	Water - US - 11202023	11/20/23	1330		X	GW	P,A	X	X			X
2	Water - DS - 11202023	11/20/23	1225		X	GW	P,A	X	X			X
3	Soil - US - 11202023	11/20/23	1335	X		S	P,A	X	X	X	X	
4	Soil - DS - 11202023	11/20/23	1250	X		S	P,A	X	X	X	X	
5	Water - DUP - 11202023	11/20/23	—		X	GW	P,A	X	X			X
6	Soil - DUP - 11202023	11/20/23	—	X		S	P,A	X	X			
7	FB - 11202023	11/20/23	1200			O	P,A	X	X			
8	EB - 11202023	11/20/23	1305			O	P,A	X	X			

# of Containers	2	2	1	1	1			
Preservation Code	1	1	1	1	1			
Container Code	A	A	A	A	P			

Dissolved Metals Samples: Field Filtered [ ] Lab to Filter [ ]

Dissolved Phosphate Samples: Field Filtered [ ] Lab to Filter [ ]

Comments:
Water - DS - 11202023 & Soil - DS - 11202023 have extra volume for MS/MSD.

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)
Q C

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

[3] Container Codes:
A = Amber Glass
G = Glass
P = Plastic
ST = Sterile
V = Vial
S = Summa Canister
T = Tedlar Bag
O = Other (please define)

	Relinquished by: (signature)	Date/Time:	Received by: (signature)	Date/Time:
1	Michael A. Izdebski	11/20/23 1615		
2				
3				
4				
5				

Regulatory Requirements / Report Limits: AWQ STDS [ ] NY TOGS [ ] NYC Sewer Discharge [ ] NY CP-51 [ ] Part 360 GW (Landfill) [ ] NY Restricted Use [ ] NY Unrestricted Use [ ] NY Part 375 [ ]

Deliverables: Enhanced Data Package [ ] NYSDEC EQuIS EDD [X] EQuIS (Standard) EDD [ ] NY Regulatory EDD [ ] NY Regs Hits-Only EDD [ ]

Other: Cat B deliverable

NELAC and AIHA-LAP, LLC Accredited

Project Entity: Government [X] Federal [ ] City [ ] Municipality [ ] 21 J [ ] Brownfield [ ] MWRA [ ] School [ ] MBTA [ ] WRTA [ ]

Other: Chromatogram [ ] AIHA-LAP,LLC [ ]

PCB ONLY: Soxhlet [ ] Non Soxhlet [ ]

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-ELON-0001 v07_Sample Receiving Checklist
	Effective Date: 07/13/2023

Log In Back-Sheet

Client NYSDEC Access
Project NOW Curp
MCP/RCP Required N/A
Deliverable Package Requirement N/A
Location Salisbury, NJ
PWSID# (When Applicable) N/A
Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time CA 11/2/23 748
Back-Sheet By / Date / Time LA 11/2/23 1658
Temperature Method gun # 5
Temp ✓ < 6° C Actual Temperature 1.2/5.9/10.8
Rush Samples: Yes / (No) Notify
Short Hold: Yes / (No) Notify

Notes regarding Samples/COC outside of SOP:

Login Sample Receipt Checklist – (Rejection Criteria Listing – Using Acceptance Policy) Any False statement will be brought to the attention of the Client – True or False

	True	False
Received on Ice	☑	☐
Received in Cooler	☑	☐
Custody Seal: DATE TIME	☐	☑
COC Relinquished	☑	☐
COC/Samples Labels Agree	☑	☐
All Samples in Good Condition	☑	☐
Samples Received within Holding Time	☑	☐
Is there enough Volume	☑	☐
Proper Media/Container Used	☑	☐
Splitting Samples Required	☐	☑
MS/MSD	☒	☒ (LA)
Trip Blanks	☐	☑
Lab to Filters	☐	☑
COC Legible	☑	☐

COC Included: (Check all included)

Client	☑	Analysis	☑	Sampler Name	☑
Project	☑	IDs	☑	Collection Date/Time	☑

All Samples Proper pH: (N/A) ☐ ☐

Additional Container Notes

Note: West Virginia requires all samples to have their temperature taken. Note any outliers.

DC#_Title: ENV-FRM-ELON-0001 v07_Sample Receiving Checklist

Effective Date: 07/13/2023

Sample		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
16oz Amb/Clear	Soils Jars (Circle Amb/Clear)																				
8oz Amb/Clear																					
4oz Amb/Clear																					
2oz Amb/Clear																					
Unpreserved	Ambers 1 Liter																				
HCL																					
Sulfuric																					
Sulfuric	250mL																				
Phosphoric																					
HCl																					
Unpreserved	100mL																				
Unpreserved	Plastics 1 Liter																				
Sulfuric																					
Unpreserved	500mL	2	1			1		2	1												
Sulfuric																					
Unpreserved	250mL																				
Trizma																					
Sulfuric																					
Nitric																					
NaOH																					
Ammonium Acetate																					
NaOH/Zinc																					
Unpreserved	VOA Vials																				
HCl																					
MeOH																					
D.I. Water																					
BiSulfate																					
Col/Bact	Other / Fill in																				
125 mL PlasticC		6	3				1														
Other				1	3			1													

Appendix C Data Usability Summary Reports

VALIDATA
Chemical Services, Inc.
2159 Wynnton Pointe, Duluth, GA 30097
(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com

DATA USABILITY SUMMARY REPORT

COMPANY:	NYSDEC_AECOM Environmental
PROJECT NAME:	NOW Corporation Project 60631041
CONTRACTED LAB:	Con-Test (Pace Analytical), East Longmeadow, MA
QA/QC LEVEL:	DUSR
ANALYTICAL METHOD(S):	SW 846 Method 8270D SIM
VALIDATION GUIDELINES:	*USEPA Region II data validation SOP (SVOC HW-22 Rev.5), USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,* **2008**; Professional Judgment
SAMPLE MATRICES:	Soil & Water
TYPES OF ANALYSES:	1,4-dioxane
DATA REVIEWER(S):	Amy L. Hogan
SDG NUMBER:	23K2746
SAMPLING DATE(S):	November 20, 2023

SAMPLES:

Client Sample ID	Laboratory ID	1,4-dioxane
Water-US-11202023	23K2746-01	X
Water-DS-11202023	23K2746-02	X
Soil-US-11202023	23K2746-03	X
Soil-DS-11202023	23K2746-04	X
Water-DUP-11202023	22K2746-05	X
Soil-DUP-11202023	22K2746-06	X
FB-11202023	22K2746-07	X

Suffix Codes: DL= DILUTION, MS = MATRIX SPIKE,
MSD = MATRIX SPIKE DUPLICATE, RE = REANALYSIS

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA USABILITY SUMMARY REPORT

Con-Test (Pace Analytical) – 23K2746

1,4-DIOXANE

SUMMARY

I.) General:

The analyses for 1,4-dioxane were performed per SW846 Method 8270E.

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualifications.

MAJOR ISSUES

There were no major problems for this fraction of the SDG.

MINOR ISSUES

I.) Holding Times:

All Holding Time criteria were met. No data qualification was necessary.

II.) GC/MS Tuning:

All GC/MS Tuning criteria were met. No data qualification was necessary.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No data qualification was necessary.

Initial Calibration Verification:

All Initial Calibration Verification criteria were met. No data qualification was necessary.

Continuing Calibration:

All Continuing Calibration criteria were met. No data qualification was necessary.

IV.) Blanks:

Method Blanks:

There were no detections in the associated method blank. No data qualification was necessary.

Equipment Blanks:

There was no associated field equipment blank submitted for this SDG. The COC did list one but a note in the sample receipt stated that there was not enough volume to perform the analysis. No data qualification was necessary.

Field Blanks:

There were no detections reported in the associated field blanks submitted for this SDG. No data qualification was necessary.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No data qualification was necessary.

VI.) Laboratory Control Samples (LCS):

Two LCS / LCSD sets were analyzed by the laboratory for this SDG. All criteria were met. No data qualification was necessary.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses were performed using samples Water-DS-11202023 and Soil-DS-11202023. All criteria were met. No data qualification was necessary.

VIII.) Field Duplicates:

Two sets of field duplicate samples (Water-DS-11202023 / Water-DUP-11202023 and Soil-DS-11202023 / Soil-DUP-11202023) were identified as part of this SDG. There were no calculable results. No data qualification was necessary.

IX.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No data qualification was necessary.

X.) Internal Standards Performance (ISTD):

All ISTD area count criteria were met. No data qualification was necessary.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All CRQL criteria were met. No data qualification was necessary.

XII.) Sample and QC Calculation Verification:

All Sample and QC Calculation Verification criteria were met. No discrepancies were noted.

Attachment A

Sample Result Forms (FORM Is) Corrected for Validation Qualifiers

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: Water-US-11202023 Sampled: 11/20/2023 13:30

Sample ID: 23K2746-01

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	0.033	µg/L	1		SW-846 8270E	11/27/23	12/1/23 15:23	MEW

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	19.1	15-110		12/1/23 15:23

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: Water-DS-11202023 Sampled: 11/20/2023 12:25

Sample ID: 23K2746-02

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	0.032	µg/L	1		SW-846 8270E	11/27/23	12/1/23 17:04	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	21.7	15-110		12/1/23 17:04

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-US-11202023 Sampled: 11/20/2023 13:35

Sample ID: 23K2746-03

Sample Matrix: Soil

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.12	0.050	mg/Kg dry	1		SW-846 8270E	11/27/23	12/1/23 17:24	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	19.3	15-110		12/1/23 17:24

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-DS-11202023 Sampled: 11/20/2023 12:50

Sample ID: 23K2746-04

Sample Matrix: Soil

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.10	0.043	mg/Kg dry	1		SW-846 8270E	11/27/23	12/1/23 18:23	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	33.9	15-110		12/1/23 18:23

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: Water-DUP-11202023 Sampled: 11/20/2023 00:00

Sample ID: 23K2746-05

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.19	0.031	µg/L	1		SW-846 8270E	11/27/23	12/1/23 18:43	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	20.2	15-110		12/1/23 18:43

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: SOIL-DUP-11202023 Sampled: 11/20/2023 00:00

Sample ID: 23K2746-06

Sample Matrix: Soil

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.11	0.044	mg/Kg dry	1		SW-846 8270E	11/27/23	12/1/23 19:03	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	25.3	15-110		12/1/23 19:03

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2746

Date Received: 11/21/2023

Field Sample #: FB-11202023 Sampled: 11/20/2023 12:00

Sample ID: 23K2746-07

Sample Matrix: Field Blank

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	0.033	µg/L	1		SW-846 8270E	11/27/23	12/1/23 19:24	CJM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	20.1	15-110		12/1/23 19:24

DATA USABILITY SUMMARY REPORT

COMPANY:	AECOM Technical Services Northeast, Inc.
PROJECT NAME/#:	NOW Corporation
CONTRACTED LAB:	Pace East Long Meadow, MA
QA/QC LEVEL:	DUSR
ANALYTICAL METHOD(S):	EPA Draft Method 1633 Modified
VALIDATION GUIDELINES:	*USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,* 2020; NYSDEC *Guidelines for Sampling and Analysis of PFAS* 2023 Professional Judgment
SAMPLE MATRIX:	Water and Soil
TYPES OF ANALYSES:	Polyfluoroalkyl Substances (PFAS)
DATA REVIEWER(S):	Ann Marie Kropovitch
SDG NUMBER:	23K2747
SAMPLING DATE(S):	November 20, 2023

SAMPLES:

LAB ID	CLIENT ID	MATRIX	PFAS
23K2747-01	WATER-US-11202023	Water	X
23K2747-02	WATER-DS11202023	Water	X
23K2747-03	SOIL-US-11202023	Soil	X
23K2747-04	SOIL-DS-11202023	Soil	X
23K2747-05	WATER-DUP-11202023 (WATER-DS11202023)	Water	X
23K2747-06	SOIL-DUP-11202023 (SOIL-DS-11202023)	Soil	X
23K2747-07	FB-11202023	Water	X
23K2747-08	EB-11202023	Water	X

Qualifier	Definition
U	The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.
J	The reported result was an estimated value with an unknown bias.
J+	The result was an estimated quantity, but the result may be biased high.
J-	The result was an estimated quantity, but the result may be biased low.
N	The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification."
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value was the estimated concentration in the sample.
UJ	The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
R	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended.

DATA USABILITY SUMMARY REPORT

Pace

PERFLOROALKYL SUBSTANCES (PFAS)

SUMMARY

I.) General:

The analyses for Perfluoroalkyl Substances were performed by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS) per EPA Method 1633 Draft. Analysis was performed by Pace (East Long Meadow, Massachusetts)

II.) Overall Assessment of Data:

All laboratory data were acceptable with qualifications.

MINOR ISSUES

I.) Laboratory Data Package:

The required documentation was present and complete. The laboratory presented a complete case narrative in the data package. The data packages contains results for all samples listed on the COC.

II.) Sample Receipt, Preservation, and Holding Times:

The samples were received intact with proper COC documentation and signatures. The samples were received within the method temperature requirements. The samples were extracted and analyzed within the method hold times.

III.) Initial Calibration (ICAL) and Initial Calibration Verification (ICV):

All Initial Calibration and Initial Calibration Verification criteria were met. No data qualification was necessary.

IV.) Continuing Calibration (CCV):

All Continuing Calibration Verifications criteria were met. No data qualification was necessary.

V.) Blanks:

Blank results were evaluated based on project guidelines in the following table:

Blank Result	Sample Result	Qualification
Any detection	< Reporting Limit	Qualify as ND at reporting limit
Any detection	>Reporting Limit and >10x the blank result	No qualification
≥Reporting Limit	>Reporting limit and	J+ biased high

Instrument Blank (IB):

All instrument blanks were free from contamination. No qualification was necessary.

Method Blank (MB):

Method Blank B359414-BLK1 was detected for PFPeA (0.44 J ng/L).

Method Blank B359423-BLK1 was detected for perfluorobutanoic acid (0.29 J ug/kg).

Field Blank (FB):

The Field Blank was free from contamination.

Equipment Blank:

Equipment Blank EB-11202023 was detected for the following:

Compound	Result	Units
Perfluorohexanoic acid (PFHxA)	0.30	ng/l
Perfluorododecanoic acid (PFDoA)	1.0	ng/l
Perfluorooctanoic acid (PFOA)	0.63	ng/l
Perfluorodecanoic acid (PFDA)	1.2	ng/l
Perfluorobutanoic Acid	1.4	ng/l

Blank Qualification:

Lab ID	Client ID	Analyte	Qualification
23K2747-04	SOIL-DS-11202023	Perfluorobutanoic Acid	U at RL
23K2747-06	SOIL-DUP-11202023	Perfluorobutanoic Acid	U at RL
23K2747-03	SOIL-US-11202023	Perfluorobutanoic Acid	U at RL
23K2747-02	WATER-DS11202023	Perfluorobutanoic Acid	U at RL
23K2747-05	WATER-DUP-11202023	Perfluorobutanoic Acid	U at RL
23K2747-01	WATER-US-11202023	Perfluorobutanoic Acid	U at RL
23K2747-04	SOIL-DS-11202023	Perfluorodecanoic acid (PFDA)	U at RL
23K2747-06	SOIL-DUP-11202023	Perfluorodecanoic acid (PFDA)	U at RL
23K2747-04	SOIL-DS-11202023	Perfluorohexanoic acid (PFHxA)	U at RL
23K2747-03	SOIL-US-11202023	Perfluorohexanoic acid (PFHxA)	U at RL
23K2747-02	WATER-DS11202023	Perfluorohexanoic acid (PFHxA)	U at RL
23K2747-05	WATER-DUP-11202023	Perfluorohexanoic acid (PFHxA)	U at RL

23K2747-04	SOIL-DS-11202023	Perfluorooctanoic acid (PFOA)	U at RL
23K2747-06	SOIL-DUP-11202023	Perfluorooctanoic acid (PFOA)	U at RL
23K2747-01	WATER-US-11202023	Perfluorooctanoic acid (PFOA)	U at RL
23K2747-02	WATER-DS11202023	Perfluoropentanoic Acid (PFPeA)	U at RL
23K2747-05	WATER-DUP-11202023	Perfluoropentanoic Acid (PFPeA)	U at RL
23K2747-01	WATER-US-11202023	Perfluoropentanoic Acid (PFPeA)	U at RL

VI.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses were performed using samples 23K2747-02/WATER-DS11202023 and 23K2747-04/SOIL-DS-11202023. All criteria were met, with the following exceptions. Qualification is applied to the parent sample only and any field duplicate of that parent.

LAB ID	CLIENT ID	QC Failure	Analyte	Qualifications
23K2747-04	SOIL-DS-11202023	%R > lower QC limit	3-Perfluoropropyl propanoic acid (3:3 FTCA) and 2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)	UJ

VII) Laboratory Control Samples (LCS):

All LCS recovery criteria were met, with the following exceptions:

QC ID	Analyte(s)	Lab ID	Client ID	Qualification
B360635-BS1	3-Perfluoropropyl propanoic acid (3:3 FTCA)	23K2747-04RE1	SOIL-DS-11202023	UJ
		23K2747-06RE1	SOIL-DUP-11202023	UJ
		23K2747-03RE1	SOIL-US-11202023	UJ

VIII.) Field Duplicates:

Two sets of field duplicate samples (water WATER-DS11202023/ WATER-DUP-11202023) and (soil SOIL-DS-11202023/SOIL-DUP-11202023) were identified as part of this sampling event. The 30% Relative Percent Difference criteria (when results > 2x the reporting limit) was met and no qualification was necessary.

IX.) Surrogates:

Surrogate recoveries (%R) were within the QC limits.

XI.) Reporting limits (RLs):

All reporting limit criteria were met.

XII.) Instrument Performance criteria:

All Instrument Performance criteria were met. No data qualification was necessary.

XIII.) Sample Verification:

No data qualification was necessary.

Attachment A

Sample Result Forms (FORM Is) Corrected for Validation Qualifiers

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-US-11202023 | Sampled: 11/20/2023 13:30

Sample ID: 23K2747-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.1		ng/L	1	U	Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoropentanoic acid (PFPeA)	ND	2.0		ng/L	1	U	Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.0	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.0	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorooctanoic acid (PFOA)	ND	1.0		ng/L	1	U	Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorononanoic acid (PFNA)	ND	1.0	0.19	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorodecanoic acid (PFDA)	ND	1.0	0.19	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.0	0.28	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.0	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.0	0.28	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorotetradecanoic acid (PFTeDA)	ND	1.0	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorobutanesulfonic acid (PFBS)	0.60	1.0	0.26	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	1.0	0.24	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.0	0.21	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.0	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	1.0	0.32	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorononanesulfonic acid (PFNS)	ND	1.0	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	1.0	0.32	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	1.0	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	4.1	0.71	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	4.1	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	4.1	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	1.0	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	1.0	0.42	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	1.0	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.0	0.45	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.0	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	10	2.7	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	10	2.5	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	0.70	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
9Cl-PF3ONS (F53B Minor)	ND	4.1	0.87	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
11Cl-PF3OUdS (F53B Major)	ND	4.1	0.98	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	10	1.8	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	51	10	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	51	9.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.50	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-US-11202023 Sampled: 11/20/2023 13:30

Sample ID: 23K2747-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	2.0	0.51	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	2.0	0.41	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.88	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:16	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	53.9	10-130		12/6/23 15:16
13C5-PFPeA	97.1	35-150		12/6/23 15:16
13C5-PFHxA	98.5	55-150		12/6/23 15:16
13C4-PFHpA	101	55-150		12/6/23 15:16
13C8-PFOA	98.5	60-140		12/6/23 15:16
13C9-PFNA	100	55-140		12/6/23 15:16
13C6-PFDA	98.0	50-140		12/6/23 15:16
13C7-PFUnA	94.7	30-140		12/6/23 15:16
13C2-PFDoA	88.2	10-150		12/6/23 15:16
13C2-PFTeDA	69.1	10-130		12/6/23 15:16
13C3-PFBS	92.1	55-150		12/6/23 15:16
13C3-PFHxS	98.8	55-150		12/6/23 15:16
13C8-PFOS	90.8	45-140		12/6/23 15:16
13C2-4:2FTS	87.5	60-200		12/6/23 15:16
13C2-6:2FTS	93.0	60-200		12/6/23 15:16
13C2-8:2FTS	87.8	50-200		12/6/23 15:16
13C8-PFOSA	88.5	30-130		12/6/23 15:16
D3-NMeFOSA	85.3	15-130		12/6/23 15:16
D5-NEtFOSA	84.5	10-130		12/6/23 15:16
D3-NMeFOSAA	91.6	45-200		12/6/23 15:16
D5-NEtFOSAA	88.8	10-200		12/6/23 15:16
D7-NMeFOSE	79.9	10-150		12/6/23 15:16
D9-NEtFOSE	77.2	10-150		12/6/23 15:16
13C3-HFPO-DA	95.2	25-160		12/6/23 15:16

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-DS11202023 | Sampled: 11/20/2023 12:25

Sample ID: 23K2747-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	3.9		ng/L	1	U	Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoropentanoic acid (PFPeA)	ND	1.9	0.34	ng/L	1	U	Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorohexanoic acid (PFHxA)	ND	0.97	0.21	ng/L	1	U	Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoroheptanoic acid (PFHpA)	0.48	0.97	0.25	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorooctanoic acid (PFOA)	0.98	0.97	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorononanoic acid (PFNA)	ND	0.97	0.18	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorodecanoic acid (PFDA)	ND	0.97	0.18	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoroundecanoic acid (PFUnA)	ND	0.97	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorododecanoic acid (PFDoA)	ND	0.97	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	0.97	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorotetradecanoic acid (PFTeDA)	ND	0.97	0.24	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorobutanesulfonic acid (PFBS)	0.62	0.97	0.25	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.97	0.23	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.97	0.20	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	0.97	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.97	0.28	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.97	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.9	0.67	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	3.9	0.95	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.9	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.97	0.40	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.97	0.43	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.97	0.21	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	9.7	2.5	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	9.7	2.4	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.9	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.9	0.66	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
9Cl-PF3ONS (F53B Minor)	ND	3.9	0.82	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
11Cl-PF3OUdS (F53B Major)	ND	3.9	0.94	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	9.7	1.7	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	48	9.9	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	48	8.5	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.47	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Water-DS11202023 Sampled: 11/20/2023 12:25

Sample ID: 23K2747-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	1.9	0.48	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	1.9	0.39	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.84	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:32	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	48.1	10-130		12/6/23 15:32
13C5-PFPeA	88.3	35-150		12/6/23 15:32
13C5-PFHxA	91.1	55-150		12/6/23 15:32
13C4-PFHpA	93.3	55-150		12/6/23 15:32
13C8-PFOA	94.3	60-140		12/6/23 15:32
13C9-PFNA	90.3	55-140		12/6/23 15:32
13C6-PFDA	91.8	50-140		12/6/23 15:32
13C7-PFUnA	85.3	30-140		12/6/23 15:32
13C2-PFDoA	81.5	10-150		12/6/23 15:32
13C2-PFTeDA	64.8	10-130		12/6/23 15:32
13C3-PFBS	88.6	55-150		12/6/23 15:32
13C3-PFHxS	96.0	55-150		12/6/23 15:32
13C8-PFOS	90.5	45-140		12/6/23 15:32
13C2-4:2FTS	84.3	60-200		12/6/23 15:32
13C2-6:2FTS	90.3	60-200		12/6/23 15:32
13C2-8:2FTS	83.3	50-200		12/6/23 15:32
13C8-PFOSA	84.3	30-130		12/6/23 15:32
D3-NMeFOSA	80.2	15-130		12/6/23 15:32
D5-NEtFOSA	82.7	10-130		12/6/23 15:32
D3-NMeFOSAA	87.1	45-200		12/6/23 15:32
D5-NEtFOSAA	84.5	10-200		12/6/23 15:32
D7-NMeFOSE	78.3	10-150		12/6/23 15:32
D9-NEtFOSE	75.9	10-150		12/6/23 15:32
13C3-HFPO-DA	85.9	25-160		12/6/23 15:32

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-US-11202023 | Sampled: 11/20/2023 13:35

Sample ID: 23K2747-03

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.79		µg/kg dry	1	U	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoropentanoic acid (PFPeA)	ND	0.39	0.026	µg/kg dry	1	U	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.013	µg/kg dry	1	U	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoroheptanoic acid (PFHpA)	0.10	0.20	0.015	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorooctanoic acid (PFOA)	0.47	0.20	0.029	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorononanoic acid (PFNA)	0.28	0.20	0.026	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorodecanoic acid (PFDA)	0.29	0.20	0.018	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoroundecanoic acid (PFUnA)	0.42	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorododecanoic acid (PFDoA)	0.17	0.20	0.021	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorotridecanoic acid (PFTrDA)	0.15	0.20	0.027	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorotetradecanoic acid (PFTeDA)	0.088	0.20	0.018	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.029	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.025	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.022	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorooctanesulfonic acid (PFOS)	0.96	0.20	0.035	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.030	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.044	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.021	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.79	0.074	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.79	0.081	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.79	0.073	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.027	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.028	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.041	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	2.0	0.15	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.17	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.79	0.065	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.79	0.080	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
9Cl-PF3ONS (F53B Minor)	ND	0.79	0.076	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
11Cl-PF3OUdS (F53B Major)	ND	0.79	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	2.0	0.17	µg/kg dry	1	UJ	Draft Method 1633	12/18/23	12/21/23 8:39	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	9.8	1.2	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	9.8	0.96	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.39	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS

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Project Location: Staatsburg, NY Sample Description: Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-US-11202023 Sampled: 11/20/2023 13:35

Sample ID: 23K2747-03

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.39	0.041	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.39	0.031	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.39	0.040	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:39	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	84.9	10-130		12/21/23 8:39
13C5-PFPeA	88.7	35-150		12/21/23 8:39
13C5-PFHxA	88.7	55-150		12/21/23 8:39
13C4-PFHpA	94.3	55-150		12/21/23 8:39
13C8-PFOA	88.5	60-140		12/21/23 8:39
13C9-PFNA	86.9	55-140		12/21/23 8:39
13C6-PFDA	89.3	50-140		12/21/23 8:39
13C7-PFUnA	84.3	30-140		12/21/23 8:39
13C2-PFDoA	83.5	10-150		12/21/23 8:39
13C2-PFTeDA	54.3	10-130		12/21/23 8:39
13C3-PFBS	81.8	55-150		12/21/23 8:39
13C3-PFHxS	94.1	55-150		12/21/23 8:39
13C8-PFOS	91.1	45-140		12/21/23 8:39
13C2-4:2FTS	96.5	60-200		12/21/23 8:39
13C2-6:2FTS	137	60-200		12/21/23 8:39
13C2-8:2FTS	166	50-200		12/21/23 8:39
13C8-PFOSA	83.3	30-130		12/21/23 8:39
D3-NMeFOSA	26.4	15-130		12/21/23 8:39
D5-NEtFOSA	14.7	10-130		12/21/23 8:39
D3-NMeFOSAA	108	45-200		12/21/23 8:39
D5-NEtFOSAA	128	10-200		12/21/23 8:39
D7-NMeFOSE	38.9	10-150		12/21/23 8:39
D9-NEtFOSE	28.9	10-150		12/21/23 8:39
13C3-HFPO-DA	84.7	25-160		12/21/23 8:39

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-DS-11202023 | Sampled: 11/20/2023 12:50

Sample ID: 23K2747-04

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.79		µg/kg dry	1	U	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoropentanoic acid (PFPeA)	ND	0.39	0.026	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorohexanoic acid (PFHxA)	ND	0.20		µg/kg dry	1	U	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.015	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorooctanoic acid (PFOA)	ND	0.20	0.029	µg/kg dry	1	U	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorononanoic acid (PFNA)	0.11	0.20	0.026	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorodecanoic acid (PFDA)	ND	0.20	0.018	µg/kg dry	1	U	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoroundecanoic acid (PFUnA)	0.17	0.20	0.020	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorododecanoic acid (PFDoA)	0.076	0.20	0.021	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorotridecanoic acid (PFTrDA)	0.080	0.20	0.027	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorotetradecanoic acid (PFTeDA)	0.052	0.20	0.018	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.029	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.025	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.022	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorooctanesulfonic acid (PFOS)	0.35	0.20	0.035	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.030	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.044	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.021	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.79	0.074	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.79	0.081	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.79	0.073	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.027	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.028	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.041	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	2.0	0.15	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.17	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.79	0.064	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.79	0.080	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
9Cl-PF3ONS (F53B Minor)	ND	0.79	0.076	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
11Cl-PF3OUdS (F53B Major)	ND	0.79	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	2.0	0.17	µg/kg dry	1	UJ	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	9.8	1.2	µg/kg dry	1	UJ	Draft Method 1633	12/18/23	12/21/23 8:54	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	9.8	0.96	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.39	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-DS-11202023 | Sampled: 11/20/2023 12:50

Sample ID: 23K2747-04

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.39	0.041	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.39	0.031	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.39	0.040	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 8:54	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual		
13C4-PFBA	43.6	10-130		12/21/23	8:54
13C5-PFPeA	67.1	35-150		12/21/23	8:54
13C5-PFHxA	88.8	55-150		12/21/23	8:54
13C4-PFHpA	94.6	55-150		12/21/23	8:54
13C8-PFOA	93.1	60-140		12/21/23	8:54
13C9-PFNA	91.3	55-140		12/21/23	8:54
13C6-PFDA	93.3	50-140		12/21/23	8:54
13C7-PFUnA	89.2	30-140		12/21/23	8:54
13C2-PFDoA	91.4	10-150		12/21/23	8:54
13C2-PFTeDA	74.6	10-130		12/21/23	8:54
13C3-PFBS	81.2	55-150		12/21/23	8:54
13C3-PFHxS	92.9	55-150		12/21/23	8:54
13C8-PFOS	92.0	45-140		12/21/23	8:54
13C2-4:2FTS	87.5	60-200		12/21/23	8:54
13C2-6:2FTS	129	60-200		12/21/23	8:54
13C2-8:2FTS	156	50-200		12/21/23	8:54
13C8-PFOSA	89.5	30-130		12/21/23	8:54
D3-NMeFOSA	54.3	15-130		12/21/23	8:54
D5-NEtFOSA	35.0	10-130		12/21/23	8:54
D3-NMeFOSAA	110	45-200		12/21/23	8:54
D5-NEtFOSAA	125	10-200		12/21/23	8:54
D7-NMeFOSE	53.3	10-150		12/21/23	8:54
D9-NEtFOSE	48.6	10-150		12/21/23	8:54
13C3-HFPO-DA	84.8	25-160		12/21/23	8:54

con-test
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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

FD of Water-DS-11202023

Field Sample #: Water-DUP-11202023 | Sampled: 11/20/2023 00:00

Sample ID: 23K2747-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	3.9		ng/L	1	U	Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoropentanoic acid (PFPeA)	ND	1.9		ng/L	1	U	Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorohexanoic acid (PFHxA)	ND	0.97		ng/L	1	U	Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoroheptanoic acid (PFHpA)	0.42	0.97	0.25	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorooctanoic acid (PFOA)	1.1	0.97	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorononanoic acid (PFNA)	ND	0.97	0.19	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorodecanoic acid (PFDA)	ND	0.97	0.18	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoroundecanoic acid (PFUnA)	ND	0.97	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorododecanoic acid (PFDoA)	ND	0.97	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	0.97	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorotetradecanoic acid (PFTeDA)	ND	0.97	0.24	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorobutanesulfonic acid (PFBS)	0.66	0.97	0.25	ng/L	1	J	Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.97	0.23	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.97	0.20	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	0.97	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.97	0.29	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.97	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.97	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.9	0.68	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	3.9	0.96	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.9	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.97	0.40	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.97	0.30	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.97	0.43	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.97	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	9.7	2.6	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	9.7	2.4	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.9	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.9	0.67	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
9Cl-PF3ONS (F53B Minor)	ND	3.9	0.83	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
11Cl-PF3OUdS (F53B Major)	ND	3.9	0.94	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	9.7	1.8	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	49	9.9	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	49	8.6	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.48	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

FD of Water-DS-11202023

Field Sample #: Water-DUP-11202023 | Sampled: 11/20/2023 00:00

Sample ID: 23K2747-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	1.9	0.48	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	1.9	0.39	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.84	ng/L	1		Draft Method 1633	11/30/23	12/6/23 15:49	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	39.6	10-130		12/6/23 15:49
13C5-PFPeA	85.8	35-150		12/6/23 15:49
13C5-PFHxA	87.4	55-150		12/6/23 15:49
13C4-PFHpA	90.4	55-150		12/6/23 15:49
13C8-PFOA	89.2	60-140		12/6/23 15:49
13C9-PFNA	83.7	55-140		12/6/23 15:49
13C6-PFDA	84.7	50-140		12/6/23 15:49
13C7-PFUnA	80.1	30-140		12/6/23 15:49
13C2-PFDoA	76.0	10-150		12/6/23 15:49
13C2-PFTeDA	57.8	10-130		12/6/23 15:49
13C3-PFBS	81.5	55-150		12/6/23 15:49
13C3-PFHxS	86.1	55-150		12/6/23 15:49
13C8-PFOS	85.2	45-140		12/6/23 15:49
13C2-4:2FTS	76.1	60-200		12/6/23 15:49
13C2-6:2FTS	81.7	60-200		12/6/23 15:49
13C2-8:2FTS	75.5	50-200		12/6/23 15:49
13C8-PFOSA	81.0	30-130		12/6/23 15:49
D3-NMeFOSA	77.6	15-130		12/6/23 15:49
D5-NEtFOSA	77.3	10-130		12/6/23 15:49
D3-NMeFOSAA	82.1	45-200		12/6/23 15:49
D5-NEtFOSAA	76.9	10-200		12/6/23 15:49
D7-NMeFOSE	71.9	10-150		12/6/23 15:49
D9-NEtFOSE	67.5	10-150		12/6/23 15:49
13C3-HFPO-DA	82.9	25-160		12/6/23 15:49

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Project Location: Staatsburg, NY
Sample Description: FD of Soil-DS-11202023
Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-DUP-11202023
Sampled: 11/20/2023 00:00

Sample ID: 23K2747-06

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.80		µg/kg dry	1	U	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoropentanoic acid (PFPeA)	ND	0.40	0.026	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorohexanoic acid (PFHxA)	ND	0.20	0.014	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoroheptanoic acid (PFHpA)	ND	0.20	0.015	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorooctanoic acid (PFOA)	ND	0.20		µg/kg dry	1	U	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorononanoic acid (PFNA)	0.10	0.20	0.026	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorodecanoic acid (PFDA)	ND	0.20		µg/kg dry	1	U	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoroundecanoic acid (PFUnA)	0.16	0.20	0.020	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorododecanoic acid (PFDoA)	0.079	0.20	0.022	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorotridecanoic acid (PFTrDA)	0.079	0.20	0.027	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorotetradecanoic acid (PFTeDA)	0.052	0.20	0.018	µg/kg dry	1	J	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorobutanesulfonic acid (PFBS)	ND	0.20	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	0.20	0.030	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	0.20	0.025	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.20	0.022	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorooctanesulfonic acid (PFOS)	0.35	0.20	0.036	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorononanesulfonic acid (PFNS)	ND	0.20	0.030	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	0.20	0.045	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	0.20	0.021	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	0.80	0.075	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	0.80	0.082	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	0.80	0.074	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	0.20	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.20	0.021	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.20	0.028	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-MeFOSAA (NMeFOSAA)	ND	0.20	0.028	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-EtFOSAA (NEtFOSAA)	ND	0.20	0.042	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	2.0	0.15	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	2.0	0.17	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.80	0.065	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.80	0.081	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
9Cl-PF3ONS (F53B Minor)	ND	0.80	0.077	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
11Cl-PF3OUdS (F53B Major)	ND	0.80	0.10	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	2.0	0.17	µg/kg dry	1	UJ	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	10	1.2	µg/kg dry	1	UJ	Draft Method 1633	12/18/23	12/21/23 9:10	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	10	0.98	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.40	0.020	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS

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Project Location: Staatsburg, NY
Sample Description: FD of Soil-DS-11202023
Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: Soil-DUP-11202023
Sampled: 11/20/2023 00:00

Sample ID: 23K2747-06

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	0.40	0.042	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	0.40	0.031	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.40	0.041	µg/kg dry	1		Draft Method 1633	12/18/23	12/21/23 9:10	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	79.7	10-130		12/21/23 9:10
13C5-PFPeA	83.8	35-150		12/21/23 9:10
13C5-PFHxA	86.1	55-150		12/21/23 9:10
13C4-PFHpA	90.8	55-150		12/21/23 9:10
13C8-PFOA	87.7	60-140		12/21/23 9:10
13C9-PFNA	83.3	55-140		12/21/23 9:10
13C6-PFDA	90.5	50-140		12/21/23 9:10
13C7-PFUnA	91.0	30-140		12/21/23 9:10
13C2-PFDoA	92.7	10-150		12/21/23 9:10
13C2-PFTeDA	61.4	10-130		12/21/23 9:10
13C3-PFBS	77.2	55-150		12/21/23 9:10
13C3-PFHxS	89.5	55-150		12/21/23 9:10
13C8-PFOS	86.4	45-140		12/21/23 9:10
13C2-4:2FTS	83.3	60-200		12/21/23 9:10
13C2-6:2FTS	114	60-200		12/21/23 9:10
13C2-8:2FTS	159	50-200		12/21/23 9:10
13C8-PFOSA	84.8	30-130		12/21/23 9:10
D3-NMeFOSA	27.0	15-130		12/21/23 9:10
D5-NEtFOSA	14.5	10-130		12/21/23 9:10
D3-NMeFOSAA	109	45-200		12/21/23 9:10
D5-NEtFOSAA	127	10-200		12/21/23 9:10
D7-NMeFOSE	41.1	10-150		12/21/23 9:10
D9-NEtFOSE	34.5	10-150		12/21/23 9:10
13C3-HFPO-DA	83.4	25-160		12/21/23 9:10

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Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: FB-11202023 | Sampled: 11/20/2023 12:00

Sample ID: 23K2747-07

Sample Matrix: Field Blank

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.2	1.5	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoropentanoic acid (PFPeA)	ND	2.1	0.37	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorohexanoic acid (PFHxA)	ND	1.1	0.23	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoroheptanoic acid (PFHpA)	ND	1.1	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorooctanoic acid (PFOA)	ND	1.1	0.24	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorononanoic acid (PFNA)	ND	1.1	0.20	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorodecanoic acid (PFDA)	ND	1.1	0.20	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoroundecanoic acid (PFUnA)	ND	1.1	0.29	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorododecanoic acid (PFDoA)	ND	1.1	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorotridecanoic acid (PFTrDA)	ND	1.1	0.29	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorotetradecanoic acid (PFTeDA)	ND	1.1	0.26	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorobutanesulfonic acid (PFBS)	ND	1.1	0.27	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoropentanesulfonic acid (PFPeS)	ND	1.1	0.25	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorohexanesulfonic acid (PFHxS)	ND	1.1	0.22	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.1	0.32	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorooctanesulfonic acid (PFOS)	ND	1.1	0.34	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorononanesulfonic acid (PFNS)	ND	1.1	0.31	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorodecanesulfonic acid (PFDS)	ND	1.1	0.33	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorododecanesulfonic acid (PFDoS)	ND	1.1	0.28	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	4.2	0.74	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	4.2	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	4.2	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluorooctanesulfonamide (PFOSA)	ND	1.1	0.32	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	1.1	0.44	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	1.1	0.33	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-MeFOSAA (NMeFOSAA)	ND	1.1	0.46	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-EtFOSAA (NEtFOSAA)	ND	1.1	0.23	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	11	2.8	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	11	2.6	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.2	1.1	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.2	0.73	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
9Cl-PF3ONS (F53B Minor)	ND	4.2	0.90	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
11Cl-PF3OUdS (F53B Major)	ND	4.2	1.0	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	ND	11	1.9	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	53	11	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	ND	53	9.3	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.1	0.52	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Staatsburg, NY | Sample Description: | Work Order: 23K2747

Date Received: 11/21/2023

Field Sample #: FB-11202023 | Sampled: 11/20/2023 12:00

Sample ID: 23K2747-07

Sample Matrix: Field Blank

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	DF	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	2.1	0.53	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	2.1	0.42	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.1	0.91	ng/L	1		Draft Method 1633	11/30/23	12/6/23 16:05	AMS

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	92.5	10-130		12/6/23 16:05
13C5-PFPeA	90.8	35-150		12/6/23 16:05
13C5-PFHxA	93.5	55-150		12/6/23 16:05
13C4-PFHpA	95.1	55-150		12/6/23 16:05
13C8-PFOA	92.0	60-140		12/6/23 16:05
13C9-PFNA	93.0	55-140		12/6/23 16:05
13C6-PFDA	93.4	50-140		12/6/23 16:05
13C7-PFUnA	89.6	30-140		12/6/23 16:05
13C2-PFDoA	85.0	10-150		12/6/23 16:05
13C2-PFTeDA	82.5	10-130		12/6/23 16:05
13C3-PFBS	86.1	55-150		12/6/23 16:05
13C3-PFHxS	94.9	55-150		12/6/23 16:05
13C8-PFOS	92.6	45-140		12/6/23 16:05
13C2-4:2FTS	70.8	60-200		12/6/23 16:05
13C2-6:2FTS	94.9	60-200		12/6/23 16:05
13C2-8:2FTS	91.2	50-200		12/6/23 16:05
13C8-PFOSA	84.0	30-130		12/6/23 16:05
D3-NMeFOSA	84.5	15-130		12/6/23 16:05
D5-NEtFOSA	86.8	10-130		12/6/23 16:05
D3-NMeFOSAA	91.9	45-200		12/6/23 16:05
D5-NEtFOSAA	89.6	10-200		12/6/23 16:05
D7-NMeFOSE	84.7	10-150		12/6/23 16:05
D9-NEtFOSE	83.5	10-150		12/6/23 16:05
13C3-HFPO-DA	90.6	25-160		12/6/23 16:05